

**INTEGRATING PATIENT SAFETY IN NURSING EDUCATION: AN ANALYSIS OF
PRE-REGISTRATION NURSING CURRICULA IN KENYA**

by

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I declare that **INTEGRATING PATIENT SAFETY IN NURSING EDUCATION: AN ANALYSIS OF PRE-REGISTRATION NURSING CURRICULA IN KENYA** is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references and that this work has not been submitted before for any other degree at any other institution.

[REDACTED]

24th October 2017

.....

.....

Signature

Date

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ABSTRACT

The purpose of this research was to investigate the extent to which patient safety concepts were integrated in the Kenyan pre-registration Bachelor of Science in nursing curriculum, and to understand the issues that influence its delivery in the classroom and clinical settings, with the aim of developing strategies that will enhance the integration of patient safety concepts in the curriculum.

In the first phase, a qualitative content analysis of the nursing curriculum documents was performed. In addition, semi-structured interviews were conducted with 13 faculty members to explore the extent to which the patient safety concepts are addressed in the nursing curriculum. In the second phase, the researcher assessed the patient safety knowledge and competencies as perceived by the nursing students using a quantitative approach whereby the Health Professional Education in Patient Safety Survey was administered to 178 nursing students in two nursing schools. The third phase, a quantitative approach, was utilised to assess the patient safety culture in the two main hospitals used by the schools for the clinical rotations using the Safety Attitudes Questionnaire – Short Form Questionnaire which was administered to 234 healthcare professionals. Additionally, a qualitative approach was utilised to explore the perceptions of staff on the preparation of the pre-registration nursing students in patient safety by conducting semi-structured interviews with 14 participants.

The content analysis showed that patient safety was not an explicit and discrete content in the curriculum documents. The perspectives of the faculty were presented under four main themes that emerged from the thematic analysis. The results of the student survey showed that generally the students were more confident about learning on the clinical aspects of patient safety than the sociocultural aspects and they were more confident in

classroom learning than in clinical learning. From the hospital survey, the staff had a positive perception of the overall patient safety culture, but the mean score was below the international benchmark. From the analysis of the semi-structured interviews on the hospital staff five main themes emerged.

Based on the findings, strategies for the integration of the patient safety concepts in nursing education were developed.

KEY CONCEPTS

Classroom learning; clinical learning; curriculum; nursing education; nursing students; patient safety; patient safety culture; pre-registration.

TABLE OF CONTENTS

DECLARATION.....	i
ACKNOWLEDGEMENTS	i
ABSTRACT i	
LIST OF TABLES.....	viii
LIST OF FIGURES.....	x
LIST OF ANNEXURES	xi
LIST OF ABBREVIATIONS.....	xii
CHAPTER 1 ORIENTATION OF THE STUDY	1
1.1 INTRODUCTION	1
1.2 BACKGROUND TO THE RESEARCH PROBLEM.....	1
1.2.1 Global perspectives on patient safety.....	1
1.2.2 Patient safety in Kenya.....	4
1.2.3 Patient safety and nursing education	6
1.2.4 Nursing education in Kenya	8
1.2.5 Overview of Kenya	8
1.3 STATEMENT OF THE RESEARCH PROBLEM.....	10
1.4 CONCEPTUAL FRAMEWORK.....	11
1.5 DEFINITION OF KEY CONCEPTS.....	15
1.6 AIM AND OBJECTIVES OF THE STUDY.....	16
1.6.1 Research objectives	16
1.6.2 Phases of the study.....	16
1.7 RESEARCH METHODOLOGY.....	17
1.7.1 Research design	17
1.7.2 Research methods	18
1.7.3 Ethical considerations	22
1.8 SIGNIFICANCE OF THE STUDY	22
1.9 SCOPE AND LIMITATIONS OF THE STUDY	24

1.10	STRUCTURE OF THE THESIS	24
1.11	CONCLUSION	25
CHAPTER 2 LITERATURE REVIEW.....		26
2.1	INTRODUCTION	26
2.2	PATIENT SAFETY	26
2.2.1	Defining patient safety.....	27
2.2.2	Errors in healthcare	28
2.2.3	Factors contributing to errors	31
2.2.4	Prevention of medical errors: Detecting and reporting errors	36
2.3	PATIENT SAFETY CULTURE	38
2.3.1	Safety culture	39
2.3.2	Patient safety culture.....	40
2.3.3	Components of patient safety culture	40
2.3.4	Relationship between patient safety culture and patient safety outcomes	44
2.3.5	Assessing patient safety culture	46
2.3.6	Patient safety culture perceptions	53
2.4	PATIENT SAFETY IN HEALTH PROFESSIONALS' EDUCATION	58
2.4.1	Core competencies for healthcare professionals	58
2.4.2	Teaching and learning methods used for patient safety education	63
2.4.3	Patient safety in pre-registration nursing curriculum	66
2.4.4	Faculty role in patient safety education	69
2.4.5	Integrating patient safety education into clinical nursing education.....	71
2.4.6	The hidden curriculum.....	73
2.4.7	Student and graduate nurses' perceptions of patient safety competence ..	74
2.5	THE WORLD HEALTH ORGANIZATION PATIENT SAFETY CURRICULUM.....	76
2.6	QUALITY AND SAFETY EDUCATION FOR NURSES.....	78
2.6.1.	Phases of the QSEN	78

2.6.2. QSEN pre-licensure nursing competencies.....	80
2.7 CONCLUSION	88
CHAPTER 3 RESEARCH DESIGN AND METHOD.....	89
3.1 INTRODUCTION	89
3.2 AIM AND OBJECTIVES OF THE RESEARCH.....	89
3.2.1 Aim of the study	89
3.2.2 Research objectives.....	89
3.3 RESEARCH DESIGN	90
3.3.1 Phases of the study.....	90
3.3.2 Descriptive research design.....	91
3.3.3 Exploratory research design.....	92
3.3.4 Quantitative research design.....	92
3.3.5 Qualitative research design.....	93
3.3.6 Content analysis.....	94
3.4 RESEARCH SETTING.....	101
3.4.1 Profiles of the nursing schools	101
3.4.2 Profiles of the hospitals	102
3.5 RESEARCH METHODOLOGY.....	102
3.5.1 Population	102
3.5.2 Sample and sampling.....	103
3.5.3 Sample size.....	103
3.5.4 Data collection.....	104
3.5.5 Reliability and Validity in quantitative research	104
3.5.6 Trustworthiness in qualitative research	106
3.5.7 Data analysis.....	108
3.6 PHASE ONE – CURRICULUM CONTENT ANALYSIS AND FACULTY PERSPECTIVES	115
3.6.1 Curriculum content analysis	116

3.6.2	Perspectives of nursing faculty.....	117
3.7	PHASE TWO: NURSING STUDENTS' PERCEPTIONS	120
3.7.1	Population	120
3.7.2	Sample and sampling technique	120
3.7.3	Data collection tool.....	122
3.7.4	Validity and reliability.....	123
3.7.5	Pre-testing of the research instrument	123
3.7.6	Data collection procedure.....	124
3.7.7	Data management and analysis.....	124
3.8	PHASE THREE: ORGANISATIONAL PATIENT SAFETY.....	126
3.8.1	Assessment of the healthcare organisation patient safety culture.....	126
3.8.2	Perceptions of the hospital staff on pre-registration patient safety education.....	132
3.9	ETHICAL CONSIDERATIONS.....	134
3.9.1	Ethical principles	134
3.9.2	Securing informed consent.....	137
3.9.3	Permission to conduct the study	137
3.9.4	Scientific integrity of the research	138
3.10	CONCLUSION	138
CHAPTER 4 PRESENTATION AND DESCRIPTION OF THE RESEARCH FINDINGS.....		139
4.1	INTRODUCTION	139
4.2	PHASE ONE: CURRICULUM CONTENT ANALYSIS AND FACULTY PERSPECTIVES	139
4.2.1	Overview	139
4.2.2	Descriptions of the nursing programme.....	140
4.2.3	Curriculum content analysis	141
4.2.4	Faculty perspectives of patient safety education.....	143
4.3	PHASE TWO: PATIENT SAFETY KNOWLEDGE AND COMPETENCE.....	161

4.3.1	Overview	161
4.3.2	Response rate.....	161
4.3.3	Demographic characteristics	161
4.3.4	Specific patient safety content areas.....	163
4.3.5	Broader patient safety issues	177
4.3.6	Comfort speaking up about patient safety	179
4.3.7	Relationship between demographic characteristics and H-PEPSS scores.....	181
4.4	PHASE THREE: PERCEPTIONS OF HOSPITAL STAFF ON PATIENT SAFETY CULTURE AND PATIENT SAFETY EDUCATION.....	190
4.4.1	Overview	190
4.4.2	Patient culture survey.....	190
4.4.3	Perceptions of the hospital staff on pre-registration patient safety education.....	204
4.5	CONCLUSION	221
CHAPTER 5 DISCUSSION OF THE INTEGRATED FINDINGS.....		223
5.1	INTRODUCTION	223
5.2	EMERGENT THEMES AND DISCUSSION	224
5.2.1	Curriculum issues.....	224
5.2.2	Faculty preparation in teaching patient safety	227
5.2.3	Student characteristics that influence safety competencies	229
5.2.4	Patient safety in the clinical sites.....	230
5.2.5	Clinical education issues	232
5.2.6	Interprofessional education	234
5.2.7	Collaboration between the nursing schools and clinical settings.....	235
5.3	INTERPRETATION OF RESULTS WITHIN THE CONCEPTUAL FRAMEWORK	235
5.4	CONCLUSION	237

CHAPTER 6 STRATEGIES FOR INTEGRATION OF PATIENT SAFETY IN THE NURSING CURRICULUM	238
6.1 INTRODUCTION	238
6.2 LEADERSHIP SENSITISATION ON PATIENT SAFETY.....	239
6.3 POLICY CHANGES	240
6.4 DEVELOPMENT OF PATIENT SAFETY CORE COMPETENCIES	240
6.5 FACULTY CAPACITY BUILDING.....	241
6.6 CURRICULUM CHANGES	241
6.7 EVALUATION OF THE CURRICULUM	241
6.8 INTERPROFESSIONAL EDUCATION	241
6.9 MENTORSHIP	242
6.10 PATIENT SAFETY IN THE CLINICAL SITES.....	242
6.11 ACADEMIC PRACTICE PARTNERSHIPS.....	243
6.12 CONCLUSION	243
CHAPTER 7 SUMMARY, CONCLUSIONS AND LIMITATIONS.....	244
7.1 INTRODUCTION	244
7.2 RESEARCH DESIGN AND METHODS.....	244
7.3 SUMMARY OF FINDINGS.....	245
7.3.1 Phase one	245
7.3.2 Phase two	246
7.3.3 Phase three.....	247
7.4 CONCLUSIONS.....	248
7.5 LIMITATIONS OF THE STUDY	250
7.6 RECOMMENDATIONS.....	251
7.6.1 Recommendations for practice and education	251
7.6.2 Recommendations for future research	252
7.7 CONTRIBUTIONS OF THE STUDY	252
7.8 CONCLUDING REMARKS	253

REFERENCES..... 254

LIST OF TABLES

Table 1.1:	Basic nursing programmes in Kenya	8
Table 1.2:	Overview of research methodology of the study	18
Table 2.1:	Patient safety culture assessment tools	48
Table 2.2:	SAQ domains and item examples	50
Table 2.3:	Professional organisations with recommendations for competencies ...	59
Table 2.4:	Skill level competent - competency themes	60
Table 2.5:	Patient centred care	81
Table 2.6:	Teamwork and collaboration	83
Table 2.7:	Evidence-based practice	84
Table 2.8:	Quality improvement	85
Table 2.9:	Safety	86
Table 2.10:	Informatics	87
Table 3.1:	Common parametric statistical tests	110
Table 3.2:	Phases and stages of thematic analysis	113
Table 3.3:	Documents used for content analysis	116
Table 4.1:	Faculty interviews – participant’s demographic data	145
Table 4.2:	Emerging themes, subthemes and categories	146
Table 4.3:	Demographic characteristics of the respondents (n = 178)	162
Table 4.4:	Description of participants per year of study	162
Table 4.5:	Confidence in learning clinical safety in classroom setting	163
Table 4.6:	Confidence in learning clinical safety in clinical setting	164
Table 4.7:	Confidence in learning culture of safety in classroom setting	164
Table 4.8:	Confidence in learning culture of safety in clinical setting	165
Table 4.9:	Confidence in learning about working in teams in classroom setting ..	166
Table 4.10:	Confidence in learning about working in teams in clinical setting	167
Table 4.11:	Confidence in learning about communicating effectively in classroom setting	168
Table 4.12:	Confidence in learning about communicating effectively in clinical setting	169
Table 4.13:	Confidence in learning about managing safety risks in classroom setting	170
Table 4.14:	Confidence in learning about managing safety risks in a clinical setting	170

Table 4.15:	Confidence in learning about human and environmental factors in a classroom setting	172
Table 4.16:	Confidence in learning about human and environmental factors in a clinical setting.....	172
Table 4.17:	Confidence in learning about recognising, responding to and disclosing adverse events in the classroom setting	173
Table 4.18:	Confidence in learning about recognising, responding to and disclosing adverse events in a clinical setting	174
Table 4.19:	Differences on self-reported patient safety competence in different learning settings.....	175
Table 4.20:	Broader patient safety issues	178
Table 4.21:	Comfort in speaking up about patient safety	180
Table 4.22:	Differences between genders on the h-pepss subscales.....	182
Table 4.23:	Differences between genders on the H-PEPSS Sections 2 and 3	183
Table 4.24:	H-PEPSS subscales mean scores per year of study	184
Table 4.25:	H-PEPSS Sections 2 and 3 mean scores per year of study.....	187
Table 4.26:	Percentage of respondents that agreed with each h-pepss section two and three per year of study.....	188
Table 4.27:	Response rate by hospital.....	191
Table 4.28:	Summary of demographic data classified by professions	192
Table 4.29:	Teamwork climate scores	194
Table 4.30:	Safety climate scores	195
Table 4.31:	Job satisfaction scores.....	196
Table 4.32:	Stress recognition scores.....	197
Table 4.33:	Perceptions of management scores.....	198
Table 4.34:	Work conditions scores	199
Table 4.35:	Independent item scores.....	200
Table 4.36:	Comparison SAQ mean scores across demographic factors.....	201
Table 4.37:	Hospital interviews participant demographic data	205

LIST OF FIGURES

Figure 1.1:	Map of Kenya showing administrative boundaries	10
Figure 1.2:	QSEN Core Competencies	13
Figure 2.1:	Contributing factors to adverse events in healthcare	34
Figure 3.1:	A streamlined codes-to-theory model for qualitative inquiry.....	96
Figure 4.1:	Culture of safety: Classroom vs Clinical.....	165
Figure 4.2:	Working in teams: Classroom vs Clinical	167
Figure 4.3:	Communicating effectively: Classroom vs Clinical	169
Figure 4.4:	Managing safety risks: Classroom vs Clinical	171
Figure 4.5:	Understanding human and environmental factors: Classroom vs Clinical	173
Figure 4.6:	Adverse events: Classroom vs Clinical	175
Figure 4.7:	Patient safety perceived competence per year of study – Classroom setting	185
Figure 4.8:	Patient safety perceived competence per year of study – Clinical setting	186
Figure 4.9:	Comparison the SAQ dimensions mean score	201
Figure 4.10:	Hospital staff interviews themes and subthemes	208
Figure 6.1:	Strategic framework for the integration of patient safety in nursing education	239

LIST OF ANNEXURES

Annexure A: Ethical clearance certificate from the University of South Africa	283
Annexure B: Ethical clearance certificate from the Pwani University Ethics Review Committee.....	284
Annexure C: Letter seeking permission from University A	286
Annexure D: Letter of approval from University A	287
Annexure E: Letter seeking permission from University B	288
Annexure F: Letter of approval from University B	289
Annexure G: Letter seeking permission from Hospital A.....	28890
Annexure H: Letter of approval Hospital A.....	291
Annexure I: Letter seeking permission from hospital B	292
Annexure J: Letter of approval Hospital B.....	293
Annexure K: Coding frame.....	294
Annexure L: Nursing faculty consent form and interview guide	298
Annexure M: Hospital staff consent form and interview guide	299
Annexure N: Health professional education in patient safety survey tool.....	303
Annexure O: Safety attitudes questionnaire	306
Annexure P: SAQ approval.....	310
Annexure Q: Sample of transcribed interview.....	311
Annexure R: Declaration of professional editing and proofreading.....	312

LIST OF ABBREVIATIONS

AACN	American Association of Colleges of Nursing
AHRQ	Agency for Healthcare Research and Quality
ANOVA	Analysis of Variance
BScN	Bachelor of Science in Nursing
CPSI	Canadian Patient Safety Institute
CUE	Commission for University Education
DEU	Dedicated Education Unit
EBP	Evidence-Based Practice
GOK	Government of Kenya
H-	
PEPSS	Health Professionals Education in Patient Safety Survey
HRO	High-Reliability Organisation
HSOPSC	Hospital Survey on Patient Safety Culture
IHI	Institute of Healthcare Improvement
IOM	Institute of Medicine
IPE	Inter-Professionals Education
NCK	Nursing Council of Kenya
NQF	National Quality Forum
PBL	Problem Based Learning
PSI	Patient Safety Indicators
QSEN	Quality and Safety Education for Nurses
SAQ	Safety Attitudes Questionnaire
SD	Standard Deviation
SPSS	Statistical Package for the Social Sciences
UNISA	University of South Africa
UK	United Kingdom
USA	United States of America
WHO	World Health Organization

CHAPTER 1

ORIENTATION OF THE STUDY

1.1 INTRODUCTION

The safety of healthcare is an extremely important issue for healthcare professionals and individual consumers of healthcare, yet evidence indicates that healthcare is not as safe as it should be (Jha 2008:13; World Health Organization [WHO] 2011a:2). Medical errors have emerged as one of the most pressing challenges in healthcare systems around the world, mainly because of the increasing complexity of health delivery systems. Modern medicine has undergone transformation with new discoveries and improvements in technology leading to improved outcomes in healthcare as well as longevity. However, this has also led to an increase in the risk to the safety of the patient, meaning that the threat to patient safety is an actual and serious problem in healthcare today.

1.2 BACKGROUND TO THE RESEARCH PROBLEM

1.2.1 Global perspectives on patient safety

Patient safety is a complex theme, and for this reason various definitions have emerged from different professionals and regulatory authorities, all with the aim of creating awareness regarding the issue. The definitions of patient safety and its related concepts that have been postulated over the recent years are diverse and abstract. The Institute of Medicine (IOM) defines patient safety as prevention of harm caused by errors of commission and omission, with emphasis being placed on a system of care delivery that prevents errors, learns from the errors that do occur and is built on a culture of safety that involves healthcare professionals, organisations, and patients (Aspden, Corrigan, Wolcott, & Erickson, 2004:333). Emanuel, Berwick and Conway (2008:6) proposed a definition of patient safety that acknowledges that patient safety is both a way of doing things and an emergent discipline. They define patient safety as “a discipline in the healthcare sector that applies safety science methods towards the goal of achieving a trustworthy system of healthcare delivery. Patient safety is also an attribute of healthcare systems; it minimizes the incidence and impact of, and maximizes recovery from, adverse events”. The most current definition of patient safety, postulated by the WHO, is one that encompasses the theme in all the other definitions. The WHO defines patient safety as “the reduction of risk of unnecessary harm associated with healthcare to an acceptable minimum. An acceptable minimum refers to the collective notions of given current

knowledge, resources available and the context in which care was delivered weighed against the risk of non-treatment or other treatment” (WHO 2009a:15). With an understanding that without universally accepted conceptual definition of patient safety and its related terms, the WHO established that the understanding of these by the players involved would be distorted. They therefore launched a project to develop an international classification for patient safety. This was done through a drafting group that comprised experts from the fields of patient safety, classification theory, health informatics, consumer/patient advocacy, law and medicine. They developed a conceptual framework for the international classification of patient safety and the definitions for 48 key concepts in patient safety (WHO, 2009:20). For this reason, the author chose to use the WHO definition for the purpose of this study.

The safety of the healthcare systems came into the limelight in 1999 from a report by the IOM, “To Err is Human”, which highlighted that medical errors were a major cause of morbidity and mortality in the United States of America health system. The report showed that 44,000 to 98,000 deaths occurred every year and one million people were injured because of error (Kohn, Corrigan, & Don, 2000:26). In 2000, the United Kingdom (UK), also published the report “An Organisation with a Memory” which recorded over 850,000 incidents of harm to National Health Service (NHS) hospital patients each year with an average of 40 incidents a year contributing to patient deaths in NHS institutions (Department of Health, 2000:9). Subsequently studies from different countries from all over the world confirm the magnitude of the problem. An Australian study revealed that 18,000 deaths occurred due to medication errors and at least 7% of the admitted patients are affected by at least one adverse event (Ehsani, Jackson, & Duckett 2006:551). In 2004, the Canadian Adverse Events Study found that adverse events occurred in more than 7% of hospital admissions, and estimated that 9,000 to 24,000 Canadians die annually due to avoidable medical errors (Baker, Norton, Flintoft, Blais, Brown, Cox, Etchells, Ghali, Hébert, Majumdar, O’Beirne, Palacios-Derflinger, Reid, Sheps, & Tamblyn 2004:1678). For that reason, the WHO concluded that medical errors could result in numerous preventable injuries and deaths, and estimates that millions of patients worldwide suffer disabling injuries or death every year due to unsafe medical practices and care (Jha 2008:13).

The level of harm from medical errors has been greatly studied in developed countries since the early 1990s, but the number of studies is limited in the developing and underdeveloped countries. The WHO estimates that the rates of adverse events may be

doubled in developing countries where the proportion has been estimated to be from 25% to 40% or more (WHO 2011a:5). A retrospective study on medical records in Kenya, Egypt, Morocco, Tunisia, Sudan, South Africa and Yemen found that harm to patients due to unsafe medical care is a major public health problem, as it is in the developed countries, but in the developing countries patients are more likely to die from such harm. The study showed that almost one-third of patients who suffered a harmful incident died. Another 14% sustained permanent disability, 16% sustained moderate disability, and 30% were left with minimal disability (Wilson, Olsen, Gibberd, Vincent, El-Assady, Rasslan, Qsous, Macharia, Sahel, Whittaker, Abdo-Ali, Letaief, Ahmed, Abdellatif & Larizgoitia 2012:3)

These reports have served as a global call to action to the healthcare fraternity to transform the healthcare systems, deal with the issues of patient safety and to assure the public about the safety of the healthcare system. With the recognition for the need for action, the WHO established a World Alliance for Patient Safety (later WHO Patient Safety) whose responsibility is to raise awareness and commitment to improving the safety of care and facilitates the development of patient safety policies and practices in all WHO member states (WHO 2004).

It is universally recognised that a bridge to the assurance of patient safety is through a skilled health professional workforce. In 2001, the IOM published a report “Crossing the Quality Chasm: A New Health System for the 21st Century” which pointed out that health professionals’ education did not adequately prepare the professionals to address issues of patient safety (IOM 2001:207). In 2003, with the background of this information, the IOM recommended that for healthcare systems to achieve change there is need to educate the healthcare professional to deliver patient-centred care as members of an interdisciplinary team, emphasising evidence-based practice, quality-improvement approaches, and informatics (IOM 2003:45). With the acknowledgement that doctors, nurses, pharmacists and other health professionals were not adequately prepared to provide the highest quality and safest medical care possible, and that there was insufficient assessment of their ongoing proficiency, a Health Professions Education Summit was held in 2002. At this summit, the leaders and experts from health professions education areas met and developed strategies for restructuring clinical education to be consistent with the principles of the 21st-century health system (IOM 2003). Subsequently, The World Alliance for Patient Safety, on behalf of the WHO, in 2009, launched the Patient Safety Curriculum Guide for Medical Schools (WHO 2009b). In

2011, they published a curriculum guide that included all other health professionals, and was called “Patient Safety Curriculum Guide: Multi-professional Edition” (WHO 2011b). The guide contains 11 patient safety themes that need to be addressed in the healthcare education curriculum with the aim of assisting universities and schools in several healthcare fields, including nursing, to deliver consistent and structured patient safety education to improve patient care. This has therefore been the cornerstone for improving the health professional’s education both at pre-registration and post-registration levels with a major emphasis being laid on competencies for improvement of patient safety.

1.2.2 Patient safety in Kenya

Patient safety in Kenya is a major issue in the public health system with numerous adverse events reported in the media. Anecdotal data from the media shows that medical errors are reported in one of every three hospital visits and serious results are seen in as many as 20% of cases (Standard Digital 2013). However, accurate data on the actual adverse events rates in the country is limited. Without a standardised adverse events reporting mechanism in the country it becomes impossible to detail the exact estimates of the rates in the Kenyan public health system. Nevertheless, the WHO estimates that the rates of adverse events in developing countries is almost double or more than that of the developed countries where the proportion has been estimated to be from 25% to 40% or more (WHO 2011a:5). To support these estimates, a study by Koigi-Kamau, Kabare and Wanyoike-Gichuhi (2005:357) in Kenya on incidence of surgical site infections following caesarean section showed that for every 100 patients 19 developed surgical site infections. This surgical site incidence rate was twice as high as that reported on European countries (European Centre for Disease Prevention and Control 2008:16). Furthermore, a retrospective review of medical records that was carried out in multiple developing countries, showed that the incidence rate of adverse events in Kenya was as high as 14.5% per admission (Wilson et al 2012:8).

In Kenya, the concerns surrounding patient safety are immense however in the past the country has been grappling with issues of poverty and the challenges from infectious diseases including HIV/AIDS and malaria. The focus of policy makers therefore has largely been on dealing with these issues. Recently there has been a shift in the focus of healthcare in Kenya, with quality and patient safety starting to receive the attention they deserve. In 2007, the Kenya government published a development blueprint “Kenya Vision 2030” in which it envisioned transforming Kenya into a newly industrialising,

middle-income country providing quality life to all its citizens by 2030 (Government of Kenya [GOK], 2007:1). Under the social pillar of the vision, the Kenyan government aims at providing an efficient and high-quality healthcare system with the highest standards by 2030. This was further strengthened by the promulgation of a new constitution in 2010, which in Chapter 4, “The Bill of Rights”, guarantees that every person has the right to the highest attainable standard of health (GOK 2010:30). The profile of the healthcare consumers is also changing. According to the African Development Bank, in Kenya “strong economic growth in the past two decades has helped reduce poverty significantly and lift previously poor households into the middle class”. This has boosted Kenyans’ purchasing power and is expected to keep on rising (Ncube, Lufumpa & Kayizzi-Mugerwa 2011:2). This has also increased the demand for quality healthcare by the consumers, who feel that they should get value for their money. For the healthcare provider to remain competitive in the market, they have to transform their systems to ensure that they provide quality and safe healthcare. Availability of high-speed internet connectivity has enabled most Kenyans to have access to the internet with the estimated number of people with access to the internet rising to 40.5 million, attributable to the growth of fibre optic network in the country (Communication Authority of Kenya 2017:23). This, coupled with a strengthened economy, has made Kenyans more knowledgeable about the social issues happening in the country and around the world. The transformation in the Kenyan population has made members of the public to become more assertive about their expectations for quality and safe healthcare. They have greater expectations in the competency of the healthcare providers and are insistent on action against failures by the healthcare systems and the healthcare professionals. This therefore means that healthcare systems have no choice but to change and the change can mainly be achieved by transforming the education of the healthcare professionals.

With the recognition that patient safety is a major issue and the economic impact of the medical errors rising, Kenya collaborates with various organisations to tackle the patient safety problem. In 2011, the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) Health Sector Programme entered into a private–public partnership with B Braun Melsungen AG and the Ministry of Health to deliver an education programme for senior executives and middle-level managers within the healthcare industry. The “Patient Safety: Towards Improving Healthcare Delivery” project aimed at facilitating improvements in patient safety through enhanced training of health workers on patient safety (Otieno 2011). Kenya is also in collaboration with the World Bank through the

Health in Africa initiative, which supports legal, regulatory and institutional reforms, to improve patient safety and the quality of privately provided health services (World Bank 2009).

1.2.3 Patient safety and nursing education

Nurses are recognised as vital members of the healthcare team in the hospitals and their contribution is fundamental in the improvement of quality and maintenance of patient safety in the hospitals (Kohlbrener, Whitelaw & Cannaday 2011:122). Compared to other healthcare professionals, nurses are more often likely than to recognise, intercept, and correct errors within the healthcare delivery system (Rothschild, Hurley, Landrigan, Cronin, Martell-Waldrop, Foskett, Burdick, Czeisler & Bates 2006:63). Their role in the healthcare systems concerning patient safety is reflected in Florence Nightingale's tenet of "First Do No Harm" (Nightingale 1859) in which she called upon nurses to protect their patients from harm.

Historically in the healthcare delivery system the major focus of patient safety initiatives is mainly on improvement of the safety practices of nurses during their post-registration period. However, it is becoming increasingly apparent that for the nurses to be competent in these safety practices more emphasis has to be placed on the acquisition of the knowledge, the application of that knowledge to practice and also the development of the appropriate attitudes, and this can only be done through education (Henderson, Forrester, & Heel 2006:275). Therefore, nursing education programmes both at the pre-registration and post-registration levels should be designed in such a way that the nurse is well-equipped with the patient safety competencies and that learning from errors is facilitated. Several studies conducted around the world to assess the inclusion of patient safety concepts in pre-registration nursing curriculum have shown that there is a great interest in this field around the world. Reports, however, show that patient safety concepts are not explicitly covered in the pre-registration curriculum but rather they are implied within the curriculum and the student nurse is left to infer these concepts.

According to Tella, Jamookeeah and Partanen (2014:7) if patient safety is not evident in the nursing curriculum as an explicit concept but rather integrated in the nursing content, there is a risk of it not being taught comprehensively. In the UK, a multisite study was conducted on the formal and informal ways pre-registration students in the medical, nursing, pharmaceutical and physiotherapy professions learn about patient safety in

order to become safe practitioners. The study showed that patient safety in the nursing curriculum documents was not visible as a specific module or theme but as a series of statements about safety and that patient safety was not a discrete topic but underpinned in all aspects of the nursing programmes (Cresswell, Howe, Steven, Smith, Ashcroft, Fairhurst, Bradley, Magnusson, McArthur, Pearson & Sheikh 2013:843). A qualitative study of a nursing curriculum at a university in the east of England by Mansour (2013:157), found that the curriculum was not explicitly linked to patient safety and there was a mismatch between theory and practice. These findings are congruent with results from other studies. In Iran, nursing students reported that they were dissatisfied with the way that patient safety issues were covered in the classroom teaching and they felt that the curriculum concentrated more on the medical aspects with little time being dedicated to patient safety issues (Vaismoradi, Salsali & Marck 2011:434). In Japan, a study of nursing curricula from 193 public and private Japanese university nursing schools found that 90% of the nursing schools had incorporated some form of patient safety education into the curriculum with 10% having no patient safety education (Maeda, Kamishiraki, Starkey & Ehara 2011:416).

Another main issue identified in the integration of patient safety in nursing education is the preparation of the nursing faculty in teaching and mentoring the students in patient safety concepts. The provision of quality student experience is dependent on a competent faculty who are well-prepared in various pedagogical approaches and patient safety concepts (Sherwood & Drenkard 2007:151). Research has, however, shown that the nursing faculty are ill prepared in patient safety concepts. In a qualitative study by Tregunno, Ginsburg, Clarke and Norton (2014:257) on the perspectives of faculty regarding integration of patient safety concepts in health professional's curricula, one of the concerns that the faculty reported was the extent to which they as faculty and the clinical preceptors are prepared in the patient safety field. According to Vaismoradi (2012:101), the reason why faculty are not well prepared is because the field of patient safety is relatively new and most nursing faculty completed their nursing education prior to the emergence of this field and they may not have received the same continuing education that practice settings have provided for nurses in practice.

Nursing education has been focused on the development of nurses who are able to provide patient care to the population. However, with the changing times, nursing education needs to shift its focus not only to care provision but also development of competencies related to patient safety and quality improvement.

1.2.4 Nursing education in Kenya

The Nursing Council of Kenya (NCK) regulates the practice and education of nurses and midwives in Kenya. The NCK has approved training of nurses on three levels, certificate, diploma and degree. Training in diploma and degree programmes is categorised as basic and post basic with post basic training being specialised and undertaken only if the student has already acquired basic nursing education.

The following table shows the approved nursing basic level trainings in Kenya.

Table 1.1: Basic nursing programmes in Kenya

Nursing Programme	Level of Training	Programme Type	Training Duration
Kenya Enrolled Community Health Nurse	Certificate	Basic	30 Months
Kenya Registered Nurse	Diploma	Basic	36 Months
Kenya Registered Community Health Nurse	Diploma	Basic	42 Months
Kenya Registered Nurse Midwife	Diploma	Basic	42 Months
Kenya Registered Nurse/Mental Health & Psychiatric Nurse	Diploma	Basic	36 Months
Bachelor of Science in Nursing	Degree	Basic	48 Months

(NCK 2013)

Institutions that offer nursing education in Kenya are accredited and approved by the NCK. By July 2015, there were 101 approved nurse training institutions to train students at degree, basic and higher diploma level for various branches of nursing practice (NCK 2017). Of the 101 institutions, 24 train nurses at a degree level while 77 offer basic diploma in nursing. The institutions offering diplomas are further divided into 36 government-owned institutions and 41 privately owned training institutions. The government-owned institutions are all grouped under the auspices of the Kenya Medical Training College, which has 29 colleges offering basic diploma nursing in different parts of the country.

1.2.5 Overview of Kenya

Kenya is situated in the eastern part of the African continent. It is almost bisected by the equator. Kenya shares a border with Ethiopia, Somalia, Tanzania, Uganda, Sudan and the Indian Ocean. Kenya has a total area of 582,646 square kilometres of which 571,466

square kilometres form the land area. Approximately 80% of the land area of the country is arid or semiarid, and only 20% is arable. The country falls into two regions: lowlands, including the coastal and Lake Basin lowlands, and highlands, which extend on both sides of the Great Rift Valley. Rainfall and temperatures are influenced by altitude and proximity to lakes or the ocean. The climate along the coast is tropical with rainfall and temperatures being higher throughout the year. There are four seasons in a year: a dry period from January to March, the long rainy season from March to May, followed by a long dry spell from May to October, and then the short rains between October and December. According to the 2014 Demographic and Health Survey, the population of Kenya was 43 million, and with a growth rate of 2.9% per annum, the population may increase to 77 million by 2030 (Kenya National Bureau of Statistics 2014:1).

Under the new constitution, which was enacted in August 2010, Kenya is divided into 47 semi-autonomous counties that are headed by governors and each with its own government (see Figure 1.1). County governments consist of a county assembly and a county executive. The county assembly is made up of members elected from different wards in the county. The county governor is the head of the county executive. Voters in each county elect their governor and deputy governor directly. The governor then appoints other members of the county executive committee, with the approval of the county assembly (GOK 2012:c43-12).

The healthcare delivery system in Kenya comprises the public sector, this mainly being offered by the National and the County Governments. The other providers are the private sector, which includes the private for-profit institutions, faith-based organisations, and non-government organisations. Previously, the public health system consisted of the following levels of health facilities: national referral hospitals, provincial general hospitals, provincial hospitals, health centres and dispensaries. However, with the new constitution, the healthcare management function has been devolved to the county level with only the management of the national referral hospitals remaining within the national government, who are also tasked with the formulation of the health policy (GOK 2010:175). By 2014, there were a total of 7795 facilities in Kenya with a total of 68,185 healthcare workers (Ministry of Health 2014:9).

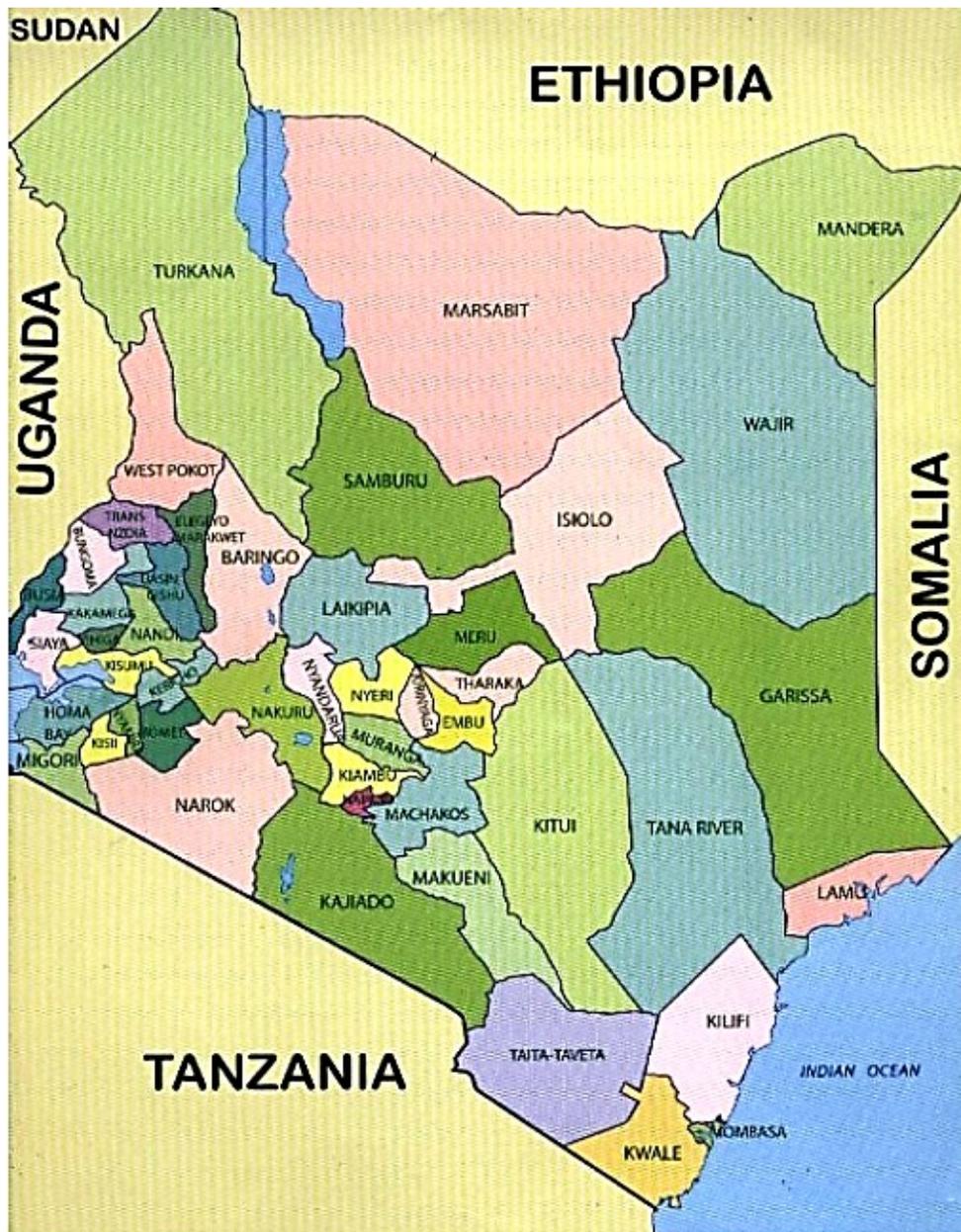


Figure 1.1: Map of Kenya showing administrative boundaries (Counties ... 2015)

1.3 STATEMENT OF THE RESEARCH PROBLEM

Nurses are the cornerstone of the healthcare delivery system. They are the ones who often have the most direct and sustained contact with the patients and this therefore makes them key in ensuring the safety of the patient. To gain the competencies required to protect the patient, the nurse must be well-equipped with the appropriate knowledge, skills and attitude. The experienced nurse has developed assessment skills and clinical intuition to recognise and intervene to prevent patient risk and harm; however, the novice nurse lacks the intuition and the opportunity to develop an awareness of patients at risk. These qualities, intuition, knowledge, skills and attitudes should ideally be ingrained in

them during pre-registration training. The traditional role of the nurse as exclusively providers of direct healthcare is also changing. Nurses no longer only provide bedside nursing but play key roles in quality improvement, patient safety, risk management measurement of outcomes as well as benchmarking of practice. This has necessitated the transformation of the nursing curriculum to ensure that quality improvement and patient safety concepts are incorporated as explicit and clear content that prepares the novice nurse to competently fit in with the changes in the healthcare systems and in their new roles and responsibilities. However, research on the nursing curricula from the various countries has shown that patient safety issues are not comprehensively covered in the curricula and there is a major gap between what is being taught and the reality on the ground (Cresswell et al 2013:843; Maeda et al 2011:416; Vaismoradi et al 2011:434).

The nursing care environments in which practice and learning take place have also become more complex. The novice nurse is exposed to nursing work environments that are highly intense settings with little margin for human error, and nursing work that is highly demanding both at a cognitive and physical level (Ebright, Urden, Patterson, & Chalko 2004:531). The work environments where the nursing student undergoes training and eventually practice have also increasingly become more patient safety conscious and have instituted various modalities for tracking improvement and safety. However, according to Benner, Sutphen, Leonard, and Day (2009:134) students remain “outsiders” or “guests” in these settings, missing important opportunities to observe outcomes of the care they provide. This therefore means that a dynamic relationship should be enhanced between the clinical practice and the nursing education. In clinical practice, the causes of patient safety issues should be analysed and integrated in the nursing education. Students should also be involved in the process during the training so that by the time of graduation, they have been exposed to these issues.

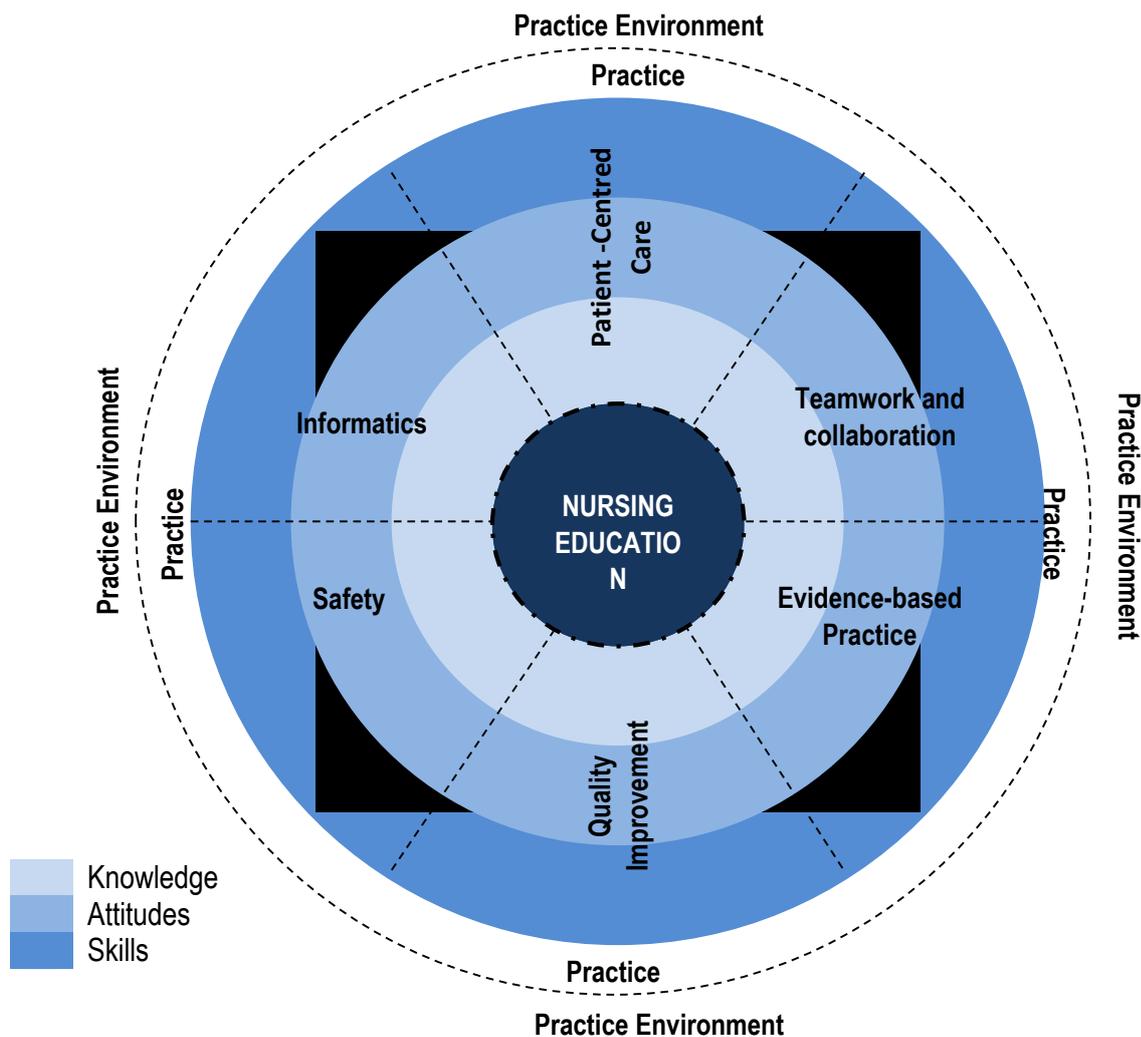
1.4 CONCEPTUAL FRAMEWORK

This study is guided by the conceptual framework of Quality and Safety Education for Nurses (QSEN) developed by QSEN faculty with funding from Robert Wood Johnson Foundation (Cronenwett, Sherwood, Barnsteiner, Disch, Johnson, Mitchell, Sullivan, & Warren 2007:122). QSEN addresses the challenge of preparing nurses with the competencies necessary to continuously improve the quality and safety of the healthcare systems in which they work. The QSEN framework is founded on the IOM’s report for health professions education that calls on faculties of these professions to alter learning

experiences so that the graduate is equipped with the five competencies, namely patient-centred care; work in an interdisciplinary team; evidence-based practice; quality improvement; and informatics (IOM 2003:45). QSEN outlines six competencies for the pre-registration nursing students, which are patient-centred care; teamwork and collaboration; evidence-based practice; quality improvement; safety; and informatics. Using the definitions of the competency, they propose statements for the knowledge and skills for each competency that should be developed during the pre-registration nursing education. These competencies, which are not separate linear concepts but interact to create the whole, can then be used as a framework for education programmes, licensing and certification of nurses at all levels (Sherwood & Drenkard 2007:151). Figure 1.2 shows a framework of how the competencies are conceptualised.

QSEN defines patient-centred care competency as being able to “recognize the patient or designee as the source of control and full partner in providing compassionate and coordinated care based on respect for patient’s preferences, values, and needs” (Cronenwett et al 2007:123). Cronenwett et al (2007:128) agree that nursing curricula generally do cover issues related to patient-centred care, but more attention needs to be focused on the knowledge, skills and attitudes that ensure that the nursing student is able to elicit and incorporate patient preferences and values in the plan of care – values which ensure the patient (or surrogates) as partners in care, appreciate the legal and ethical dilemmas posed by shared decision making, and develop expertise in managing conflict.

Teamwork and collaboration competency ensures that the graduate nurse is able to function effectively within nursing and inter-professional teams, fostering open communication, mutual respect, and shared decision making, to achieve quality patient care (Cronenwett et al 2007:125). This competency takes into account the importance of the inter-professional team in positive patient outcomes and the overall quality of the healthcare system (Leonard, Graham, & Bonacum 2004:i85). The graduate nurse should be knowledgeable on their strengths, limitation and values. He or she should be able to define their scope of practice and the roles and contributions of the other members, develop the ability to analyse the team members’ different communication style preferences and the impact of their own style of communication. They should also be able to discuss effective strategies for communicating and initiate actions to resolve conflict. More so, they should be able to identify barriers of effective team functioning and participate in designing systems that support effective teamwork.



(Massachusetts Department of Higher Education 2010:5)

Figure 1.2: QSEN Core Competencies

Evidence-based Practice (EBP) competency is defined as the integration of the best current evidence with clinical expertise and patient/family experiences and values for the delivery of optimal healthcare (Cronenwett et al 2007:126). According to Burns and Foley (2005:351), new nursing graduates who develop this competency are able to differentiate between clinical opinions and various levels of scientific evidence. Cronenwett et al (2007:126) argue that with this competence, the graduate nurse understands that EBP is more than just evidence but rather involves patients' preferences and values as well as the clinical expertise required to understand when it is appropriate for the clinician to deviate from the evidence-based guidelines in order to deliver quality, patient-centred care.

Quality-improvement competency is defined as the use of data to monitor the outcomes of care processes and use improvement methods to design and test changes to continuously improve the quality and safety of healthcare systems (Cronenwett et al 2007:127). The nursing student who develops this competency is able to recognise that nursing and other health professionals are part of the systems of care and care processes that affect the outcomes for patients and families; describe strategies for learning about outcomes of care; explain the importance of variation and measurement in assessing the quality of care; and describe approaches for changing processes of care.

The fifth competency, safety, is defined as the ability to minimise risk of harm to patients and providers through both system effectiveness and individual performance. In the IOM report, this competency is integrated in the quality-improvement competency (IOM 2003:45). However, QSEN faculty separated it from quality improvement because they felt that inasmuch as the current curriculum taught students on aspects of safety in the care of the patient, it did not take into account the system issues that compromise the safety of the patient (Cronenwett et al 2007:130). With this competency, the graduate nurse is able to examine human factors and basic safety design principles as well as unsafe practices, understand the importance of safety culture and error reporting as well as develop the value for vigilance and monitoring their own performance and that of the system.

Informatics, according to Smith, Cronenwett, & Sherwood (2007:132) is the least understood of the competencies. QSEN define it as the use of information and technology to communicate and manage knowledge, mitigate error and support decision making. This competency was included on the premise that the knowledge of informatics, skills in it and attitudes towards it are required for one to develop the other five competencies (Cronenwett et al 2007:130). The nursing student develops the ability to explain the importance of information and technology in safe patient care, to utilise information on common databases, understand different communication technologies and their impact on safety and quality, and value the involvement of nurses in the design, selection, implementation and evaluation of information technology to support patient care.

Cronenwett et al (2007:130) argue that the above competencies cannot be achieved through the traditional theoretical teaching or developed in a single course but by the faculties and clinical instructors engaging differently with the inter-professional teams that they teach.

1.5 DEFINITION OF KEY CONCEPTS

For the purpose of this study, the following terms have been used in the sense defined below:

Adverse events: unexpected harm resulting from a justified action where the correct process was followed for the context in which the event occurred.

Competency: the application and demonstration of appropriate the knowledge, skill, ability and judgement required for safe and ethical nursing practice

Error: a failure to carry out a planned action as intended or application of an incorrect plan which manifests in doing the wrong thing (commission) or failing to do the right thing (omission), at either the planning or execution phase.

Healthcare-associated infection: an infection that was neither present nor incubating at the time of patient's admission, which normally manifests itself more than three nights after the patient's admission to hospital.

Near miss: an incident which did not reach the patient.

Nursing curriculum: a defined and prescribed course of studies, which students must fulfil in order to pass a certain level of education.

Patient safety incident: an event or circumstance which could have resulted, or did result, in unnecessary harm to a patient.

Patient safety: the reduction of risk of unnecessary harm associated with healthcare to an acceptable minimum.

Patient: a person who is a recipient of healthcare, itself defined as services received by individuals or communities to promote, maintain, monitor or restore health.

Pre-registration nurse: a student who is undergoing training in a nursing programme recognised by the NCK, leading to an academic award and professional registration.

Quality improvement: the result or outcome of the culture, processes and structures that are directed towards the prevention of system failure and the improvement of safety and quality.

1.6 AIM AND OBJECTIVES OF THE STUDY

The aim of this research was to investigate the extent to which patient safety concepts are integrated in the pre-registration Bachelor of Science in nursing curriculum in Kenya and to understand the issues that influence teaching, learning and practising patient safety in the classroom and clinical settings. This ultimately lead to the development strategies that will enhance the integration of the patient safety concepts in the pre-registration nursing curriculum in Kenya to generate a patient safety-competent workforce and subsequently ensure delivery of safe healthcare services to the public.

1.6.1 Research objectives

Based on the aims of the study, the specific objectives were to:

1. Identify the explicit patient safety concepts in the formal pre-registration nursing curriculum;
2. Explore the perspectives of nursing faculty on patient safety education in the pre-registration nursing curriculum;
3. Measure the patient safety knowledge and competencies as perceived by the nursing students;
4. Assess the patient safety culture that the students are exposed to in the hospitals that nursing students receive clinical education;
5. Explore the perceptions of the hospital staff on the preparation of the pre-registration nursing students in patient safety;
6. Develop strategies for the integration of patient safety concepts in the preregistration nursing curriculum.

1.6.2 Phases of the study

The research was conducted in the following three phases in an attempt to accomplish the above objectives. Because the researcher followed the guidelines of the QSEN and WHO Patient Safety Curriculum Guide in regard to integrating patient safety in the nursing curriculum, emphasis was placed on the way the patient safety competencies are integrated, taught and assessed in the nursing curriculum

Phase one: Pre-registration nursing curriculum analysis and faculty perspectives

During phase one, a qualitative content analysis of the formal nursing curriculum was performed to identify aspects of patient safety covered in the pre-registration curriculum as well as how they are taught and assessed. Further, the researcher explored the knowledge and attitudes of nursing faculty regarding patient safety and the barriers and enablers to the integration of patient safety concepts in the curriculum

Phase two: Nursing students' perceptions

In phase two, measurement of the perceptions of nursing students to patient safety knowledge and competencies from each level of the nursing programmes was conducted. This was aimed at informing the researcher about each group's perception of learning about patient safety in the classroom and clinical settings.

Phase three: Hospital patient safety

Phase three focused on the hospitals where the nursing students undergo clinical education. The researcher aimed at gaining insight into how these hospitals viewed patient safety as well as their culture regarding patient safety. The researcher also explored the perceptions of the hospital staff on the preparation of the pre-registration nursing students in patient safety.

1.7 RESEARCH METHODOLOGY

The section that follows describes the methods that the researcher used to collect and analyse the data during the study.

1.7.1 Research design

The researcher used descriptive and exploratory research design in this study. A descriptive research is concerned with describing the characteristics of a particular individual, group or phenomenon and it is concerned with providing an accurate account of characteristics of particular individuals, situations of groups (Burns & Grove 2012:34). An exploratory study begins with a phenomenon of interest, but rather than simply observing and describing it, it investigates the full nature of the phenomenon, the manner in which it is manifested, and the other factors to which it is related (Polit & Beck 2012:18). Using quantitative and qualitative approaches, the researcher explored and described the extent to which patient safety concepts are integrated in the nursing curriculum as well as the perceptions of the nursing faculty and nursing students regarding patient

safety. This gave insight from an academic point of view. The researcher also explored and described the safety culture and views regarding patient safety of the clinical placement sites which the nursing students receive their clinical instruction. Further the researcher explored the perceptions of the hospital staff how well the current curriculum is preparing the nursing student for issues regarding patient safety and quality improvement.

1.7.2 Research methods

The research was conducted in the following three phases in an attempt to accomplish the above stated objectives. Because the researcher followed the guidelines of the QSEN as well as the WHO “Patient Safety Curriculum Guide: Multi-professional Edition” in regard to integrating patient safety in the nursing curriculum, emphasis was placed on the way the competencies are integrated, taught and practised by the nursing curriculum. Table 1.2 provides a brief overview of the research methodology that was followed in each phase of this study.

Table 1.2: Overview of research methodology of the study

Phase one: Curriculum content analysis and faculty perspectives– Qualitative research design			
Objective	Sample	Data collection	Data analysis
To identify the explicit patient safety concepts in the formal pre-registration nursing curriculum	Curriculum documents	Analysis of documents using a coding frame	Qualitative content analysis through coding of the raw data into categories of interest
Explore the perspectives of nursing faculty to patient safety education in the nursing curriculum	Faculty in the nursing schools	Semi-structured interviews	Thematic analysis
Phase two: Nursing students’ perceptions - Quantitative research design			
Objective 3: Assess the perceptions of nursing students to patient safety knowledge and competencies	Degree nursing students	Self-administered questionnaire	Descriptive and inferential analysis
Phase three: Organisation patient safety - Quantitative and Qualitative research design			
Objective 4: Assess the patient safety culture in the hospitals that nursing students receive clinical instruction.	Main hospitals that the nursing schools use for clinical education	Self-administered questionnaire	Descriptive and inferential analysis
Objective 5: Explore the hospitals management perceptions of the preparation of nursing students in patient safety concepts.	Hospital staff involved in clinical education, risk management and patient safety	Semi-structured interviews	Thematic analysis

1.7.2.1 Phase one: Curriculum content analysis and faculty perceptions

The aim of phase one was to identify aspects of patient safety that are covered in the pre-registration curriculum as well as how they are taught and assessed. During phase one, a content analysis of the nursing curriculum documents and practice assessment documents were performed to:

- Understand of the ways patient safety is represented in formal curriculum;
- Get a picture of education as planned; and
- Determine how patient safety competencies are assessed.

1.7.2.2 Population and sampling

For the curriculum content analysis, the sample comprised of nursing curriculum documents and practice assessment documents purposively sample from the two nursing schools included in this study.

For the faculty interviews, the population was the nursing faculty from the nursing schools from which a purposive sampling method was employed whereby course leaders or their equivalents who were deemed to be influential in the curriculum design and operationalisation were identified who were then be asked to nominate another appropriate staff member (for example a module leader, lecturer or clinical tutor).

1.7.2.2.1 Data collection

For the content analysis, a coding frame (see Annexure K) was developed with relevant patient safety concepts drawn from the QSEN competencies, WHO “Patient Safety Curriculum Guide: Multi-professional Edition” and relevant literature. The curriculum documents were then analysed for these concepts.

Interviews were conducted with nursing faculty to gather or clarify information about the curriculum and develop an understanding of their conceptualisation of patient safety. To ensure this consistency in the interviews, the researcher developed an interview guide based on extensive literature review of other similar studies that have been conducted in other areas but in somewhat different settings. The interview guide was developed was able to assist the researcher:

- Gain perspective about education regarding the sociocultural aspects of patient safety central;

- Obtain descriptions of experiences with patient safety education;
- Gain an understanding of how patient safety was conceptualised by the faculty; and
- Get views regarding ways they teach patient safety and ways in which patient safety education could be improved.

The guide was subjected to peer review by experts in the patient safety fields and nursing education. Other experts in development of interview guide were also consulted. To ensure trustworthiness during the interview sessions, the researcher recorded the entire proceedings and maintained an audit trail of all the transcription notes.

1.7.2.2.2 Validity and Reliability

Validity entails both internal and external validity. Internal validity refers to the ability of the research tool to measure what it is supposed to measure whereas external validity relates to the generalisability of the findings of a study to the whole population affected by the study topic (Polit & Beck 2012:236).

In this phase the validity and reliability was ensured by developing a coding frame based on the QSEN competencies and relevant literature. The tool was then subjected to peer review by nursing experts in the field.

1.7.2.3 Phase two: Nursing students' perceptions

The aim during this phase was to measure the perceptions of nursing students to patient safety knowledge and competencies from each level of the nursing programmes in the two nursing schools. This was aimed at informing the researcher about each group's perception of patient safety and the curriculum content pertaining to patient safety.

1.7.2.3.1 Population and sampling

The population for this phase of the study was students in the nursing training institutions. For each nursing school, stratified random sampling was employed whereby the researcher first grouped them according to the level of study and then randomly select the students from the 2nd, 3rd and 4th years.

1.7.2.3.2 Data collection

The researcher collected data using the Health Professional Education in Patient Safety Survey (H-PEPSS) tool. The tool is designed to measure health professionals' self-

reported patient safety competence around the time of entry to practice. The H-PEPSS focuses primarily on the sociocultural aspects of patient safety including culture, teamwork, communication, managing risk and understanding human factors.

1.7.2.4 Phase three: Organisation patient safety

Phase three focused on the hospitals which the nursing students were exposed to for their clinical education. The first area of focus was mainly the clinical placement sites where the students undertook their clinical instruction. The researcher aimed at gaining insight into how these hospitals viewed patient safety as well as their culture regarding patient safety.

The researcher also explored the perceptions of the hospital staff on the preparation of the pre-registration nursing students in patient safety. Interviews were carried out on key informants in the sample sites

1.7.2.4.1 Population and sampling

The population for this phase was the healthcare workers in the hospitals which the nursing schools used as clinical placement sites for their clinical instruction. A random sample of healthcare workers who worked in the medical and surgical wards in these hospitals was used for the patient safety culture survey. In the same clinical sites, purposive sampling was done to identify key informants for the semistructured interviews. These were drawn from the nursing management, those linked to patient safety and the frontline nurses involved with student learning in the clinical areas.

1.7.2.4.2 Data collection

To gain insight on the patient safety culture of the clinical placement sites, the researcher collected data using the SAQ. Key informant interviews were carried out using an interview guide developed by the researcher.

1.7.2.4.3 Validity and reliability

To ensure validity and reliability during phase three, the researcher used a predetermined data collection tool whose validity and reliability had statistically been proven. The questionnaire was also be tested on five nurses from a different hospital who were not involved in the final data collection. For the semistructured interviews, the researcher ensured trustworthiness and authenticity throughout the research process.

1.7.2.5 Data analysis

The curriculum documents were analysed based on the coding frame developed based on QSEN competencies and relevant literature review. The curriculum documents were searched for the key patient safety terms in the coding frame, using Microsoft Word, as well as with pencil and rubber for the documents that were not available in soft copy. Interviews and focus group discussions were recorded, transcribed and checked for accuracy. The researcher read through the transcripts and highlighted all data related to the research objective and translated it into codes which were then sorted into themes and categories. The data from the H-PEPSS and SAQ surveys was analysed using the Statistical Package for Social Sciences (SPSS) which was used to generate figures and graphs. Descriptive and inferential statistical analysis were carried out.

1.7.3 Ethical considerations

The researcher first sought permission to conduct the study from the University of South Africa (UNISA) and also the Pwani University Research and Ethics Committee. Further, the researcher sent letters seeking permission to conduct the research to the sampled nursing schools. The researcher also sought and obtained permission from the research committee of the hospitals that are used for clinical instruction.

Verbal and written consent was obtained from the participants in the interviews and surveys. The participants were informed what the research entailed and reassurances were given about the confidentiality of any information obtained. For the survey, written consent was obtained with a cover letter being attached to the questionnaire explaining the objectives of the study and the confidentiality of any information given (see Annexures for the consent forms)

1.8 SIGNIFICANCE OF THE STUDY

One may question if developing countries are well equipped or ready to deal with issues of patient safety at this stage in their development. This argument may be based on the fact that these countries are plagued with many other issues that they deem to be of priority and therefore patient safety is not a main concern at the moment. However, if the financial and social costs that a country encounters as a result of patient safety are taken into account, it is clear why it is vital that developing countries should invest in patient safety. In the United States of America (USA), it is estimated that for every dollar spent

on healthcare, it may cause up to 45 cents worth of harm (Goodman, Villareal & Jones 2011:590). Welzel (2012:406) compared it “to a bucket with holes in it – a fraction of the water poured into the bucket immediately flows out again”.

Nurses are the frontline of healthcare provision and are therefore supposed to be the protectors of the consumers of healthcare. Yet they can also be a source of the harm. One of the major hindrances to the efforts to improve patient safety is the lack of knowledge by clinicians in regard to patient safety concepts, research and information on patient safety best practices (IOM 2003:21). So, to improve patient safety in the health systems, the primary approach is to educate and make patient safety information available to the nurses at the forefront of healthcare, and more so during their training period. Education has been identified as a major player in developing the necessary patient safety knowledge skills and attitudes in nursing and medical students (Henderson et al 2006:275; Madigosky, Headrick, Nelson, Cox, & Anderson 2006:94). However, a review of various nursing curricula across the world has shown that patient safety issues are not taught as distinct and explicit elements and in those that have patient safety as a separate topic, the time spent on it is not adequate (Mansour 2013:157; Maeda et al 2011:416; Cresswell et al 2013:843; Attree, Cooke, & Wakefield 2008:239). The WHO has also recognised the need for integration of the patient safety concepts in the pre-registration curriculum and therefore has developed a curriculum guide that can be used by all healthcare professionals who deal with specific patient safety concepts (WHO 2012).

Kenya is not any different in patient safety issues. However, the extent of the harm from medical errors is not well known due to lack of reporting and surveillance in the healthcare system, but going by the WHO prediction regarding medical errors in developed countries, then the numbers are quite high. A comprehensive literature review shows that there is no study of this nature that has been carried out in the country and most countries in Africa. This study therefore provides advice to the nursing educators and policy makers in regard to the integration of patient safety in the pre-registration nursing curriculum and thus provides a basis for a change in the design of the curriculum in the country.

Interdisciplinary collaboration has been shown to lead to more effective communication across disciplines and, ultimately, safer, more affordable and higher quality care. To achieve collaboration, interdisciplinary educational opportunities and programmes need to be developed to help foster collaboration among students before they enter the health

workforce (IOM, 2011:467). This study only looks at patient safety issues in the nursing curriculum; however, the researcher envisions that the study will act as a springboard for development of a patient safety curriculum that can be taught jointly to all health professionals at the pre and post-registration levels.

1.9 SCOPE AND LIMITATIONS OF THE STUDY

This study was limited to two government-owned, NCK-approved nursing schools which delimits the generalisation of this study beyond the scope of this study. The sample size was small taking into account that there are 22 nursing schools in Kenya that carry out degree nursing training. The study was mainly focused on the public government-sponsored nursing schools, and therefore the results may not be generalisable to the private institutions.

To get the nursing students' perceptions of patient safety in nursing education, the researcher used a quantitative approach to measure the perceptions of the students using a self-administered questionnaire. To increase the validity of results and complement the study, a qualitative approach could have been added to the research methodology.

1.10 STRUCTURE OF THE THESIS

This thesis consists of six chapters:

Chapter 1 introduces the study area, the problem, the aim and objectives of the study, and the research design and methodology of the study. It also provides definitions of key terms and phrases.

Chapter 2 describes the literature review that was conducted for the study.

Chapter 3 discusses the research design and methodology.

Chapter 4 presents the research findings from the three phases.

Chapter 5 presents a discussion of the integrated findings with literature support and the interpretation of the results within the conceptual framework.

Chapter 6 describes the strategies for the integration of patient safety education in the nursing curriculum.

Chapter 7 discusses the conclusions and limitations of the study, and makes recommendations for practice and further research.

1.11 CONCLUSION

This chapter provided an orientation of the entire study. The chapter orients the reader to the background information about the patient safety issues at the global and the local

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

A literature review “is a process of finding relevant research reports critically, appraising the studies and synthesising the study results” (Burns & Grove 2015:163). According to Creswell (2014:27), a literature review has the following functions:

1. It shares with the reader the results of other studies closely related to the proposed study.
2. It fills the gaps in literature and extends prior studies.
3. It provides a framework for establishing the significance of the study.
4. It clarifies research methods and strategies that have been used in studies in the same field.

In addition, Polit and Beck (2012:170) assert that a literature review is a crucial task that should be undertaken early in the research process as it helps the researcher shape their research questions and lay a foundation for arguing for the need of the new study that they propose. Further along in the research process it helps in the interpretation and discussion of the results.

This chapter therefore presents a review of literature on patient safety, patient safety culture, and patient safety in the health professionals’ education and specifically in the nursing curriculum. In the chapter there is also a discussion of the QSEN framework and its application in nursing education.

2.2 PATIENT SAFETY

Unsafe healthcare is a global issue that is increasingly causing morbidity and mortality. This has led health consumers, healthcare providers as well as policy makers to shift their focus to the safety of a system that is generally expected to be safe but is not living up to these expectations. This increased scrutiny and focus on the unsafeness of the healthcare system has led to the emergence of patient safety as a discipline in itself, with its own body of knowledge and expertise.

Patient safety is viewed as an integral part of quality. According to the IOM, patient safety is indistinguishable from quality healthcare and healthcare systems should be able to

prevent errors from occurring as well as integrate lessons learnt from the errors that do occur (IOM 2004:6). The IOM further states that the defining characteristics of a quality healthcare system are safety, effectiveness, patient centredness, timeliness, efficiency and equitability (IOM 2001:39).

2.2.1 Defining patient safety

Defining the concept is challenging due to its complexity and the multiple factors related to it. A literature review on patient safety shows that there are various definitions that have been postulated over time and with this, the ambiguity associated with the definitions has increased.

The IOM defines patient safety as prevention of harm to patients with emphasis being placed on the system of care delivery that prevents errors, learns from the errors that do occur and is built on a culture of safety that involves healthcare professionals, organisations, and patients (IOM 2004:5).

The National Quality Forum (NQF), in its report *Standardizing a Patient Safety Taxonomy* defined patient safety as “the prevention and mitigation of harm caused by errors of omission or commission that are associated with healthcare” (NQF, 2006). According to the NQF, patient safety also entails the establishment of operational systems and processes that minimise the likelihood of errors and maximise the likelihood of intercepting them when they occur.

Emanuel, Berwick, and Conway (2008:6) proposed a definition of patient safety that acknowledges that patient safety is both a way of doing things and an emergent discipline. They define patient safety as “a discipline in the healthcare sector that applies safety science methods towards the goal of achieving a trustworthy system of healthcare delivery. Patient safety is also an attribute of healthcare systems; it minimizes the incidence and impact of, and maximizes recovery from, adverse events”.

The WHO developed a definition based on an understanding that without a universally acceptable definition of patient safety and its related terms, understanding of patient safety by all concerned would be distorted. They therefore launched a project to develop an international classification of patient safety. This was done through a drafting group that comprised experts from the fields of patient safety, classification theory, health informatics, consumer/patient advocacy, law and medicine. They developed a

conceptual framework for the international classification of patient safety and the definitions for 48 key concepts in patient safety (WHO 2009a:5). They defined patient safety as

“The reduction of risk of unnecessary harm associated with healthcare to an acceptable minimum. An acceptable minimum refers to the collective notions of given current knowledge, resources available and the context in which care was delivered weighed against the risk of non-treatment or other treatment” (WHO, 2009a:15).

This definition by the WHO takes into account the different settings where healthcare is provided as well as the resources available in those settings. Therefore, patient safety is not a rigid concept, but rather a flexible concept that takes into account the way of doing things in different settings.

The emerging theme in all the definitions is the need to view patient safety from a systems point of view. Patient safety requires the development of healthcare systems that are supportive of reduction of harm to the patient. Emanuel et al (2008:14) in an effort to clarify the elements of patient safety divided healthcare systems into four main domains that play a key pole in patient safety. These are the healthcare workers, the healthcare consumers, healthcare delivery processes and the methods for feedback and continuous improvement. This therefore indicates that patient safety is not only a concept, but rather a discipline that entails more than just the prevention of harm.

2.2.2 Errors in healthcare

The fundamental concept in all patient safety definitions is the reduction of harm to patients that occurs through errors in healthcare. Historically, Reason (2003:9) defined an error as the failure of a planned action to be completed as intended (omission) or the use of a wrong plan to achieve an aim (commission) and occurs in all stages in the process of care, from diagnosis, to treatment, to preventative care (IOM 2000:4). According to the IOM (2004:30) not all errors result in serious harm and these are known as *near misses* (an act of commission or omission that could have harmed the patient but did not do so as a result of chance, prevention or mitigation). Those that result in serious harm are known as *adverse events* and these are the ones that present a concern due to their impact on morbidity, mortality and the global economy.

The magnitude of errors in healthcare came into the limelight in 1999 in a report by the IOM, "To Err is Human", which highlighted that medical errors were a major cause of morbidity and mortality in the USA health system. The report, which was based on two studies in two states using large samples of hospital admissions, showed that the proportion of hospital admissions experiencing an adverse event were between 2.9% and 3.7% and that 44,000 to 98,000 deaths occurred every year as a result of medical errors (IOM 2000:26). Consequently, deaths due to preventable adverse events exceeded the deaths attributable to motor vehicle accidents (43,458), breast cancer (42,297) or AIDS (16,516). Furthermore, the report highlighted the economic impact of medical errors indicating that the total lost income, lost household production, disability and healthcare costs were estimated at between US\$37.6 billion and US\$50 billion for adverse events. This report created a global awareness regarding medical errors and thus acted as a wakeup call to the rest of the world to look at the healthcare systems more critically.

In 2000, the UK published the report "An Organisation with a Memory" which reported over 850,000 incidents of harm to NHS hospital patients each year with an average of 40 incidents a year contributing to patient deaths in NHS institutions (Department of Health 2000:11). Subsequent studies from different countries from all over the world confirmed the magnitude of the problem. An Australian study in major public hospitals between 2003 and 2004 revealed that 18,000 deaths occurred due to medication errors and at least 7% of the admitted patients were affected by at least one adverse event (Ehsani et al 2006:551). This was supported by an earlier study in 1995 called "The Quality in Australian Healthcare Study" by Wilson, Runciman, Gibberd, Harrison, Newby, and Hamilton (1995:458). In this study, it was reported that 16.6% of hospital admissions were associated with an adverse event, half of which were considered preventable. The study also found that 13.7% who suffered an adverse event had permanent disability, while 4.9% died as a direct result of the adverse event. In 2004, the Canadian Adverse Events Study found that adverse events occurred in more than 7.5% of hospital admissions with nearly 38% of the events being avoidable. The study also estimated that 9,000 to 24,000 Canadians die annually due to avoidable medical errors (Baker et al 2004:1678). In Denmark, the rates were also found to be comparable to the global trends where the prevalence of admissions with adverse events was 9.0% with at least 40% of them being preventable (Schioler et al 2001:5370).

This study has led to numerous other studies being carried out in various parts of the world, mostly in developed countries. However, the studies on the extent of harm in healthcare in the low- and middle-income countries (developing countries) is limited. To document the magnitude of the medical errors in the developing countries, the WHO from 2006 to 2008 carried out a large-scale study in six countries, namely Egypt, Jordan, Kenya, Morocco, South Africa, Sudan, Tunisia and Yemen. They carried out a two-step retrospective study where they first screened randomly selected medical records of past patients for harmful incidents. They then did an in-depth examination of the records with a high likelihood of harm, assessing the possible harmful incidents that might have occurred. The study reported that in these countries, on average, the adverse event rate was 8.2%, with some hospitals having rates of 14.8%. They reported that 83% (with a range of 55%–93%) of these events were highly preventable. Further, almost one-third of patients who suffered a harmful incident died, meaning that nearly 2% of the patients in each hospital across the eight countries who sustained an adverse event died. The report also showed that 14% of those who were affected by an adverse event, sustained permanent disability, and with each adverse event causing an average of 9.1 additional days in hospital. The most common type of errors they found were therapeutic errors, diagnostic errors and operative errors. Inadequate training or supervision of clinical staff followed by absence of or the failure to implement a relevant protocol or policy were found to be the greatest contributory factors to the occurrence of adverse events in most of the hospitals (Wilson et al 2012:e832).

Of concern in the trends observed over the years is that there is no major change, with research showing that there are no significant reductions in either the overall rate of harm or the rate of preventable harm due to adverse events. This has happened despite the increased attention and the efforts that are geared towards improvement of patient safety. In a study in 10 USA hospitals found that among 2,341 admissions, 588 had suffered harm which translated to 25.1% of the hospital admissions, with 63.1% of those harmful events being preventable. This study reported that in the 10 hospitals there was very little evidence that the rate of harm had decreased substantially over a six-year period, validating the study by Landrigan, Parry, Bones, Hackbarth, Goldmann, and Sharek (2010:2124). This study corroborates an earlier analysis by Vincent et al (2008:a2426) regarding the safety of the healthcare system in the UK. In their analysis, they found that indeed hospital mortality rates and mortality rates after surgery had reduced significantly over a period of 11 years. However, safety indicators like drug administration rates and

hospital-acquired infections had increased. It is worth noting that the previous report by the IOM that kick-started the patient safety movement globally may have been underestimated due to poor reporting at the time. Newer evidence points to even higher reports of patient harm. Classen et al (2011:581) reported that the methods of identifying adverse events missed approximately 90% of the adverse events. This may therefore explain the reason why the trends look like they are not reducing, but rather there are better data collection methods that over time have been developed that has led to better detection of adverse events.

2.2.3 Factors contributing to errors

Reducing medical errors requires an understanding of the causes or factors that contribute to the occurrence of these errors. Each factor rarely occurs in isolation, but rather is multifaceted in nature. Research also shows that it is not always the individual who is to blame in the occurrence of the errors but rather the system as a whole. It is therefore important for healthcare organisations to analyse and to deal with them from a systems point of view.

To better understand the genesis of error, the work of James Reason on human error is used as a foundation. He defines an error as the failure of a planned sequence of mental or physical activities to achieve its intended outcome when these failures cannot be attributed to chance. He further clarifies that for it to be classified as an error, the particular activity has to be intentional. The notion of intention comprises two elements, that is, an expression of planned outcome to be achieved and the means by which this outcome will be achieved (Reason 2003:5). Reason explains further that there are two approaches in looking at human error, that is, the person approach and the system approach (Reason 2000:769). These two are distinguished respectively as the “sharp end” of a process in which the event occurs and the “blunt end” where many factors have interacted to lead to this error.

This person approach views errors as being caused by the factors related to the individual’s behaviour which include forgetfulness, inattention, poor motivation, carelessness, negligence and recklessness (Reason 2000:769). For a long time this was and still is the way errors are viewed in human services professions including healthcare, as this is the safer way for the institutions. This approach assumes that individuals are fully capable of deciding which action to take and the consequences of these actions and

that if the action goes wrong, then that individual is to blame. Institutions respond to errors by punishing individuals, retraining or other responses aimed at preventing recurrence of the error. This approach is highly discouraged because by blaming the individual, then the context in which the individual is acting is not taken into account. By focusing on the individual, then system factors are left to accumulate and therefore increase the probability of the error reoccurring. This, therefore, impedes development of mitigating measures of errors that include the system as well.

The systems approach is based on the principle that humans are not perfect and that errors are unavoidable even in the best of circumstances (Reason 2000:780). Following Reason's arguments, for healthcare systems to effectively protect potential clients then there need to be defences, barriers and safeguards. Some of these defence measures are engineered (for example alarms, physical barriers, automatic shutdowns), others rely on people (surgeons, anaesthetists, nurses etc.), and yet others depend on procedures and administrative controls. However it is important to note that these mechanisms of controlling errors are not always infallible.

Reason (2000) further explains that errors are a result of two factors, that is, active failures and latent conditions. Active failures occur at the level of the sharp end of the healthcare process and usually are related to the healthcare provider (e.g. wrong site surgery, administration of wrong drug dose). Their effects have immediate and direct impact. Latent conditions are those that are not in the direct control of the individual healthcare worker or those at the "blunt end" of the system. They include factors such as system design, organisational management, organisational structures, financial constraints, availability of equipment and their designs, working conditions, communication and so forth. These usually underlie a system, can remain dormant within a system and once coupled with the active failures then lead to the occurrence of an error. They pose the greatest threat to patient safety in the healthcare system because they are often unrecognised and have the capacity to result in multiple types of errors (IOM 2000:55). Recognising and fixing latent conditions instead of focusing only on active failures, lead to the development of much safer systems with fewer occurrences of errors.

2.2.3.1 *A human factors framework*

Using the systems approach to causes of adverse events, a human factors framework was designed to gain a better understanding of the nature of preventable adverse events

(Henriksen, Dayton, Keyes, Carayon, & Hughes 2008:6). Figure 2.1 shows the major human factors that can lead to an adverse event.

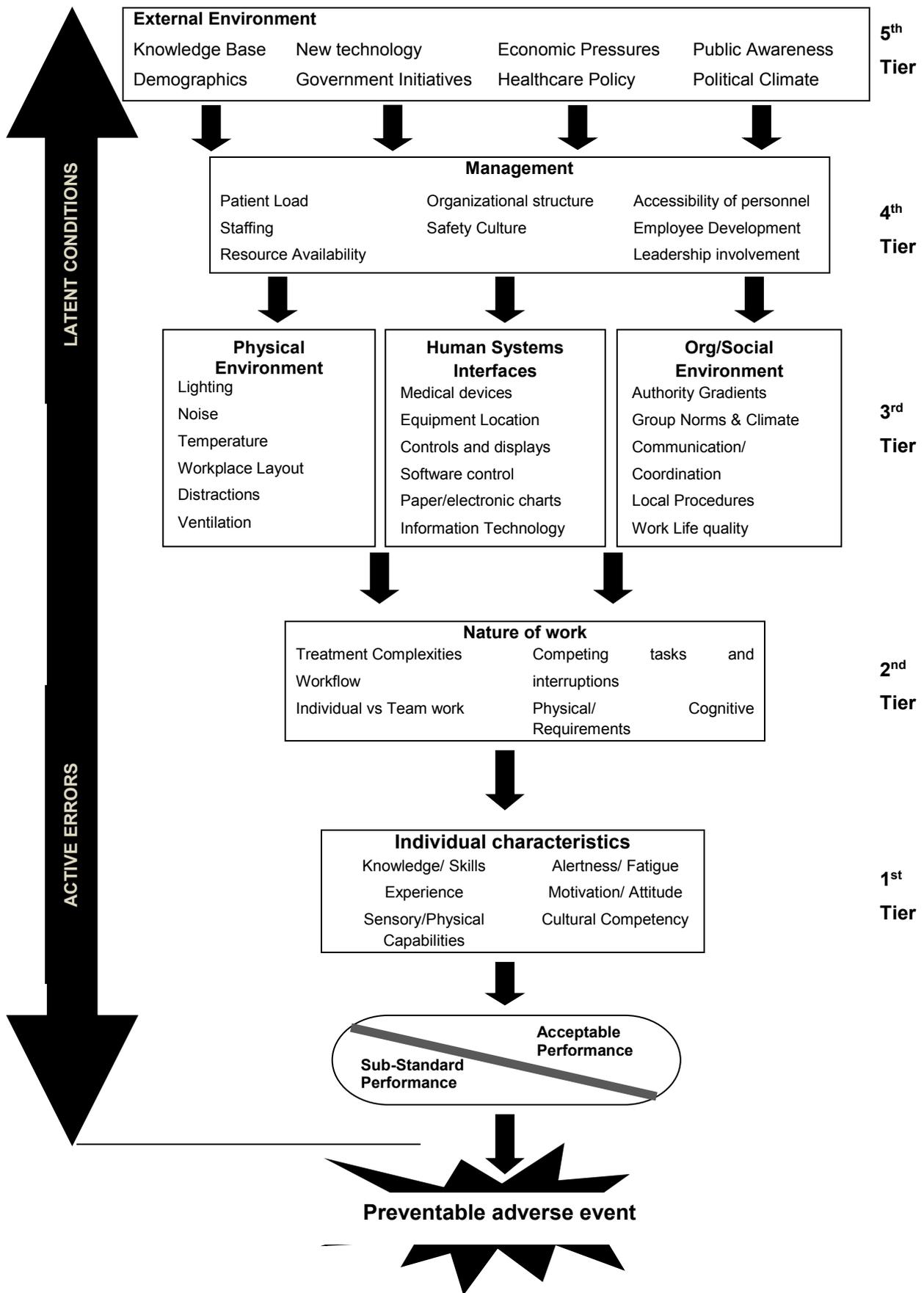
According to Henriksen et al (2008:7), “many adverse events result from this unique interaction or alignment of several necessary but singly insufficient factors. Weaknesses in these factors typically are present in the system long before the occurrence of an adverse event. All that is needed is for a sufficient number to become aligned for a serious adverse event to occur”.

2.2.3.1.1 Individual characteristics

Individual characteristics entail those characteristics that the provider, who is at the sharp end of the process, brings to the job. They include factors like personality traits, knowledge, skills, experience, cultural competencies, training and education as well as attitudinal factors like motivation and need for success. According to Henriksen et al (2008), one of the key factors is the knowledge and skills that a person acquires through training in an accredited training institution. This equips the person with specific competencies for the job and therefore increases the confidence level for the job. Pre-licensure education is key to the performance of the job effectively.

2.2.3.1.2 Nature of work

This represents the second tier of major factors and entails the characteristics of the work itself. This entails the extent to which well-defined procedures are utilised, the nature of the workflow, peak and nonpeak patient loads, the presence or absence of teamwork, the complexity of treatments, equipment functioning and downtime, interruptions and competing tasks, and the physical/cognitive requirements for performing the work (Henriksen et al 2008). Research shows that some of these factors increase the incidence of errors by the frontline provider (Trbovich, Prakash, Stewart, Trip & Savage 2010:211; Westbrook, Woods, Rob, Dunsmuir & Day 2010:683).



(Henriksen et al 2008:7)

Figure 2.1: Contributing factors to adverse events in healthcare

2.2.3.1.3 *Human systems interface*

The interaction of the two subsystems – human and equipment/health technology – can lead to errors occurring in the healthcare systems. The frontline provider handles a large variety of equipment; this, coupled with the increasing complexity of technology in healthcare, increases the likelihood of errors occurring. According to the IOM (2012:31) the use of technology in healthcare creates new opportunities to improve patient safety. However, if it is designed and applied inappropriately, it introduces risks in the healthcare system leading to adverse events.

2.2.3.1.4 *Physical environment*

The third tier in the framework recognises the relationship between the physical environment and the human performance in healthcare. These include factors like the design of the physical environment, the equipment, the layout of the workspace, ventilation as well as the noise distractions and lighting in the environment. For example, studies have shown that noise interferes with communication; creates distractions; affects cognitive performance and concentration; causes annoyance; and contributes to stress and fatigue (Choiniere 2010:327; Mazer 2010:181). These ultimately have been shown to contribute to the occurrence of medical errors (Mazer 2006:142).

2.2.3.1.5 *Organisational/social environment*

This is a factor which lies in the latent conditions category which when combined with other factors can lead to medical errors. These include factors like work groups and their norms, the morale of the workers, organisational climate and communication patterns, among others. Research on team work and communication and its role in patient safety suggests that 70%-80% of medical errors are associated with poor team communication and understanding (Reader, Flin, Mearns, & Cuthbertson 2007:347).

2.2.3.1.6 *Leadership and management*

The fourth tier relates to the latent conditions that are related to management and those in decision-making positions within the organisation. These managerial factors have a strong influence on the behaviour of the worker and ultimately on patient safety. However according to Henriksen et al (2008:13), those in managerial positions who make organisational policy, shape organisational culture, and implement managerial decisions are rarely held accountable for the consequences of their actions. Rather the blame is

held by those at the sharp end of the process. The greatest impact is felt from the decisions that are made by the managers regarding staffing, availability of resources, patient safety culture, training and development of the staff, quality improvement measures and the leadership commitment to safer healthcare.

2.2.3.1.7 The external environment

Healthcare organisations are open systems and do not work in isolation and hence the influence of the external environment cannot be overlooked. Government policies and initiatives, technological innovations, political and public influences and changing demographics all influence healthcare systems. These factors shape the context in which healthcare is provided and therefore to ensure patient safety, organisations need to understand the influence of these factors on healthcare. In Kenya, the new constitution moved the management of the public health facilities to the county government level from the central government. This move has since led to the county hospital being responsible for the day-to-day running of these health facilities; nonetheless, the government of Kenya ultimately remains the overall policy maker in health-related matters in Kenya. This therefore means that the management of healthcare facilities has two external influences, and they should take into account these issues when dealing with issues of patient safety.

2.2.4 Prevention of medical errors: Detecting and reporting errors

To be able to effectively deal with medical errors, healthcare organisations must establish strategies to detect, characterise, and report potential preventable adverse events. Consequently, the organisations can then analyse this information and identify opportunities for quality improvement and system changes. According to the IOM (2004:17) key to a patient safety system is the ability of the healthcare workers and the patients to identify adverse events and near misses, be able to prevent and mitigate harm as well as disclose information regarding the errors that have occurred so as to facilitate learning and redesigning of the system.

A review of literature on error detecting and reporting shows that there are many methods used in practice, each with its own advantages and disadvantages. The major methods for detecting adverse events include voluntary and mandatory reporting, chart review, searching claims data, automated computerised monitoring, and monitoring of patients' progress (Montesi & Lechi 2009:651). Reporting and chart review are retrospective in

nature, in that they identify the error when it has already occurred while automated computerised monitoring and monitoring of patient progress are prospective in that they seek to identify critical points in the clinical process at which failures are likely to occur (IOM 2004:202).

2.2.4.1 Voluntary and mandatory reporting

Voluntary reporting of adverse events and near misses entails the healthcare worker reporting anonymously the occurrence of the adverse event or the near miss. This is usually done by the person committing or witnessing the error. The anonymity of the report encourages the person to report the error without fear of disciplinary action. The recipient of the report is then tasked with analysis of the narrative and reporting it to the next level for action. The limitations of this method have been reported in various studies. The limitations include the clinician reporting only when they are aware the mistake has been made, if the error will result in actual harm or if it is an error of omission (Evans et al 2006:36; Burkoski 2007:12; Martowiriono, Jansma, Van Luijk, Wagner, & Bijnen 2012:78).

Mandatory incident reporting is obligatory and usually restricted to certain adverse events (for example sentinel events). It is legally recognised documentation and cannot be done anonymously. The incident narrative report of the incident is then sent, with root cause analysis, to the management for statistical reports, communication with the clinicians and ultimately for improvement. One of the major limitations is that incident reporting systems capture only a small percentage of adverse events and that some categories of events are underrepresented. In a survey of 189 hospitals that use an incident reporting system, Levinson (2012:12) found that the systems captured only an estimated 14% of the patient harm events.

Despite their limitations, voluntary and mandatory reporting remain universal in the healthcare systems. However, for them to work effectively, Farley, Haviland, Champagne, Jain, Battles, Munier, and Loeb (2008:416) identified four key components that they should possess: a supportive environment for reporting, reports received from a broad range of staff, timely dissemination of reports, and structured mechanisms to review reports.

2.2.4.2 *Chart review*

Chart review involves reviewing practice sources, for example physician and nurse progress notes and laboratory data, prescription data, and administrative data) and carefully examining the chart if certain indicators/triggers are present. The main limitations of this method are the lack of standardisation of the triggers to analyse, difficulty in training reviewers and the resources needed, both fiscal and human, as well as the quality of documentation and reviewers' abilities to capture triggers (Montesi & Lechi 2009:652).

2.2.4.3 *Automated computerised monitoring*

The increased use of computerised hospital information systems has led to the development of automated non-voluntary detection systems that enable the concurrent monitoring of patients for the occurrence of medical errors. The computerised system entails an electronic health record with an integrated patient database drawn from various sources like the pharmacy, laboratory, radiology and other areas of the health system. In the detection of medical errors, the computerised system contains information that is readily available in real time and is collected routinely; therefore it can automatically be analysed at various stages to detect any quality and safety indicators (Lemon & Stockwell 2012:1269).

2.3 PATIENT SAFETY CULTURE

For patient safety to be achieved in healthcare, a culture of safety must be realised. According to the IOM: "The biggest challenge to moving towards a safer health system is changing the culture from one of blaming individuals for errors to one in which errors are treated not as personal failures, but as opportunities to improve the system and prevent harm." (IOM 2001:79). Leape et al (2009:424) support this by claiming that progress on patient safety has been insufficient and they conclude that "safety does not depend just on measurement, practices, and rules, nor does it depend on any specific improvement methods; it depends on achieving a culture of trust, reporting, transparency, and discipline".

The IOM (2004:174) describes a culture of safety that includes (1) a shared belief that although healthcare is a high-risk undertaking, delivery processes can be designed to prevent failures and harm to participants; (2) an organisational commitment to detecting

and analysing patient injuries and near misses; and (3) an environment that balances the need for reporting of events and the need to take disciplinary action.

2.3.1 Safety culture

The concept of “safety culture” was coined in the late 1980s in the aftermath of the Chernobyl nuclear reactor accident. The International Atomic Energy Agency introduced the term as a result of their analysis into the accident which brought to light the importance of a safety culture and the role of other factors like leadership and human involvement in ensuring safety (Lee & Harrison 2000). The various definitions of safety culture typically contain shared elements. Safety culture refers to shared attitudes, beliefs, values and assumptions that underlie how people perceive and act upon safety issues within their organisations. An organisation with a “safety culture” is open and fair with staff when incidents occur, learns from mistakes, and rather than blaming individuals, looks at what went wrong in the system (Wiegmann et al 2002; Cooper 2002:31; Singer, Lin, Falwell, Gaba, & Baker 2009:400).

Safety culture has further been explored in studies of high-reliability organisations (HROs), that is, hazardous organisations where errors seldom happen despite the risks involved in their work process. Examples of HROs are commercial air travel and nuclear power plants. Weick & Sutcliffe (2007:9) hold that HROs stay safe because they have an environment of “collective mindfulness” in which all workers look for, and report, small problems or unsafe conditions before they pose a substantial risk to the organisation and when they are easy to fix. They go on to describe five high-reliability principles that these organisations rely on: preoccupation with failure, reluctance to simplify, sensitivity to operations, commitment to resilience and deference to expertise.

Based on these reports of success of HROs, healthcare organisations are encouraged to transition to HROs with a commitment to a culture of safety to improve safety and quality of care. According to Pronovost et al (2006:1599) the key attributes of the culture of safety in the healthcare organisations should be (1) acknowledgement of the high risk nature of the organisations activities and the determination to achieve consistently safe operations; (2) a blame-free environment where individuals are able to report errors or near misses without fear of reprimand or punishment; (3) encouragement of collaboration across ranks and disciplines to seek solutions to patient safety problems; and (4) organisational commitment of resources to address safety concerns.

2.3.2 Patient safety culture

Patient safety culture is a complex framework, which involves different dimensions that guides many behaviours of patient safety. According to the Agency of Healthcare Research and Quality (AHRQ) patient safety culture requires an understanding of the values, beliefs, and norms about what is important in an organisation and what attitudes and behaviours related to patient safety are supported, rewarded and expected.

2.3.3 Components of patient safety culture

Sammer, Lykens, Singh, Mains and Lackan (2010:157) describe seven subcultures within patient safety culture: leadership, teamwork, communication, EBP, learning, just culture and patient-centred care.

2.3.3.1 Leadership

Literature shows that key to designing, fostering, and encouraging a patient safety culture is leadership involvement and commitment. According to the Institute of Healthcare Improvement, only senior leaders can productively direct efforts in their healthcare organisations to foster the culture and commitment required to address the underlying systems causes of medical errors and harm to patients (Botwinick, Bisognano & Haraden 2006:1). Leaders can ensure a patient safety culture in an organisation's leaders by making safety a priority in the organisations and gearing the strategic goals and processes towards safety. This shows the commitment of the leadership to the importance of safety as a risk that needs to be managed. This then translates to the rest of the staff that it is a priority and leads to behavioural and attitudinal changes in the staff in terms of their performance regarding safety (Taylor, 2010:11). Blake, Kohler, Rask, Davis, and Naylor (2006:323), in a study to determine the facilitators and barriers to development of a safety culture in a Georgian hospital, found that administrative leadership and support were among the key facilitators to patient safety practices. In support of this, Charles, McKee and McCann (2011:61) found that staff perceived senior leadership behaviours having a stimulating effect and were important in signalling patient safety and staff wellbeing priorities.

Effective leadership also requires that those in leadership make a case for patient safety by talking openly to its internal and external customers about adverse events as well as the gaps in performance by performing regular and timely assessments. This therefore

requires that they constantly engage the stakeholders, staff as well as the patients and their families (Botwinick et al 2006:14). One of the approaches that leadership can use to demonstrate engagement in patient safety is by having executive walkabouts (Thomas, Sexton, Neilands, Frankel, & Helmreich, Robert 2005:28; Schwendimann, Milne, Frush, Ausserhofer, Frankel, & Sexton 2013:414). In so doing, the leaders are informed at first hand regarding the safety concerns of frontline staff as well as demonstrate visible commitment by listening to and supporting staff when issues of safety are raised (Cavanagh & Hulme 2009:3 ; Taylor, Chuo, Figueroa-Altmann, Di Taranto, & Shaw 2013:401)

2.3.3.2 *Teamwork*

Healthcare organisations comprise members from different professions working together towards a common goal – delivery of safe, quality and reliable care to the patient. To effectively deliver this care, they must work as a team and therefore teams are inevitable in healthcare. These teams are multidisciplinary, with a wide range of expertise and specialists, and their activities can often be widely distributed in time and space. The size and structure of a team can influence how the team performs, as can the internal dynamics of the team members and how the group is led (Flin, Winter & Cakil Sarac 2009:20). The wellbeing of these teams have a bearing on patient safety.

Teams and teamwork in healthcare have been shown to reduce medical errors, improve patient and process outcomes, and increase patient and staff satisfaction. In a literature review by Manser (2009:145) regarding teamwork and its role in patient safety found that teamwork plays an important role in the causation and prevention of adverse events with 22%–32% of the studies reporting communication and teamwork being the most contributory factors to errors. Research also shows that staff 's perceptions of teamwork and attitudes towards safety-relevant team behaviour are related to the quality and safety of patient care as well as staff wellbeing and the healthcare workers' ability to provide safe patient care (Flin, Yule, McKenzie, Paterson-Brown & Maran 2006:149; Prati & Pietrantoni 2014:667), as well as the development of a safety culture (Wallin, Kalman, Sandelin, Färnert, Dahlstrand, & Jylli 2015:267).

2.3.3.3 *Communication*

Due to the multidisciplinary nature of healthcare, communication is an essential aspect in the delivery of safe care and maintenance of a safety culture. It provides knowledge,

establishes relationships and behaviour patterns, and supports leadership and team coordination (Flin et al 2009:16). A significant number of medical errors have been attributed to communication breakdown in healthcare. The Joint Commission identified communication failure as the primary root cause in more than 70% of sentinel events from 1995 to 2003, with more than one half of the organisations (55%) citing organisation culture as a barrier to effective communication and teamwork. This culture involved hierarchy and intimidation, failure to function as a team, and failure to follow the chain of communication (The Joint Commission 2004).

Use of standardised communication tools has been shown to reduce communication failure and ultimately reduce the occurrence of errors. These tools create an environment in which individuals can speak up and express concerns, and that they can share common “critical language” to alert team members to unsafe situations (Lee, Allen. & Daly 2012:84). Examples of these tools include the WHO Surgical Safety checklist which is used with an operating team prior to a surgical procedure with the aim of reducing mortality and morbidity related to surgery (Haynes et al 2009:491). Another communication tool is the SBAR (Situation, Background, Assessment, and Recommendation) which is used for handovers as well as for improving the quality of urgent communications (Haig, Sutton. & Whittington 2006:167). According to Flin et al (2009:17) the SBAR is especially beneficial because it can be used in a range of different settings by many different staff members, clinical and non-clinical, while allowing professionals who have been taught to communicate in very different styles to have a common language.

2.3.3.4 *Evidence-based practice*

It is imperative that healthcare organisations provide care that is based on the best available evidence that maximises patient safety and outcomes for the health service generally. EBP is an approach to practice that emphasises the use of best evidence in combination with the clinician’s experience, as well as patient preferences and values, to make decisions about care and treatment (Leufer & Cleary-Holdforth 2009:35).

The use of EBP in an organisation is demonstrated by the use of standardised protocols and clinical guidelines which guide all the members in clinical decision making. In so doing it allows for application of interventions that are based on empirical evidence of their safety and not just on the reliance of "the way it was always done" which may not

be safe for the particular patient. Findings from research indicate that organisations that implement EBP report better patient safety parameters and is associated with better perceptions of patient safety cultures by the staff.

2.3.3.5 *Learning*

Reason and Hobbs (2003:146) identified three main components of a safety culture: learning culture, just culture and reporting culture. A learning culture is one that learns from errors, near misses and other identified safety issues. It is a set of organisational values, conventions, processes and practices that encourage individuals – and the organisation as a whole – to increase knowledge, competence and performance. For an organisation to learn from the errors, it would be prudent to adapt a spirit of questioning and understanding why the incident occurs instead of who is to blame for the incident. In so doing the staff feel safe to share issues without fear of punishment (Khatri, Brown, & Hicks 2009:312). Organisations that have a learning culture track their safety issues by collecting data on a regular and timely basis. They then analyse these data and report about the results while allowing for opportunities to learn from their failures as well their successes (Farrell & Davies 2006:852; Blake et al 2006:323). However, this has not always been the case in most healthcare organisations. Research shows that a good number of medical errors occur as a result of poor learning cultures and that the organisations do not learn from these mistakes and hence more often than not the error is likely to be repeated (Chuang, Ginsburg, & Berta 2007:330; Frankel & Leonard 2013:137).

2.3.3.6 *Just culture*

As noted early, a just culture is one of the essential components of a safety culture. A just culture goes hand in hand with a learning culture because a culture that is willing to learn is ready to look at their errors from an objective point of view and avoids a punitive approach to handling the errors. This then encourages reporting of the errors and therefore more opportunities for learning (Ulrich & Kear 2014:450).

According to Frankel et al (2013:24), a healthcare organisation has established a just culture when the staff share a belief that justice will be served when an error occurs and is also able to differentiate when to punish and when to offer immunity. The organisations sustain this culture by having clear policies and guidelines as well as a commitment by the leadership to creation of a just environment.

2.3.3.7 Patient-centred care

The seventh component of patient safety culture is the provision of patient-centred care which has been identified as one of the dimensions for provision of safe and quality of healthcare (Robb & Seddon 2006:2174; IOM 2001:39). Patient-centred care involves individualising the care and involving the patient in the decision making, thereby respecting their values, wishes and needs. (Robinson, Callister, Berry, & Dearing 2008:400). The patient is at the centre of the care and in so doing it allows for continuity of care as well as collaboration of different professions, subsequently empowering the staff to provide care that is most responsive to the needs of the patient (Jayadevappa & Chhatre 2011:15). The benefits of patient-centred care have been documented in various studies. This includes a reduction in mortality rates, reduction in the return to emergency rooms rates, patient and staff satisfaction as well as reduction in medication errors and nosocomial infection rates (Meterko, Wright, Lin, Lowy, & Cleary 2010:1188; Charnel & Frampton 2008:80).

2.3.4 Relationship between patient safety culture and patient safety outcomes

Studies on the safety culture of healthcare organisations have shown that there is a close relationship between the patient safety performance in an organisation and its safety culture. Singer et al (2009:399) conducted a cross-sectional study in 91 hospitals to examine the relationship between measures of hospital safety climate and hospital performance on selected patient safety indicators (PSIs). They found that hospitals with better safety culture overall had lower relative incidence of PSIs and that the nurses and doctors perceptions of better safety climate predicted lower risk of experiencing PSIs. They also found that culture also related to the behaviour of the clinicians and they reported that hospitals in which employees reported more problems with fear of shame and blame had a significantly higher risk of safety problems. This observation was also made by Braithwaite, Westbrook, Travaglia, and Hughes (2010:229) who described that one of the barriers to incident reporting was a poor workplace safety culture. Castel, Ginsburg, Zaheer and Tamim (2015:[5]) also reported similar results where they studied 2,319 nurses and 386 physicians from three Canadian provinces. They established that demographics were not greatly associated with fear of repercussions for nurses or physicians but rather the cultural factors related to organisational and unit leadership support of the safety culture were likely to instil fear of repercussions in the clinicians.

In Palestine, the linkage between patient safety culture and occurrence of adverse events was documented in a study by Najjar, Nafouri, Vanhaecht, and Euwema (2015:16). In the study they used the Institute for Healthcare Improvement Global Trigger Tool (IHI-GTT) for measuring adverse events and the Hospital Survey on Patient Safety Culture (HSOPSC) to measure the patient safety culture. The IHI-GTT, developed by the Institute for Healthcare Improvement, is used to measure rates of harm resulting from medical care and provides a reliable measure for them over time. They found that there was a negative correlation between patient safety culture and adverse events in the departments was high with eight of the 14 dimensions of patient safety culture being related to adverse events ($r = -.905$, $p < 0.01$). Further, they reported that what they termed as soft factors, that is, interaction, communication and teamwork showed a very strong correlation. For example, the correlation coefficient for open communication and feedback received on errors and adverse events was -0.905 ($p < 0.01$). On the other hand, the hard factors, that is, staffing and frequency and number of reporting were found to still have a negative correlation though weak ($r = -.060$ for staffing). Similarly, Mardon, Khanna, Sorra, Dyer and Famolaro (2010:226) reported hospitals with a more positive patient safety culture scores had lower rates of in-hospital complications or adverse events as measured by AHRQ PSIs.

Patient safety culture has further been associated with other patient outcomes in various studies. For instance, a cross-sectional study of 67 hospitals in the USA found that there was a significant positive association between lower safety culture and higher readmission rates for patients with acute myocardial infarction and heart failure. Other positive outcomes that have been related to positive patient safety cultures include a reduction in length of stay (Huang, Clermont, Kong, Weissfeld, Sexton, Rowan, & Angus 2010:151), mortality (Davenport, Henderson, Mosca, Khuri & Mentzer 2007:778), and postoperative complication rates (Haynes et al 2011:102). However, as noted by The Health Foundation (2011:7) not all relationships are positive or significant. This view is also supported by Groves (2014:66) who conducted a meta-analysis to examine the relationship between safety culture and patient safety outcomes in acute care hospitals. The specific patient safety outcomes they focused on were pressure ulcers, falls, medication errors, nurse-sensitive outcomes and postoperative outcomes. The meta-analysis showed no significant relationship between the two. Nevertheless, the author cautions that the relationship is not necessarily absent but rather may be due to the newness of the patient safety field of study and the scarcity of studies to show the

relationship as well as the difficulty in empirically establishing a relationship between patient safety culture and safety outcomes. The author further explains that the relationship may not be theoretically linear, but may instead be indirect, or affected by multiple factors, and therefore to establish the relationship all the factors need to be taken into account.

2.3.5 Assessing patient safety culture

Sustenance of a safety culture in healthcare organisations requires regular and timely assessment of their cultures. This allows for the organisations to gain insight and an understanding of their cultures as well as to get a critical closer look at their strengths and limitations (Sexton, Grillo, Fullwood, & Pronovost 2013:15). Therefore to be able to improve the patient safety culture and patient safety practices in the organisation the first step is to assess the system, which is mostly achieved through the use of quantitative methods (Halligan & Zecevic 2011:338). There are numerous different assessment tools used around the world, each of which is based on combination of dimensions. Most of the older tools are borrowed from the safety industries (Fleming 2005:14) but newer ones have been developed which are more healthcare oriented. Jones, Skinner, Xu, Sun, & Mueller (2008:3), however, caution that when assessing culture, organisations must follow the correct and specific procedures so as to get valid results. These procedures include choosing the correct tool, using proper data collection and analysis procedures and using the results to plan and implement the interventions.

Table 2.1 below gives a brief description of the most commonly used tools in healthcare.

Many tools are available for the assessment of patient safety culture, but of importance to note is that the measurement/assessment of patient safety culture is usually extrapolated from the perceptions of the staff towards the various dimensions of patient safety culture, as defined in the tool. Therefore, assessing the patient safety culture by using any of the tools requires the determination of whether there is an increase or a decrease in the score of any of the dimensions. The increase or decrease then informs the researcher whether there is a good or bad patient safety culture in that organisation. The orientation of these factors is not always expected to be the same. For example, an increase in one factor may indicate a positive patient safety score, another factor may indicate a poor patient safety score, while some may have a double meaning. For instance in the SAQ, three factors are negatively worded, and therefore an increase in

any of the factors indicates there is a poor perception of that factor by the respondent. The results of the assessment can then guide the hospitals on which factors they can improve based on the results of the study.

Most of the assessment tools are quantitative in nature and involve the use of questionnaires with survey items determined based on results from attitudinal surveys in aviation and other HROs, observation of healthcare workers, focus group discussions, literature reviews and expert opinions (Sexton et al 2009:14). These quantitative methods are advantageous in that they provide an understanding of attitudes and behaviours of the staff based on the dimensions of the survey. Nevertheless, to gain a different understanding of the culture and not merely the attitudes and behaviours, supplemental methods of assessment are encouraged. Clarke, Lerner, and Marella (2007:311) recommend the use of qualitative methods like interviews and focus group discussions in the measurement of culture as well as the medical errors. They argue that these are able to elicit the voices of the staff as well as give better narration of lessons learnt. Further the designing of longitudinal studies that use qualitative and quantitative methods to get the long-term and inherent nature of the culture is encouraged. Listyowardojo, Ray-Sannerud, Turk, Lyons, Pytte, Leyshon, and Vallevik (2014:22) support the use of a mixed methods approach in safety culture assessment because “safety culture is not a tangible thing that is readily observable and mixed methods assessments can thus produce a more accurate profile by taking into account different perspectives and facilitating the development of a plan for improvement”.

To help organisations in benchmarking their safety culture findings with other institutions, the AHRQ established the Patient Safety Culture Comparative Database. This is a repository which the USA hospitals voluntarily record the results of their assessments and other hospitals from around the world can use to compare their results. The database reports result in tables using two perspectives, that is, the hospital characteristics such as bed size, teaching status, and geographic region; and the respondent characteristics such as work area/unit, staff position, and interaction with patients. Through this database, hospitals can then use the data to assist them in the establishment, improvement, and maintenance of a culture of patient safety (AHRQ 2004). The 2014 database contains results from 653 hospitals and 405,281 hospital staff respondents. The overall areas of strength in the hospitals were teamwork, supervisor/manager expectations and actions promoting patient safety and organisational learning—continuous improvement while the areas with potential for improvement include non-

punitive response to error, handoffs and transitions and staffing (Sorra, Famolaro, Yount, Smith, Wilson & Liu 2014:3).

Table 2.1: Patient safety culture assessment tools

Tool	Author	Dimensions measured	Strengths	Limitations
Agency for Healthcare Research and Quality (AHRQ) Hospital Survey on Patient Safety Culture (HSOPSC)	Sorra & Nieva 2004	<ul style="list-style-type: none"> • Overall perceptions of safety • Frequency of event reporting • Supervisor/manager expectations and actions promoting patient safety • Organisational learning—Continuous improvement • Teamwork within units • Communication openness • Feedback and communication about error • Non-punitive response to error • Staffing • Hospital management support for patient safety • Teamwork across hospital units • Hospital handoffs and transitions 	<ul style="list-style-type: none"> - The tool assesses safety culture at the individual, unit and organisational level - Availability of implementation guideline website - Benchmarks are available to for HCOs to compare with other hospitals - AHRQ is collating feedback about use in other countries - The tool has been used in combination with other tools in large scale studies 	<ul style="list-style-type: none"> - Some studies have suggested that not all of the items included in the tool are valid, reliable and generalisable
Safety Attitudes Questionnaire (SAQ)*	Sexton, Helmreich, Neilands, Rowan, Vella, Boyden, Roberts & Thomas 2006	<ul style="list-style-type: none"> • Safety climate • Teamwork climate: • Stress recognition • Perceptions of management • Working conditions • Job satisfaction 	<ul style="list-style-type: none"> - Adapted for use in intensive care units, theatres, general inpatient settings, emergency medical services, ambulatory clinics/primary care and nursing homes and long term care facilities - Most commonly used and rigorously validated tools - Fully validated for use in different types of staff within healthcare - Relatively short and quick to complete 	<ul style="list-style-type: none"> - The tool can point out differences in attitudes between groups but does not explore why this is the case

Tool	Author	Dimensions measured	Strengths	Limitations
Manchester patient safety culture assessment Tool	Kirk, Parker, Claridge, Esmail and Marshall (2007:313)	<ul style="list-style-type: none"> - Continuous improvement - Priority given to safety - System errors and individual responsibility - Recording incidents - Evaluating incidents - Learning and effecting change - Communication - Personnel management - Staff education - Teamwork. 	<ul style="list-style-type: none"> - Can be applied at an organisational or team level - Focuses on safety culture in its broad form and it also examines organisational maturity, thus signposting organisations and teams to areas for improvement 	<ul style="list-style-type: none"> - Largely used in the UK but no evidence of validation in other settings - Little has been published about its use
Safety Climate Survey	Victoria Managed Insurance Authority and Victorian Quality Council (2011)	<ul style="list-style-type: none"> • Teamwork Climate • Safety Climate • Stress Recognition • Job Satisfaction • Perceptions of Management • Work Conditions 	<ul style="list-style-type: none"> - It can be used to measure changes over time, before and after interventions are implemented. - It can differentiate the views of various types of staff. - Compared with other scales and found to have good reliability and validity 	<ul style="list-style-type: none"> - Largely been tested in North America so its transferability to other environments is uncertain
Modified Stanford Instrument (MSI) Patient Safety Culture in Healthcare Organisations Survey	Ginsburg, Gilin, Tregunno, Norton, Flemons and Fleming (2009:205)	<ul style="list-style-type: none"> • Senior leadership support for safety • Supervisory leadership for safety • Threats to Safety • Fear of repercussions • Learning responses • Reporting culture • Learning culture 		Comparisons between different versions of the survey did not yield acceptable levels of fit

* The researcher used the SAQ in the assessment of the patient safety culture in the hospitals.

2.3.5.1 Safety Attitudes Questionnaire

The SAQ was developed by Sexton et al (2006). It was developed following a modification of the Intensive Care Unit Management Attitudes Questionnaire, which was derived from the Flight Management Attitude Questionnaire (FMAQ), a human factors survey used to measure cockpit culture in commercial aviation. The authors carried out discussions with healthcare and safety experts and applied concepts from the Vincent's framework for analysing risk and safety and the Donabedian's conceptual model for assessing quality. From this, they generated over 100 survey items covering four themes,

which are; safety climate, teamwork climate, stress recognition, and organisational climate for which they pilot tested and subjected to exploratory factor analysis. The authors equated the word 'climate' to 'culture' citing that the word climate was more measurable and more appropriate when measuring perceptions. After pilot testing and factor analysis, the final survey therefore ended up with six factor-analytically derived attitudinal domains which are used in the current version of the SAQ. Table 2.2 defines the domains and an example of the items.

Table 2.2: SAQ domains and item examples

Domain	Item
Teamwork Climate: Perceived quality of collaboration between personnel.	<ul style="list-style-type: none"> Disagreements are appropriately resolved (i.e., not who is right, but what is best for the patient) Our doctors and nurses work together as a well-coordinated team
Safety Climate: Perceptions of a strong and proactive organisational commitment to safety.	<ul style="list-style-type: none"> I would feel perfectly safe being treated in this ICU. Personnel frequently disregard rules or guidelines developed for our ICU.
Stress Recognition: Acknowledgement of how performance is influenced by stressors.	<ul style="list-style-type: none"> I am less effective at work when fatigued. When my workload becomes excessive, my performance is impaired.
Job Satisfaction: Positivity about the work experience.	<ul style="list-style-type: none"> I like my job. This hospital is a good place to work.
Perceptions of Management: Approval of managerial action.	<ul style="list-style-type: none"> Hospital management supports my daily efforts. Hospital management is doing a good job.
Work Conditions: Perceived quality of the work environment and logistical support	<ul style="list-style-type: none"> Our levels of staffing are sufficient to handle the number of patients. The ICU equipment in our hospital is adequate.

(Sexton et al 2006:[3])

2.3.5.1.1 Development of the SAQ

The original developmental pilot studies of the SAQ were carried out in four critical care units in the USA which led to further pilot studies of the SAQ in 203 sites between 2000 and 2003 (Sexton et al 2006:[3]). The authors administered the SAQ to healthcare workers comprising attending/staff physicians, resident physicians, registered nurses, charge nurses, pharmacists, respiratory therapists, technicians and ward clerks in 106 ICUs in the UK and 20 ICUs in New Zealand. Subsequent to the findings in these pilot studies, the authors then carried out the first full scale study in 77 USA sites specifically 11 inpatient units, two operating theatres, 11 ambulatory units and 53 ICUs.

In all the pilot and full scale studies, the SAQ with six domains and 60 items was administered and the respondents rated each item using a five-point Likert scale. The authors then carried out a multi-level confirmatory factor analysis which resulted in a final

SAQ with 30 items. They then carried out a composite reliability test on the 30 item SAQ using Tenko Raykov's coefficient and this resulted in a coefficient value of .90, indicating strong reliability. The authors alerted that they did not analyse the convergent validity and construct validity, but they inferred it from the various ways in which the SAQ has been applied in various settings.

There are various versions of the SAQ adapted for use in different clinical areas and these are available for use with permission from the authors. The four versions available are for use in the ICU, operating rooms, general in-patient areas (medical wards and surgical wards) and the ambulatory room. These versions maintain the original format with the six thematic domains but to make it relevant for use in the particular clinical area, a few modifications are made. The versions have been developed with the understanding that each clinical area is unique with distinctive characteristics and members from the same unit are likely to have similarities in the way they perceive their work areas.

2.3.5.1.2 Usage of the SAQ

Besides its use in the USA, the SAQ has been used extensively around the world and has been translated and validated for use in various countries. Buljac-Samardzic et al (2015) carried out a study on 521 caregivers working in nine units in nine different nursing and residential homes in The Netherlands. They found that high positive correlation between teamwork climate, job satisfaction, perceptions of management, safety climate and working conditions ($r = 0.31$ to 0.63), but stress recognition had a negative correlation with each of the other dimensions. Through this study they also confirmed that the SAQ could also be used in the nursing and residential homes setting. The results of this study corroborated the results of a previous study in Netherlands which had also confirmed the validity and reliability of the Dutch version of the SAQ (Devriendt et al 2012)

In Italy, Nguyen, Gambashidze, Ilyas and Pascu (2015:284) translated the SAQ short form (30 items) and validated it by administering it to staff working in four departments in two hospitals. Confirmatory factor analysis was used to assess the content validity of a factor model and retest was performed two weeks after the first administration of the test to assess reliability. Internal consistency of items and safety factors was also evaluated via Cronbach's alpha. The study found similarities and differences with previous validation studies of the SAQ in the world, which constituted a good evidence of questionnaire validation and the authors concluded that the SAQ in Italian language had

satisfactory psychometric characteristics and is a valid instrument to measure safety culture in Italian hospitals.

The SAQ was applied in a study in four regional Albanian hospitals to establish the reliability and validity of the translated version (Gabrani, Hoxha, Simaku, & Gabrani 2015). The confirmatory factor analysis and its goodness-of-fit indices showed good factor model fit. The Cronbach's alpha values for each of the scales of the SAQ ranged from 0.64 to 0.82. The percentage of hospital healthcare workers who had a positive attitude was 60.3% for the teamwork climate, 57.2% for the safety climate, 58.4% for job satisfaction, 37.4% for stress recognition, 59.3% for the perception of management and 49.5% for working conditions. This led the authors to conclude that the translation had satisfactory psychometric properties and was fit for use in assessment of safety culture in Albanian hospitals.

The SAQ was also translated and adapted for the Danish setting where it was named SAQ-DK. The construct validity and reliability of the SAQ-DK were then validated through a cross-sectional study on staff members working in the clinical areas of 31 in- and outpatient units across Denmark. The study showed that the SAQ-DK had good construct validity and internal consistency reliability and was potentially a useful tool for evaluating perceptions of patient safety culture in Danish hospitals (Kristensen, Sabroe, Bartels, Mainz & Christensen 2015:149).

Patel & Wu (2014) conducted a study with the aims being to translate and culturally adapt the SAQ into Gujarati and to provide evidence for its reliability and validity in hospitals in Gujarat, India. They conducted a cross-sectional survey of safety attitudes in four private hospitals using the translated tool. They reported that the questionnaire showed acceptable reliability and construct validity. The initial culture score results showed outcomes similar to international standards, with two-thirds of the respondents describing teamwork climate positively and more than half of the respondents describing safety climate positively.

A Portuguese version of the SAQ was also validated in a cross-sectional study in six hospitals in three regions of Brazil. Internal consistency and construct validity were analysed. The Portuguese SAQ presented a Cronbach factor alpha of 0.89. The item-total correlations among the domains were moderate to strong, leading the authors to conclude that the instrument was valid and reliable (Carvalho & Cassiani 2012:572).

2.3.6 Patient safety culture perceptions

The assessment of the patient safety culture of an organisation provides information that can be used for the improvement of patient safety. Several studies have been conducted globally in different countries, contexts and healthcare systems to assess the perceptions of staff towards patient safety culture and the factors that determine it.

2.3.6.1 Differences across countries

Wagner, Smits, Sorra and Huang (2013:213) assessed the patient safety culture in 741 hospitals across three countries – the USA, Netherlands and Taiwan. Over 200,000 health professionals from various disciplines participated in the study. They used the HSOPSC tool for the study which measures patient safety culture across 12 dimensions. They found that there was a variation in the cultures of the hospitals in the three countries with 73% of the USA hospital staff grading their work area or unit patient safety as either “good” or “very good” while more than 50% respondents in the Netherlands (63%) and Taiwan (51%) grading it as just acceptable. They explained that this variation could be because the USA is among the pioneers of the patient safety movement with initiatives that were implemented before the other two countries. On the specific dimensions, they reported similarities in two areas across the three countries; all the three countries scored high on teamwork within units and low on handoffs and transitions of patient information. This indicated that the staff in the three countries were in agreement that they had good teamwork within their work units but the area that required improvement in all three hospitals was in the handing over process and transition of care. Improving handoffs and transitions has been reported to lead to reduction in the occurrence of medical errors (Starmer et al 2014:1803). Conversely, they also found clear variations in responses on these six dimensions - Organisational learning, Management support, Communication openness, Frequency of event reporting, Teamwork across units and Non-punitive response to error. For example, Taiwan reported a lower score on communication openness (40%) as compared to the Netherlands (68%) and the USA (62%), The Netherlands scored low on the management support (31%) as compared to the other two countries. This study was able to show a comparison in the safety cultures of hospitals located in different parts of the world that are generally culturally different. In so doing the hospitals can then learn from the hospitals with better safety culture and improve on the weak areas that affect the safety culture.

Studies in patient safety culture have been carried out in various countries with varying results reported. In Iran, a similar survey by Azmal, Omranikho, Goharinezhad, Kalhor, Dehcheshmeh and Farzianpour (2014:3037) using the HSOPSC on healthcare workers in two hospitals found that the majority of staff (47.4%) perceived the overall patient safety to be acceptable. The most positive response to dimensions of patient safety culture were seen in the organisational learning and teamwork which were scored highly (both at 75%) while the one of the areas that required most improvement was the non-punitive response to error (20%). Similar results were reported in other studies on Iranian healthcare workers (Moussavi et al 2013:664; Mohammadreza, Tourani, & Barati 2010:237). Results from a large-scale study in Palestinian organisations reported similar findings. The researchers observed that the overall patient safety grade was rated “excellent or very good” by 63.5% of the respondents. In the dimensions, they observed that most were scored lower as compared to studies from other hospitals. The lowest score was for non-punitive response to error, which was scored at 17% compared to the 2011 AHRQ benchmark of 44%. Further the study showed that there were more areas that needed improvement because of the more negative responses they observed. These were frequency in error reporting (35%), hospital management support of patient safety (37%), communication openness (36%) and staffing (38%). The positive dimensions were reported in two areas, that is, teamwork across the units (71%) and organisational learning – continuous improvement (72%). The scores, despite being high in the Palestinian hospitals, were still below the 2011 AHRQ benchmarks which were 80% and 72% respectively (Hamdan & Saleem 2013:167).

In India, a patient safety culture survey was conducted in three large tertiary care hospitals using the SAQ tool to measure perceptions of patient safety culture. The researchers observed that the patient safety climate index was at an average of 3.6 (on a scale of 1-5) with insignificant variations across the hospitals. In the dimensions, job satisfaction was reported highly (mean score of 4.3) indicative that the staff were generally more satisfied with their jobs in India. However, there was a lower score on stress recognition (3.4) by the staff meaning that the staff failed to recognise the link between stress and the occurrence of medical errors (Chakravarty, Sahu, Biswas, Chatterjee & Rath 2015:152). The results in this study were corroborated in a similar study by Kristensen et al (2015:149) to adapt and validate the SAQ in the Danish hospitals. For the study they converted the item scores to a 0- to 100-point scale and the

data collected was presented as the benchmark results that other researchers could use for their studies in the Danish context.

2.3.6.2 Differences across staff groups

The overall patient safety culture of an organisation is inferred from the collective perceptions of the participants in a safety culture survey. Therefore the perception of safety culture is highly influenced by demographic characteristics of the participant. One of the factors that research has shown to have a key influence on the perception of safety is the professional background with various reasons being postulated to explain these differences. Nie, Mao, Cui, He, Li, & Zhang (2013:[1]) conducted a patient safety culture survey on 1,160 healthcare workers including physicians and nurses from 32 hospitals in 15 cities across China. They compared the results in attitudes between the physicians and nurses towards patient safety culture and further compared the attitudes within the levels of the physicians. They found that the nurse and physicians differed in their overall perception of patient safety culture with nurses having a more positive attitude towards the patient safety culture than the physicians. They justified this finding by explaining that in China the nurses undertook a professional training on patient safety during their clinical practice. Similar results regarding the differences in attitudes between physicians and nurses have been reported in Palestinian healthcare workers (Hamdan & Saleem 2013:167). They also reported a variation in the attitudes of physicians of different levels towards patient safety culture. There were significant differences in the positive response rate whereby the physicians with high qualifications reporting higher overall perception of patient safety than those having a low qualification level. However, the difference in attitudes is not always the same as reported in other studies. Chakravarty et al (2015:152) in India found that the physicians had higher positive responses and therefore a more positive attitude towards PSC. They hypothesised that this higher rating than nurses was because the values of patient-centred care, altruism and accountability in all their dealings had been ingrained in the Indian physicians. They affirmed this reasoning by reporting similar scores of patient safety scores within the different physician groups unlike the difference in attitudes seen in physicians of different levels in Chinese physicians. Other studies that support this finding are from Netherlands (Verbeek-Van Noord, Wagner, Van Dyck, Twisk & De Bruijne 2014:64; Listyowardojo, Nap, & Johnson 2012:9) where in both studies the physicians rated the hospital safety culture more positively than the nurses.

Another characteristic that influences perceptions of safety culture are the position of the participant in the organisation with differences being seen between those in leadership and non-leadership positions. Notably, the leaders have been associated with positive perceptions of patient safety culture. In a Swedish study by Nordin, Theander, Wilderlansson, and Nordström (2013:28) showed that those in managerial/leadership positions scored patient safety culture more positively as compared to those in non-leadership positions. The positive attitude of managers has been demonstrated in other studies (Annemie, Johan, Ward, Leandro, Margareta, & Hilde 2014:346; Feng, Bobay, Krejci, & McCormick 2012:50). Nordin et al (2013:28) rationalises the positive attitude of the those in leadership by pointing out that those in leadership are inadvertently skewed to being positive in their assessment of the culture because they are thought to be well versed in patient safety activities within their organisations and they are also not at the sharp end of the healthcare processes and may therefore not have the real picture of the situation on the ground. Interestingly, a study on the staff nurses and charge nurses (those in leadership) in a hospital in the USA by Wilson, Redman, Talsma and Aebersold (2012:4) ran counter to the results in other studies. In the study, whose specific aim was to evaluate whether differences in perceptions of safety existed between charge and staff nurses, found that there were indeed differences between the two groups. However, unlike previous studies, this one found that nurses with no charge (leadership) experience had more positive overall perceptions of patient safety culture, while the nurses with some charge experience had lower positive overall perceptions of safety. According to the researchers, the more positive attitude seen by the staff nurses is because of their awareness of the real safety issues, being that they are at the frontline of service provision, countering the opinions of Nordin in the Swedish study.

The influence of the demographic characteristics as demonstrated above therefore indicates that there is not a single patient safety initiative that can be implemented that can suit everyone. These interventions have to be tailor-made for each group and also have targeted strategies for each group.

2.3.6.3 *Differences across clinical areas/workgroups*

The overall perception of the patient safety culture in an organisation is a cumulative perception of individuals from different clinical areas. Therefore the patient safety culture of the organisation can be ranked as highly positive based on the overall perceptions but it may be highly positive in some units but not very strong in other units. Reporting the

overall PSC score as strong or weak then means that the units that reported contrary to that overall perception are then ignored. The uniqueness of each clinical area therefore requires an understanding of the local overall culture of each separate unit while noting the strengths and weaknesses of each, as this should give guidance when developing patient safety interventions specific to each.

In a study by Shu et al (2015:1) to compare how the PSC perceptions vary between surgical wards and other non-surgical wards in a hospital showed that the healthcare workers in surgical wards rated their culture more positively than those in other units and they were also more likely to report errors than other HCWs. The top three areas that the respondents in surgical area rated highly positive were “teamwork within units,” “hospital management support for patient safety” and “organisational learning and continuous improvement”. However, they found in the surgical unit the dimension that was weakest was communication openness as compared to other units. A surgical unit is an area where communication is key in ensuring surgical safety, and research has shown most medical errors occur as a result of communication failure. This presents an opportunity for improvement specific to this area. In another study in Egypt on patient safety culture perception of nurses from various units demonstrated that there were significant differences in nurses’ perceptions from various units (Abdou & Saber 2011:17). They found that nurses who worked in the intensive care unit rated the patient safety culture of their units more positively as compared to those from the cardiac care unit and general units.

It is therefore recommended that when conducting patient safety culture surveys, hospitals and researchers should not only report the overall patient safety culture of an organisation but instead should go further and demonstrate the strength of each unit. According to Ginsburg and Oore (2015:685), to give a precise assessment of the patient safety culture in an organisation requires the generation of patient safety culture profiles of each unit which describes the culture level, strength and shape of each. They propose that the culture level of a unit can be calculated from the mean or median level on the patient safety culture scale dimensions. Culture strength can be demonstrated with the use of a standard deviation from the mean of the scores of the unit while the shape of the perceptions can be presented by use of a histogram which shows the pattern of the agreement or variability. This can then be used to predict research outcomes and plan interventions for each.

2.4 PATIENT SAFETY IN HEALTH PROFESSIONALS' EDUCATION

The evidence on patient safety and patient safety culture presented in the sections above shows that the interest and commitment to improving patient safety has grown globally and it has led to a change in the mind set of healthcare organisations in the way patient safety is viewed and handled. It is acknowledged that the foundation of patient safety is in the way the healthcare professionals are trained and educated to be able to deliver safe and quality care (IOM 2001:16; The Patient Safety and Quality of Care Working Group 2014:33). Yet according to the WHO (2011b:9) this “has been under-used and undervalued as a vital tool for addressing the challenges of achieving improved patient safety”. Healthcare professionals, including doctors, dentists, nurses, midwives and pharmacists follow an extensive education before they are allowed to diagnose, treat and care for patients but the extent to which this education is able to prepare the clinician in patient safety is still questionable. Healthcare systems are changing and becoming more complex; hence there are more challenges for the system and the workers too. However, according to Frenk et al (2010:1923), health professionals' education is not keeping up with the changes and the complexities. They account for the failure of the health professionals' education to prepare them to face these challenges to “fragmented, outdated, and static curricula that produce ill-equipped graduates”.

Furthermore, in healthcare delivery different professionals work together in teams to provide the care and therefore a multidisciplinary approach is recommended in the education of the professionals and hence the recommendation by the IOM (2003:45) that “all health professionals should be educated to deliver patient-centered care as members of an interdisciplinary team, emphasising evidence-based practice, quality improvement approaches, and informatics”.

The discussion below presents the recommended core competencies that healthcare workers need to have to be able to provide safe care to all the population.

2.4.1 Core competencies for healthcare professionals

A competency is an observable ability of a health professional, integrating multiple components such as knowledge, skills, values, and attitudes (Frank et al 2010:641). Competencies are observable, measurable and therefore can be assessed to ensure that the student has achieved them. National and international health professionals' bodies have recommended competencies that are essential for healthcare workers to enable

them to provide quality and safe healthcare which then serves as a background for programme designers to ensure that their curriculum prepares their students in patient safety. Moran, Harris, and Valenta (2016:162) conducted a literature review to identify, categorise, critically appraise and discuss implications of competency recommendations published in influential position papers. They identified 15 major professional organisations with recommendations for competencies globally as shown on Table 2.3. They also identified a 59 competent level (pre-registration) competencies with 17 themes emerging across all the recommendations as shown in Table 2.4. The authors pointed out that the increase in the number of competency recommendations and position papers was evidence that the field of patient safety and quality was growing; however they warn that there is need for national and international consensus building for competencies across the levels of skill acquisition.

Table 2.3: Professional organisations with recommendations for competencies

1.	Accreditation Council for Graduate Medical Education (ACGME)
2.	American Association of Colleges of Nursing (AACN)
3.	American Association of Colleges of Pharmacy (AACP)
4.	American Society of HealthSystem Pharmacists (ASHP)
5.	Association of American Medical Colleges (AAMC)
6.	Australian Council for Safety and Quality in Healthcare (ACSQHC)
7.	Canadian Patient Safety Institute (CPSI)
8.	Institute for Healthcare Improvement (IHI)
9.	Institute of Medicine (IOM)
10.	Interprofessional Education Collaborative (IPEC)
11.	National Association of Pharmacy Regulatory Authorities (NAPRA)
12.	National Patient Safety Foundation (NPSF)
13.	Pew Health Professions Commission (PEW)
14.	Society of Hospital Medicine (SHM)
15.	World Health Organization (WHO)

(Moran et al 2016:165)

The Institute of Medicine (2003:45) outlines five core competencies for healthcare professionals critical to providing high-quality safe care. These are:

- Delivering patient-centred care;
- Working as a part of multidisciplinary teams;
- Practising evidence-based medicine;
- Focusing on quality improvement; and

- Using information technology.

Table 2.4: Skill level competent - competency themes

Coordination and Transitions of Care
Effective Communication Skills
Ethics and Legal Issues
Evidence-Based Practice
Interdisciplinary Teamwork and Collaboration
Management of Adverse Events
Organisational Knowledge and Systems Approach to Quality
Patient-Centred Focus
Personal and Professional Accountability for Quality
Population-Based Care and Preventative Health
Quality and Safety Best Practices
Quality and Safety Principles
Quality Improvement
Quality Measurement and Process Evaluation
Reporting Systems and Error Evaluation
Risk Management
Utilisation and Improvement of Health Information Technology

(Moran et al 2016:166)

With the backdrop of these IOM core competencies, six national associations of schools of medicine, dentistry, nursing, osteopathic medicine, pharmacy, and public health came together to develop a collaboration to encourage and promote meaningful inter-professional education. The Interprofessional Education Collaborative (IPEC) expert panel developed core competencies for interprofessional collaborative practice with the aim of preparing all health professionals to intentionally and effectively work together to build a safer and better, person-centred and community/population-oriented healthcare system. The core competencies built on each profession's discipline-specific competencies (Schmitt, Blue, Aschenbrener, Viggiano, & Thomas 2011:1351). The competencies are classified in four interprofessional competency domains with general defining statement and a set of specific behavioural sub-competencies that each learner should demonstrate by the end of pre-licensure education. These are:

- Values/ethics for interprofessional practice: Work with individuals of other professions to maintain a climate of mutual respect and shared values.

- Roles/responsibilities: Use the knowledge of one's own role and of other professions' roles to appropriately assess and address the healthcare needs of the patients and populations served.
- Interprofessional communication: Communicate with patients, families, communities, and other health professionals in a responsive and responsible manner that supports a team approach to the maintenance of health and the treatment of disease.
- Teams and teamwork: Apply relationship-building values and the principles of team dynamics to perform effectively in different team roles to plan and deliver patient/population-centred care that is safe, timely, efficient, effective and equitable.

The Canadian Patient Safety Institute (CPSI) in collaboration with experts from different healthcare professionals and education developed a Canadian interprofessional competency-based framework for patient safety with the aim of changing the education of healthcare professionals and to provide them with the tools and knowledge to build and maintain a safe healthcare system. They describe six domains of patient safety competencies which can be integrated in undergraduate, postgraduate, and continuing professional education (Frank & Brien 2009:4). These are:

- Contribute to a culture of patient safety: A commitment to applying core patient safety knowledge, skills and attitudes to everyday work.
- Work in teams for patient safety: Working within interprofessional teams to optimise both patient safety and quality of care.
- Communicate effectively for patient safety: Promoting patient safety through effective healthcare communication.
- Manage safety risks: Anticipating, recognising and managing situations that place patients at risk.
- Optimise human and environmental factors: Managing the relationship between individual and environmental characteristics in order to optimise patient safety.
- Recognise, respond to and disclose adverse events: Recognising the occurrence of an adverse event or close call and responding effectively to mitigate harm to the patient, ensure disclosure, and prevent recurrence.

The Australian Commission for Safety and Quality in Healthcare (2005:3) developed the National Patient Safety Education Framework which identifies the knowledge and skills required by all healthcare workers in relation to patient safety and can be integrated to

any health professionals education curriculum or continuing education programmes.

These competencies are:

- Communicating effectively;
- Identifying, preventing and managing adverse events and near misses;
- Using evidence and information;
- Working safely;
- Being ethical;
- Continuing learning; and
- Specific issues: Preventing wrong site, wrong procedure and wrong patient treatment and medication safety.

The nursing fraternity, in response to the IOM call for transformation of health professionals' education, responded by forming the QSEN initiative funded by the Robert Wood Johnson Foundation. The QSEN initiative (later adopted by AACN) consisted of the development of quality and safety competencies that serve as a resource for nursing faculty to integrate contemporary quality and safety content into nursing education (Cronenwett et al 2007:122). With the IOM core competencies being the foundation, the AACN/QSEN outlines six competencies for the pre-registration nursing students, which are patient-centred care, teamwork and collaboration, EBP, quality improvement, safety and informatics.

The WHO, with the understanding that patient safety principles and concepts apply irrespective of the type of healthcare worker, the place where the healthcare is delivered and the type of patients, developed the *Patient Safety Curriculum Guide: Multi-professional Edition* (WHO 2011b) which provided a road map to schools of healthcare professionals on the integration of patient safety concepts in their curriculum. They identified 11 topics/topics that are essential in patient safety education, which are:

- Definition of patient safety;
- Importance of human factors in patient safety;
- Systems and the effect of complexity on patient care;
- Effective team player;
- Learning from errors;
- Understanding and managing clinical risk;
- Using quality-improvement methods to improve care;

- Engaging with patients and carers;
- Infection prevention and control;
- Patient safety and invasive procedures; and
- Improving medication safety.

For the purposes of this study, the researcher chose to utilise the WHO and AACN/QSEN core competencies and these are discussed further in the next section.

Ultimately the goal of all the patient safety competency frameworks is to act as a guide to the healthcare professionals' curriculum developers to ensure that the patient safety concepts are integrated into the programmes. Each of these competencies is grouped in domains and the exit knowledge, skills and attitudes of each domain are identified. The programmes can then adopt the competencies based on the needs and objectives of each programme. However, the common recommendation is that for the patient safety competencies to be realised, they have to be *explicitly* defined in the curriculum and in measurable terms. In so doing, the programmes can be able to define and assess the milestones achieved by the students in each stage of training.

2.4.2 Teaching and learning methods used for patient safety education

Many models of teaching and learning are used in pre-registration nursing education with the aim of preparing a competent and safe practitioner. The choice of model to use in either classroom or clinical setting is based on a variety of factors, for example, the developmental stage of the nurse, the learning styles of the learners and the resources available. Utilising the different models allows for the student nurse to combine the newly learnt information and practise the newly learnt skills in an almost real situation while allowing them to make mistakes. This fosters an acquisition and retention of the skill while maintaining an eagerness to learn (Vitale 2014:117).

Patient safety education is competency based, meaning that the student nurse must be engaged and active in all aspects of acquiring the knowledge, skills and professional behaviours (Pijl-Zieber, Barton, Konkin, Awosoga, & Caine 2014:676). Therefore patient safety education requires the use of teaching and learning strategies that facilitate the development and demonstration of the competencies. A literature review by Tella et al (2014:7) indicates that a combination of different strategies is needed to achieve patient safety education and that it is important that the nursing schools embed in their curriculum the most effective strategies. According to the WHO (2011b:51), the teaching and

learning strategies should be able to contextualise patient safety principles; hence it requires that they are made relevant to the setting that the student nurse will practice in. The examples provided to enhance learning should be realistic, practical and interesting to keep the learner engaged and willing to learn. They further advise that the strategies should give the student nurse an opportunity to apply their newly acquired safety knowledge and skills and this leads to sustained adoption of the skills. The nursing education programmes should also strive to develop safe, challenging and engaging environments that allow or effective teaching and learning to occur. In this environment the student is comfortable to speak up and do so in an honest and open way.

The recommended teaching methods in patient safety education include interactive and didactic lectures, PBL scenarios, the use of simulation-based learning and experiential learning.

2.4.2.1 *Lecture method*

The lecture method is one of the most commonly used traditional methods of teaching in classroom teaching in universities and colleges (McKeachie & Svinicki 2011:55; Kiersma, Plake, & Darbishire 2011:162). It is a one-way channel of communication, where the teacher gives an oral presentation intended to present information or teaches people about a particular subject. The student remains passive and the unique value of the individual student is not integrated into the learning process (Michel, Cater, & Varela 2009:397). Various studies have shown the conventional lecturing method is least effective in transferring concepts and engaging students. Therefore, it has been suggested that it is better to use the conventional lectures combined with other interactive methods that can increase learner participation for example small group discussions and tasks

2.4.2.2 *High and low fidelity simulation*

Simulation refers to reproduction of a realistic situation or process to enact a situation as it would appear in genuine circumstances. The simulation can be in the form of a device or an activity. Simulations are based on the principle that behaviour predicts behaviour – the way the student performs a particular task and the behaviours they demonstrate during simulation is likely to predict how they would perform and behave in real situations. Therefore simulations present an opportunity for the student to develop their knowledge,

skills and attitude in a conditions which allow for trial and error without endangering the lives of the patients.

Simulations in nursing education are divided into low, medium and high fidelity. Fidelity refers to the level of realism that the situation enacts (Al-Elq 2010:35). Low fidelity simulations have low realism and are static. Examples of this include those that are known as task trainers which are designed to replicate only a portion of the body or the environment, for example a prosthetic arm for practising insertion of an intravascular line. They are appropriate for novice learners in teaching them the technical skills. Medium fidelity increases realism but lacks the ability to interact with the student for example it can add the heart sounds or breath sounds without chest movement. They are able to provide a better understanding of the specific, more complex tasks. High fidelity utilises very realistic materials and equipment to represent the tasks that the candidate must perform and are better predictors of behaviour than the low-fidelity simulators. Examples of high fidelity simulation include computerised systems or mannequins, which involve the use of virtual reality and haptic systems. These systems are able to produce data as the student is interacting with the system and produce feedback during and after the interaction, thereby allowing for independent learning (Aebersold & Tschannen 2013:6; Motola et al 2013:e1511; Munshi, Lababidi & Alyousef 2015:12).

2.4.2.3 *Problem Based Learning*

Problem based learning (PBL) is a teaching and learning method in which the student learns from the process of working towards an understanding and solving of a problem. The student is presented with a contextualised problem and they seek the knowledge and strategies to solve the problem using available resources (Bokey, Chapuis, & Dent 2014:134; Zhang 2014). The effective use of PBL requires the use of intellectually challenging problems that allow for the student to discuss the possible issues pertaining to the problem, therefore helping the student to think critically and utilise their problem-solving skills (Hamdan, Kwan, Khan, Ghafar, & Sihes 2014:136; Abd El-Hay & Abd-Allah 2015:11). Hamdan et al (2014:136) further explain that PBL is based on three principles: Firstly, it begins with a problem rather than prior learning; secondly, it combines teaching and learning by use of the problems and the resolution of the problem by the student; and thirdly it is student centered.

Khumsikiew, Donsamak, & Saeteaw (2015: 98) outline six essential elements of PBL as first described by Barrows in 1996. These are:

1. Learning is student-centred.
2. Learning occurs in small student groups-environment.
3. The tutor is a facilitator or guide.
4. Problems presented to the student are the organising focus and stimulus for learning.
5. The problem format should be presented as the patient problem in the same way that it occurs in the real world, hence enhancing the development of clinical problem-solving skills.

During the self-directed learning, students work together, discussing, comparing, reviewing and debating what they have learnt, hence acquiring new information.

2.4.2.4 *Experiential learning*

Experiential learning is a process of learning in which the learner learns through experience and reflection from the experience that he or she is having in order to develop new knowledge, new skills and new attitudes. The emphasis is on having direct experience, in-context action and reflection (Kolb 2014:4). Experiential learning can be field-based experiences and classroom-based learning but the core aspect is that it should be meaningful to the learner (Svinivki & McKeachie 2011:210). Field-based learning includes internships, practicums, cooperative education, and service learning. Classroom-based experiential learning includes role-playing, case studies, simulations, presentations, and various types of group work.

2.4.3 Patient safety in pre-registration nursing curriculum

For the healthcare worker to be able to competently deal with patient safety issues in clinical practice, patient safety issues need to be explicitly covered in the health professionals' curriculum. This allows them to become familiar with the topic, assimilate the issues and therefore able to recognise and prevent medical errors in their practice. However, research shows that in most health professionals curricula the patient safety topic is not covered as a separate topic but more of a hidden topic and where it is included, the coverage is modest to very little (Tella et al 2014:7; Cresswell et al 2013:843). The need for integration of the patient safety issues in the healthcare professionals' curricula has been recognised for a long time. In 2003, VanGeest and

Cummins (2003:7) conducted a patient safety educational needs assessment to identify patient safety curriculum topics from nurse and physician focus groups and surveys. The suggested topics for inclusion in the curriculum were healthcare error and patient safety definitions; technology and patient safety; human factors in error; physician-patient communication; communication within the healthcare team; learning from mistakes; disclosure of errors and injuries to patients and families; financial and legal implications of healthcare error; error as an issue in medical education; and the need for systems thinking and cultural change. The nurses suggested the following topics for a patient safety curriculum: ethics (transparency and truthfulness); a proactive approach to error in healthcare; framing mistakes (the system versus individual); reporting error and follow-up; learning from mistakes; staffing issues and error; technology and error; mentoring in nursing education; and patient education. This study provided an initial insight into what some practising healthcare professionals saw as gaps in the health professional educational curricula that they undertook. The comprehensiveness of the suggested topics by practising professionals in that study pointed to the fact that patient safety was not covered explicitly in their pre-registration curricula and the healthcare professionals were only able to learn about patient safety when they were already in practice.

A search of literature shows that a limited number of studies have been carried out to specifically analyse the content of the nursing curriculum to investigate the integration of patient safety in nursing curricula globally. Nevertheless, the available studies indicate that there is still a big gap in the preparation of nurses in regard to patient safety issues. A large-scale study in the UK sought to find out the formal and informal ways pre-registration students from four healthcare professions – including nursing – learn about patient safety (Cresswell et al 2013:843). Among others, they conducted the two-stage study in four nursing schools and the clinical practice sites. The first stage, the academic context stage, entailed a content analysis of the nursing curricula documents and also interviews with the course leaders and faculty with an aim of getting an understanding of their conceptualisation of patient safety. They also carried out in-depth exploration of the course through focus group discussions with the second-year and final-year students, the newly qualified staff and the patients/service users at the practice sites. Additionally, they did observations of teaching sessions to get a picture of how the curriculum was translated during teaching. They found that patient safety was not covered as a discrete and explicit module in the nursing curriculum but rather it was “hidden” in the form of statements within the curriculum, which they also confirmed through the interviews with

the course directors and faculty as well as the observation of the teaching sessions and the focus group discussions. Based on these findings, the authors concluded that patient safety was not evident as a separate subject in the nursing curricula but rather integrated in several modules. They recommended that efforts should be made by nursing schools to make a curriculum that can familiarise students with common patient safety problems and procedures, including developing their capacity to constructively challenge unsafe practice. The findings in this study support an earlier study by Attree, Cooke, and Wakefield (2008:239) who also conducted an analysis of a pre-registration nursing curriculum. They found that patient safety was not explicitly addressed in the curriculum, but the curriculum focused more on the related concepts of safe practice. They explained the lack of explicit patient safety content within the nursing curriculum as being a result of the failure to include it in the guiding curriculum from the nursing education governing body of the country. Chenot and Daniel (2010:559) also examined the nursing curricula from seven nursing schools in the USA and found similar results. They found that all seven schools included at least a moderate amount of the IOM core competencies in the curriculum, with only one school exhibiting all of the core competencies.

Other studies that have been conducted to assess the integration of patient safety in nursing curricula have been through quantitative and qualitative methods that sought to find out the perspectives of the students and faculty in regard to the curriculum. In Japan, Maeda et al (2011) conducted a self-reported survey of nursing schools seeking to find out their patient safety educational practices in relation to content and instructional methods. They reported that 10% of the schools had no form of patient safety education in their curricula with most of the public nursing schools devoting less than five hours to the topic. They also found that most of the schools used only lecture-based instruction. Despite the limitations of modest response rates by the nursing schools, the authors were able to conclude that despite the fact that nursing schools do cover patient safety issues, the time spent and the teaching methods used were not satisfactory. Nurses are at the sharp end of the healthcare processes and therefore they need to be equipped with extensive patient safety knowledge and skills. However, the findings from the above studies indicate that there is still an opportunity for nursing schools to improve in relation to the way they teach patient safety.

Of concern is the lack of evidence of patient safety education in the nursing schools from developing countries. Leotsakos, Ardolino, Cheung, Zheng, Barraclough and Walton (2014:381) analyse the situation in the developing countries and conclude that it is a

bigger challenge for schools in developing countries to integrate patient safety in the curriculum than those in resource-rich countries. They point out that developing countries are faced by challenges of poor educational infrastructure, lack of resources and education materials, low motivation or insufficient skills of the faculty, and underfinancing of the higher education sector. Nevertheless, the WHO (2011b:34) cautions that regardless of the resources available, the patient safety principles and concepts apply and the lack of resources and staff shortages should not mean that the healthcare professional cannot make healthcare safer because the healthcare professional is the core element. Therefore to guarantee safe healthcare, the healthcare profession needs to be equipped with the knowledge, skills and attitudes to provide safe healthcare.

2.4.4 Faculty role in patient safety education

Faculty members play a crucial role in the threading of patient safety concepts in the nursing curriculum as well as delivery of patient safety education. Faculty members are generally expected to be knowledgeable on nursing concepts and most have a very rich continued education profile. Nevertheless, this does not necessarily imply they are well-prepared to teach patient safety. Patient safety is a relatively new field, which traditionally was not included in the formal nursing curriculum and often was viewed as a less important area when compared with traditional clinical topics. This shortcoming in the ability of the faculty to integrate and teach patient safety was established by Chenot and Daniel (2010:559) when they found that two of the barriers in implementing patient safety competencies in undergraduate education included the growing shortage of faculty and the lack of the competency by the faculty in the patient safety field. A literature review on the perspective of faculty towards the integration of patient safety in healthcare professionals training indicates that it is still a challenge to most. Tregunno, Ginsburg, Clarke, & Norton (2014:257) conducted a qualitative study to gain insight into the integration of patient safety content into the undergraduate curriculum by regular faculty members in medical, nursing, and pharmacy undergraduate programmes. One of the major challenges they identified was the inadequacy in the extent to which faculty members and clinical preceptors are prepared to teach and mentor in the area of patient safety. They reported that the faculty expressed the need for further training in patient safety, teamwork and conflict. This study is supported by a survey by (Myers et al 2014:9) where they asked the study participants to list their barriers and goals related to quality and safety education. The most common self-reported barrier by the faculty was the lack

of quality improvement and patient safety knowledge and a lack of a curriculum in the same.

The newness of the patient safety concept also requires additional learning for the faculty outside the conventional routes. The traditional didactic methods are no longer the mainstream way of teaching patient safety but rather it requires use of newer and innovative methods of teaching that engages the learner in the learning process and leads to a positive change in them. Therefore faculty need to be provided with more knowledge, tools and skills to effectively integrate and implement a patient safety oriented curriculum in order to fulfil this need (Coleman, Wardrop, Levinson, Zeidel, & Parsons 2017:52; Myers et al 2014:10; Tregunno et al 2014:251; Rodrigue et al 2013:319; Yanamadala, Criscione-Schreiber, Hawley, Heflin, & Shah 2014:125; WHO 2011b:34)

Thornlow and McGuinn (2010:75) highlight specific competencies required by faculty in order to be prepared to teach quality and safety in the undergraduate curriculum, and further develop a framework of expected outcomes, sample content, student learning strategies and faculty development strategies. These competencies include leadership and communication, healthcare systems and organisational structures and relationships, concepts of quality and safety using structure, process and outcome measures, among others. Recommendations for faculty capacity have been made in consideration that quality improvement and safety are core to what it means to be a healthcare professional. The faculty members including clinical faculty who teach and supervise health professions students need to be more competent and able to demonstrate these concepts in the context of their everyday work (Association of American Medical Colleges 2013:23). Additionally, Wong, Levinson, and Shojania (2012:115) propose measures that can be implemented to build on faculty capacity. They propose that instead of trying to train faculty into highly qualified experts in quality improvement and patient safety, targeting the ordinary clinician and teachers because they already possess the teaching skills and they then become facilitators in train-the-trainer tutor courses that build the capacity of other faculty. There is also need to focus on the clinical instructors in the nursing programmes who are involved in teaching the skills to the students by encouraging them to include explicit patient safety concepts during their sessions. Faculty who are also members of the nursing teams in the healthcare organisations can also be given incentives such as promotions that encourage them to be involved in quality improvement and patient safety activities either as researchers or administrators.

2.4.5 Integrating patient safety education into clinical nursing education

The role of clinical nursing education cannot be undervalued in the preparation of a safe and competent nurse. The nursing faculty have been challenged to integrate quality and safety education in their nursing curricula which is mainly pegged on the theoretical preparation of the nurse. However, to fully gain the knowledge, skills and attitude, it is imperative that the student is exposed to both didactic and experiential teaching methods. According to educationists, effective, long-lasting learning entails active engagement of the learner. The learner retains only 5% of the information given to them by lecture, but 75% retention is evident if they are involved in practice by doing (Pettigrew 2015:15). The WHO (2011b:51) states that the most important aspect of patient safety education is to ensure that the student can transfer what they have learnt to the workplace. To achieve this, the patient safety principles need to be made relevant to the nursing student and provide them with opportunities that are realistic and practical to apply the knowledge and skills they have developed. Therefore, to provide the nursing student with these it is imperative that academic clinical partnerships are formed and innovative models of clinical education are implemented (Niederhauser, Schoessler, Gubrud-Howe, Magnussen, & Codier 2012:605). One of these innovative models of clinical education is the use of Dedicated Education Units (DEU).

2.4.5.1 *Dedicated Education Units*

A DEU is an innovative clinical teaching model which was first developed at Flinder's University School of Nursing in Australia in 1997. It is a nursing placement approach that involves the creation of a collaborative teaching and learning environment for the nursing students. It involves the establishment of a floor or a unit within a health facility that is dedicated to the enhancement of the practical experience of the student. All the staff in the DEUs are focused on the teaching and learning of the student and together with the students they are supported by a clinical appointee of the hospital and an academic appointee of the university (Fourie & McClelland 2011:3). According to Hunt, Milani, and Wilson (2015:46), the goals of the DEU model are to enhance the collaboration between the academic world and the clinical practice sites, thus providing the student nurse with an opportunity to apply theory to practice and engage in a nursing role under the pupillage of the staff nurses as the preceptors. Further, the staff nurses become exposed to the role of educator and this addresses the issue of faculty shortage experienced in the nursing academies.

Literature shows that the DEU model of clinical education has a great impact on the student nurses as well as the staff nurses as compared to the traditional model of clinical education. Nursing students who have participated in the DEUs have reported a higher-quality learning environment and consistency in the mentoring process because of exposure to the same preceptors and mentors, better relationships with the staff nurse and therefore a more relaxed learning environment, better nurse to nursing student collaboration (Nishioka, Coe, Hanita, & Moscato 2014a:301; Moore & Nahigian 2013:346; Mulready-Shick, Flanagan, Banister, Mylott, & Curtin 2013:606; Polvado, Sportsman, & Bradshaw 2015:128). The staff nurses who have participated in DEU report improvement in the teaching and preceptor skills, feelings of personal and professional satisfaction by being given time to support students, thus giving them opportunities for professional development (Nishioka et al 2014b:294; Rhodes, Meyers, & Underhill 2012:223).

Teaching and learning of quality and safety have also been shown to be enhanced when students participate in DEUs with students being presented with better opportunities to develop quality and safety competencies (Deborough 2012:48; Mulready-Shick et al 2013:606). Masters (2015:153) conducted a DEU project in an acute care hospital and used the QSEN framework as the core competencies to be developed in the students. The author evaluated the students' development of the QSEN competencies by assessing the competencies after each clinical rotation and at the end of the project. She also carried out focus group discussions with the clinical instructors to get a deeper understanding of the clinical instructors experience with the DEU project. The results of the evaluation showed that there was an increase in the mean score of the QSEN evaluation in the students who participated in the project compared to those who did not participate in the DEU. The clinical instructors reported that the project helped build teamwork and collaboration, establishing trust and decrease anxiety, it mirrored the organisations and time management skills, as well boosting their confidence in the nursing role.

DEUs therefore operate on the principle that education cannot only occur exclusively in the classroom and hence to provide the best learning experience for the student, then this needs to be done in partnership with the clinical practice setting. The DEU also uses the existing resources in the healthcare facilities and allows students to fully participate as members of that patient care unit.

2.4.6 The hidden curriculum

Despite the importance of the clinical experience in preparing the student, it is important to appreciate and mitigate environmental and situation-based realities that may interfere with the learning in the clinical settings also known as “hidden curriculum” (Tregunno et al 2014:262). In healthcare education, the hidden curriculum refers to the social activities and cultures that formally or informally exist in an organisation, for example, customs, rituals, and taken-for-granted aspects (Hafler et al 2011:441). The hidden curriculum is a socialisation process that the student undergoes and it provides an avenue for the transmission of implicit beliefs, behaviours and practices.

The student undergoing clinical experience is exposed to the culture of patient safety in the clinical practice setting and they are subject to the rules and the norms of that setting. When the setting has a good patient safety culture, it is valuable to the student as it informally shapes their behaviours, attitudes and practices positively and prepares them for real life situations. Bradley, Steven, & Ashcroft (2011:5), in a study on the role of the hidden curriculum in pharmacy students, reported that the hidden education that took place during the clinical experience was very important and compensated for the limited teaching and learning that had occurred in the formal education on patient safety elements such as learning about safe systems, processes, errors and professionalism.

Conversely, the culture that the students are exposed to may be inconsistent with what they are taught in class and this becomes detrimental to the learning process of the student (Martinez et al 2014:482; Steven, Magnusson, Smith, & Pearson 2014:277). In such clinical settings, the student is exposed to unsafe practices, hierarchical power-plays among staff, negative role modelling among others and according to Mahood (2011:983) the “students move from being open-minded to being closed-minded”. The student may also feel harassed, bullied and disrespected, creating a situation that the student feels that he or she is not free to ask questions or request clarifications, fearful of making mistakes and therefore adversely affecting the learning process (Jafree, Zakar, Fischer, & Zakar 2015:6). The student then adopts these maladaptive practices and behaviours which subsequently impact the care they provide to the patients. The role of the hidden curriculum is demonstrated in a study by Lukewich et al (2015:934) on nursing student’s self-reported confidence in learning about patient safety. They observed that the confidence in learning about patient safety, especially the sociocultural aspects, declined in the clinical setting as the nursing students progressed through their academic

programme and this was attributed to the situational factors that the students were exposed to in the clinical areas. Leape et al (2012:857) make a compelling call for creation of a learning environment that is based on a culture of respect imbued with transparency, accountability and mutual respect because disrespect, which includes disruptive and humiliating behaviours and promotes the occurrence of errors.

Addressing and mitigating the impact of the hidden curriculum can be challenging to the nursing faculty and practical solutions require stronger academic service partnerships and closer links between the academic staff and the leadership of the clinical practice settings. Both the education and healthcare institutions must assume and enact a set of shared values and beliefs that position patient safety as a primary priority. Some of the ways to achieve this are by having DEUs, interprofessional faculty development opportunities for both classroom and clinical educators, opportunities for faculty members and practice setting leaders to work together to enhance patient safety education in clinical settings as well as development of an interdisciplinary clinical education model that enhances achievement of the patient safety competencies (Liao, Thomas, & Bell 2014:171; Hundert 2014:32; Matlow & Brien 2014:9; Tregunno et al 2014:262).

2.4.7 Student and graduate nurses' perceptions of patient safety competence

To ensure that the nursing curriculum is able to prepare a competent and safe nurse, it is imperative that we are able to capture the perspectives of the student nurses as well as graduate nurses regarding how well the curriculum equips them with the necessary competencies. Many tools have been designed to assess the safety competencies of healthcare professionals but they do not necessarily measure all the aspects of patient safety competences (Okuyama, Martowirono, & Bijnen 2011:991). To measure the nurses and other health professionals' self-reported patient safety competence, Ginsburg, Castel, Tregunno, and Norton (2012:676) developed the Health Professional Education in Patient Safety Survey (H-PEPSS). The H-PEPSS is a tool that is focused on the sociocultural aspects of patient safety intended mainly for health professionals who have recently completed or are nearing completion of their training.

Lukewich et al (2015:930) conducted an annual cross-sectional study from 2010 to 2013 in a Canadian university with a four-year bachelor of nursing science programme to examine nursing students' self-reported confidence in learning about key patient safety dimensions. They administered a modified version of the H-PEPSS to the nursing

students each year for the four years they were enrolled in the programme. This study was unique in nature as it was the first one to assess the perceptions over a period of time while reporting the changes in perceptions as the nursing students progressed with their studies. They found that the students felt confident about what they learnt in class about the clinical aspects of patient safety (for example infection control) across the years, but their confidence regarding the sociocultural aspects of patient safety (for example human factors in errors) declined over the years. They also found that the nursing student's self-reported confidence in learning about patient safety in the clinical setting tended to decline as they progressed through their academic programme. They explained the inconsistencies between the confidence levels in classroom and clinical settings as being a result of a discord between theoretical and practical work, with students having different clinical experiences from what is actually taught in class. The findings from this study were comparable to those in a study on the level of confidence in learning about six sociocultural dimensions of patient safety as reported by new graduates in nursing and other health professions (Ginsburg, Tregunno, & Norton 2013:147). The nursing graduates reported lower levels of confidence in learning around the dimensions of managing safety risks and understanding human and environmental factors that influence patient safety. They also reported more confidence in learning in a classroom setting than in the clinical settings, leading the authors to suggest that the clinical influence on the confidence levels of graduate nurses was significant.

In South Korea a similar study was conducted to evaluate the extent to which the nursing students have learnt patient safety and quality concepts and to identify the senior nursing students' perception of their competency in patient safety (Lee, Jang, & Park 2016:163). They found that majority of the students received some type of patient safety education using the lecture method as the most common teaching strategy. However there were variations in the students' perceptions on the degree of coverage of the patient safety related topics and content. Based on the QSEN framework, the students reported that the lowest covered competencies were safety, quality improvement, and teamwork and collaboration. Assessment of their competency based on knowledge, skills and attitude revealed a low level of competency in terms of knowledge, as reported by the students, indicating that the students were probably not presented with an opportunity to learn in their current curriculum.

2.5 THE WORLD HEALTH ORGANIZATION PATIENT SAFETY CURRICULUM

In 2009, the WHO launched a patient safety curriculum guide for doctors and medical students with the aim of encouraging medical schools to include the patient safety in their courses (Walton, Woodward, Van Staaldunen, Lemer, Greaves & Noble 2010:542). The curriculum was developed following a call by the Association of Medical Education in Europe to integrate patient safety throughout undergraduate medical education particularly in the first year of study. The WHO in 2011, published the “Patient Safety Curriculum Guide: Multi-professional Edition” which is an updated version of the medical schools guide. The updated edition covers the areas of dentistry, medicine, nursing, midwifery, pharmacy and other healthcare professions (WHO 2011b).

The curriculum guide is aimed at:

- Preparing healthcare students for safe practice in the workplace;
- Informing healthcare educational institutions of the key topics in patient safety;
- Enhancing patient safety as a theme throughout all healthcare professional curricula;
- Providing a comprehensive curriculum to assist teaching and integrating patient safety learning;
- Further developing capacity for faculty in healthcare professional education;
- Promoting a safe and supportive environment for teaching students about patient safety;
- Introducing or strengthening patient safety education in all healthcare professional educational settings worldwide;
- Raising the international profile of patient safety teaching and learning; and
- Fostering international collaboration on patient safety education research in the higher education sector.

The guide is structured into two sections: teacher’s guide and patient safety topics. The teacher’s guide details guidelines to assist the teacher on how to implement the curriculum. It also includes programme planning and design as well as the patient safety concepts and principles. The aim for this section is to build capacity for the faculty with the recognition that patient safety is a new field and the faculty may not be adequately conversant with it. The second section provides the actual 11 patient safety topics to be included in the curriculum. The curriculum is comprehensive, detailing how the curriculum

was developed, the aims of the curriculum and the reasons for inclusion of each topic in the guide.

The Curriculum Guide covers 11 topics, including those selected from the evidence-based Australian Patient Safety Education Framework with an addition from the WHO infection control programmes. These topics are:

1. What patient safety is;
2. Why applying human factors is important for patient safety;
3. Understanding systems and the effect of complexity on patient care;
4. Being an effective team player;
5. Learning from errors to prevent harm;
6. Understanding and managing clinical risk;
7. Using quality-improvement methods to improve care;
8. Engaging with patients and carers;
9. Infection prevention and control;
10. Patient safety and invasive procedures; and
11. Improving medication safety.

The WHO, in the development of this curriculum, acknowledges that patient safety is a relatively new discipline and therefore it can be a challenge to integrate the concepts into an already existing curriculum (WHO 2011b:41). They therefore provided a guide on how schools can go about integrating these topics into their curricula while pointing out that patient safety education is new and includes topics not conventionally taught to healthcare students, containing new knowledge and performance elements which need to be taught contextually and be linked with existing and traditional subjects.

The WHO field tested the curriculum in 12 participating universities/schools across the six WHO regions. The aim of the field test was to assess the effectiveness of the guide as a resource for teaching patient safety to undergraduate and graduate students in a variety of educational, economic and cultural settings (Farley, Zheng, & Rousi 2015:3). To achieve this, data was collected from the executives in the participating schools, implementation leaders, faculty members as well as the leaders at the start of the field test, soon after each school started teaching, and soon after each school finished teaching. The results of the field test showed that the stakeholders had a positive attitude towards the curriculum guide and they felt that through the curriculum, patient safety

could now be taught explicitly and become a focus for the community. The users of the guide reported that the guide was user friendly and culturally appropriate. There was a significant change in the perceptions and attitude towards patient safety by the students as a result of the curriculum. However, the faculty cautioned that the change may not necessarily have an impact on the students' subsequent practices. It was also noted that the guide had also achieved its aim of capacity building for the faculty who reported that it enabled them to develop the skills and knowledge base to enable them to teach the patient safety topics.

2.6 QUALITY AND SAFETY EDUCATION FOR NURSES

The QSEN is a project initiated in 2005 as a response from the nursing fraternity to the IOM call to the improvement of the quality and safety of healthcare. The project in the United States of America which was funded by the Robert Wood Johnson Foundation consisted of the development of quality and safety competencies that serve as a resource for nursing faculty in the integration of quality and safety concepts in nursing education (QSEN Institute 2014b). The project which ran between 2005 and 2012 was conducted in three phases.

2.6.1. Phases of the QSEN

The first phase of the initiative was conducted between 2005 and 2007 and the six competencies were defined (Dolansky & Moore 2013). To develop the competencies, the project leaders selected 10 nursing and medicine faculty experts who were recognised for their expertise in the quality and safety competencies identified by the IOM or in nursing and medical education who formed the Faculty Expert Panel. They also selected other persons who influence educational policy, nursing practice and medical education for the advisory panel. The QSEN project team, together with the panels, through a comprehensive and thorough process, reached a consensus on six competencies, namely patient-centred care, teamwork and collaboration, EBP, quality improvement, safety and informatics (Cronenwett et al 2007:124). They defined the competencies and created a set of knowledge, skills and attitudes for each of the competencies for application in pre-registration nursing education. According to Barnsteiner et al (2013:68), the competency statements were formulated to enable the faculty and staff development educators to identify gaps in the curriculum so that changes to incorporate quality and safety education could be made. The panel further developed exemplar

classroom, clinical and simulation-based learning strategies that could be used by nursing educators with the background that the new generation of students prefer interactive teaching that engages knowledge and skills with real world examples (Durham & Sherwood 2008:433).

In phase two, pilot studies were carried out in 15 nursing schools in the USA where the competencies were integrated in the nursing curriculum for pre-registration nursing education. This was conducted so as to get evidence that the competencies could be successfully integrated into the curriculum (Cronenwett et al 2009:304; Sherwood 2011:235). The schools integrated the competencies in their curriculum with the assistance of the project steering team, implemented the curriculum using the various recommended teaching strategies and evaluated one class of graduating students' perceptions of how well the competencies were achieved, The project team facilitated workshops and telephone conferences where the faculty were able to share their experiences and lessons learnt.

The third phase focused on the development of the faculty expertise necessary for the nursing schools to teach the competencies (Barnsteiner et al 2013:68). Faculty development training sessions were conducted to provide the faculty with strategies for integrating the quality and safety content in the curriculum. This institutes were carried out in the form of train-the-trainer model, and annual forums with the facilitators being drawn from those who first adopted and implemented the competencies. The phase also focused on increasing the awareness and integration of the competencies by inculcating them in nursing textbooks and the licensing, accreditation and certification standards.

Phase four of the project was expanded to include graduate education programmes and to do this the Robert Wood Johnson Foundation engaged the AACN. This phase aimed to provide educational resources and training to enhance the ability of faculty in master's and doctoral nursing programmes to teach quality and safety competencies (AACN 2012:2). The AACN in collaboration with experts and stakeholders were able to update and reach a consensus on the graduate level competencies for quality and safety as well as create learning resources to be used to teach the graduate level competencies. Furthermore, the hosted workshops to train faculty involved in graduate nursing education and the clinical faculty to facilitate the implementation of the competencies. Based on this they were therefore able to develop web-based learning programme, an

online collaboration community and teaching materials for graduate nursing programmes.

Due to the success of the QSEN framework demonstrated by the integration of the competencies in nursing schools in the USA as well as in the licensing boards and nursing textbooks, it has been described “a social movement and one of the most significant paradigm shifts in nursing history” (Sherwood & Horton-Deutsch 2015:36). Despite the progress and success of QSEN, (Dolansky & McMeekin 2015:284) explain that to enhance its impact, more still needs to be done. According to them, there is need for more psychometrically valid tools to measure the knowledge, skills and attitudes achieved by the learners in each of the six competencies. This will provide more comparative data, and hence objectively benchmark progress, and thus determine what is effective and what is not. Secondly, there is need to identify the components of the students’ formative and summative evaluations as well as more research to demonstrate that the education was of value. Thirdly, more effort needs to be devoted to increasing the nursing faculty capacity to teach the quality and safety competencies.

2.6.2. QSEN pre-licensure nursing competencies

As described in the section above, six QSEN competencies were developed through a comprehensive process involving experts in nursing, education, and policy development as well as partners in the clinical areas and other stakeholders. The six competencies are patient-centred care, teamwork and collaboration, EBP, quality improvement, safety and informatics. The team defined the competencies and developed the knowledge, skills, and attitudes to be achieved in nursing pre-licensure programmes for each competency. Below is a discussion of each of the competency.

2.6.2.1. *Patient-Centred Care*

The first competency in QSEN recognises the patient or his or her surrogate as the source of control and a full partner in providing compassionate and coordinated care based on respect for patient’s preferences, values and needs. The competency aims at ensuring that the student is able to understand the multiple dimensions of patient care, comprehend the concepts of pain and suffering to the patient and family, and appreciate the importance of active involvement of the patient and family in quality, safety and cost effectiveness. Additionally the student should be able to recognise the ethical and legal implications of patient care as well as the tenets of therapeutic patient-centred care while

maintaining effective communication. At a more advanced level, the nurse is required to be able to contribute to building consensus and conflict resolution in patient care and also comprehend and embrace nursing roles in assuring coordination, integration and continuity of care (Cronenwett et al 2007:123). Table 2.5 describes the knowledge skills and attitudes for the patient-centred competency.

Table 2.5: Patient centred care

Knowledge	Skills	Attitudes
<p>Integrate understanding of multiple dimensions of patient centred care:</p> <ol style="list-style-type: none"> 1. Patient/family/community preferences, values 2. Coordination and integration of care 3. Information, communication, and education 4. Physical comfort and emotional support 5. Involvement of family and friends transition and continuity <p>Describe how diverse cultural, ethnic and social backgrounds function as sources of patient, family, and community values</p>	<p>Elicit patient values, preferences and expressed needs as part of clinical interview, implementation of care plan and evaluation of care</p> <p>Communicate patient values, preferences and expressed needs to other members of healthcare team</p> <p>Provide patient-centred care with sensitivity and respect for the diversity of human experience</p>	<p>Value seeing healthcare situations “through patients’ eyes”</p> <p>Respect and encourage individual expression of patient values, preferences and expressed needs</p> <p>Value the patient’s expertise with own health and symptoms</p> <p>Seek learning opportunities with patients who represent all aspects of human diversity</p> <p>Recognise personally held attitudes about working with patients from different ethnic, cultural and social backgrounds</p> <p>Willingly support patient-centred care for individuals and groups whose values differ from own</p>
<p>Demonstrate comprehensive understanding of the concepts of pain and suffering, including physiologic models of pain and comfort.</p>	<p>Assess presence and extent of pain and suffering</p> <p>Assess levels of physical and emotional comfort</p> <p>Elicit expectations of patient & family for relief of pain, discomfort, or suffering</p> <p>Initiate effective treatments to relieve pain and suffering in light of patient values, preferences and expressed needs</p>	<p>Recognise personally held values and beliefs about the management of pain or suffering</p> <p>Appreciate the role of the nurse in relief of all types and sources of pain or suffering</p> <p>Recognise that patient expectations influence outcomes in management of pain or suffering</p>
<p>Examine how the safety, quality and cost effectiveness of healthcare can be improved through the active involvement of patients and families</p>	<p>Remove barriers to presence of families and other designated surrogates based on patient preferences</p>	<p>Value active partnership with patients or designated surrogates in planning, implementation, and evaluation of care</p>

Knowledge	Skills	Attitudes
Examine common barriers to active involvement of patients in their own healthcare processes Describe strategies to empower patients or families in all aspects of the healthcare process	Assess level of patient's decisional conflict and provide access to resources Engage patients or designated surrogates in active partnerships that promote health, safety and wellbeing, and self-care management	Respect patient preferences for degree of active engagement in care process Respect patient's right to access to personal health records
Explore ethical and legal implications of patient-centred care Describe the limits and boundaries of therapeutic patient-centred care	Recognise the boundaries of therapeutic relationships Facilitate informed patient consent for care	Acknowledge the tension that may exist between patient rights and the organisational responsibility for professional, ethical care Appreciate shared decision making with empowered patients and families, even when conflicts occur
Discuss principles of effective communication Describe basic principles of consensus building and conflict resolution Examine nursing roles in assuring coordination, integration, and continuity of care	Assess own level of communication skill in encounters with patients and families Participate in building consensus or resolving conflict in the context of patient care Communicate care provided and needed at each transition in care	Value continuous improvement of own communication and conflict resolution skills

(Cronenwett et al 2007:123; QSEN Institute 2014a)

2.6.2.2. Teamwork and collaboration

To be competent in teamwork and collaboration, the nurse student is required to be able to function effectively within nursing and interprofessional teams, fostering open communication, mutual respect, and shared decision making to achieve quality patient care (Cronenwett et al 2007:124). This competency departs from the traditional concept of teamwork and collaboration where the nurse was required to work side by side with other healthcare professionals in the performance of nursing care. Its main emphasis are communication, team efficiency and the understanding of the role of the system in team work. The expected outcomes are described in Table 2.6.

Table 2.6: Teamwork and collaboration

Knowledge	Skills	Attitudes
Describe own strengths, limitations, and values in functioning as a member of a team	<p>Demonstrate awareness of own strengths and limitations as a team member</p> <p>Initiate plan for self-development as a team member</p> <p>Act with integrity, consistency and respect for differing views</p>	<p>Acknowledge own potential to contribute to effective team functioning</p> <p>Appreciate importance of intra- and interprofessional collaboration</p>
<p>Describe scopes of practice and roles of healthcare team members</p> <p>Describe strategies for identifying and managing overlaps in team member roles and accountabilities</p> <p>Recognise contributions of other individuals and groups in helping patient/family achieve health goals</p>	<p>Function competently within own scope of practice as a member of the healthcare team</p> <p>Assume role of team member or leader based on the situation</p> <p>Initiate requests for help when appropriate to situation</p> <p>Clarify roles and accountabilities under conditions of potential overlap in team member functioning</p> <p>Integrate the contributions of others who play a role in helping patient/family achieve health goals</p>	<p>Value the perspectives and expertise of all health team members</p> <p>Respect the centrality of the patient/family as core members of any healthcare team</p> <p>Respect the unique attributes that members bring to a team, including variations in professional orientations and accountabilities</p>
<p>Analyse differences in communication style preferences among patients and families, nurses and other members of the health team</p> <p>Describe impact of own communication style on others</p> <p>Discuss effective strategies for communicating and resolving conflict</p>	<p>Communicate with team members, adapting own style of communicating to needs of the team and situation</p> <p>Demonstrate commitment to team goals</p> <p>Solicit input from other team members to improve individual, as well as team, performance</p> <p>Initiate actions to resolve conflict</p>	<p>Value teamwork and the relationships upon which it is based</p> <p>Value different styles of communication used by patients, families and healthcare providers</p> <p>Contribute to resolution of conflict and disagreement</p>
<p>Describe examples of the impact of team functioning on safety and quality of care</p> <p>Explain how authority gradients influence teamwork and patient safety</p>	<p>Follow communication practices that minimise risks associated with handoffs among providers and across transitions in care</p> <p>Assert own position/perspective in discussions about patient care</p> <p>Choose communication styles that diminish the risks associated with authority gradients among team members</p>	<p>Appreciate the risks associated with handoffs among providers and across transitions in care</p>

Knowledge	Skills	Attitudes
Identify system barriers and facilitators of effective team functioning Examine strategies for improving systems to support team functioning	Participate in designing systems that support effective teamwork	Value the influence of system solutions in achieving effective team functioning

(Cronenwett et al 2007:123; QSEN Institute 2014a)

2.6.2.3. Evidence-based practice

This QSEN competency emphasises the integration best current evidence to make decisions about patient care. To do this the nurse should consider patient/family preferences and values as well their clinical expertise for the delivery of optimal healthcare. To be competent in EBP, the nurse is required to understand the basic concepts of research and EBP as well as be able to appreciate the value of EBP in the choice of interventions in the provision of patient centred care. The achievable knowledge, skills and attitudes for the competency are outlined in Table 2.7.

Table 2.7: Evidence-based practice

Knowledge	Skills	Attitudes
Demonstrate knowledge of basic scientific methods and processes Describe EBP to include the components of research evidence, clinical expertise and patient/family values.	Participate effectively in appropriate data collection and other research activities Adhere to Institutional Review Board guidelines Base individualised care plan on patient values, clinical expertise and evidence	Appreciate strengths and weaknesses of scientific bases for practice Value the need for ethical conduct of research and quality improvement Value the concept of EBP as integral to determining best clinical practice
Differentiate clinical opinion from research and evidence summaries Describe reliable sources for locating evidence reports and clinical practice guidelines	Read original research and evidence reports related to area of practice Locate evidence reports related to clinical practice topics and guidelines	Appreciate the importance of regularly reading relevant professional journals
Explain the role of evidence in determining best clinical practice Describe how the strength and relevance of available evidence influences the choice of interventions in provision of patient-centred care	Participate in structuring the work environment to facilitate integration of new evidence into standards of practice Question rationale for routine approaches to care that result in less-than-desired outcomes or adverse events	Value the need for continuous improvement in clinical practice based on new knowledge

Knowledge	Skills	Attitudes
Discriminate between valid and invalid reasons for modifying evidence-based clinical practice based on clinical expertise or patient/family preferences	Consult with clinical experts before deciding to deviate from evidence-based protocols	Acknowledge own limitations in knowledge and clinical expertise before determining when to deviate from evidence-based best practices

(Cronenwett et al 2007:123; QSEN Institute 2014a)

2.6.2.4. *Quality Improvement*

To achieve this competency the nurse is required to be able to “use data to monitor the outcomes of care processes and use improvement methods to design and test changes to continuously improve the quality and safety of healthcare systems” (Cronenwett et al 2007:127). The competency stresses the importance of the participation of the nurse in the quality-improvement processes and their role in the use of quality measures to improve performance as well as designing and implementation of quality-improvement projects as to improve care processes. Table 2.8 describes the knowledge, skills and attitudes that the student should achieve.

Table 2.8: Quality improvement

Knowledge	Skills	Attitudes
Describe strategies for learning about the outcomes of care in the setting in which one is engaged in clinical practice	Seek information about outcomes of care for populations served in care setting Seek information about quality-improvement projects in the care setting	Appreciate that continuous quality improvement is an essential part of the daily work of all health professionals
Recognise that nursing and other health professions students are parts of systems of care and care processes that affect outcomes for patients and families Give examples of the tension between professional autonomy and system functioning	Use tools (such as flow charts, cause-effect diagrams) to make processes of care explicit Participate in a root cause analysis of a sentinel event	Value own and others' contributions to outcomes of care in local care settings
Explain the importance of variation and measurement in assessing quality of care	Use quality measures to understand performance Use tools (such as control charts and run charts) that are helpful for understanding variation Identify gaps between local and best practice	Appreciate how unwanted variation affects care Value measurement and its role in good patient care

Knowledge	Skills	Attitudes
Describe approaches for changing processes of care	<p>Design a small test of change in daily work (using an experiential learning method such as Plan-Do-Study-Act)</p> <p>Practice aligning the aims, measures and changes involved in improving care</p> <p>Use measures to evaluate the effect of change</p>	<p>Value local change (in individual practice or team practice on a unit) and its role in creating joy in work</p> <p>Appreciate the value of what individuals and teams can do to improve care</p>

(Cronenwett et al 2007:123; QSEN Institute 2014a)

2.6.2.5. Safety

With the background that nurses play a key role in the minimising harm or error in healthcare, the competency requires that the nurse is able to minimise risk of harm to patients and providers through both system effectiveness and individual performance. This QSEN background requires that the nurse be able to understand and mitigate the human and system factors that contribute to the occurrence of errors in healthcare systems, that he or she understands the importance of a culture of safety and their role in the creation of the culture. In addition the nurse is able to participate in the analysis of errors and consequently designing and implementation of systemic quality-improvement processes that eliminate error in healthcare. Table 2.9 describes the KSAs of this competency.

Table 2.9: Safety

Knowledge	Skills	Attitudes
<p>Examine human factors and other basic safety design principles as well as commonly used unsafe practices (such as, work-arounds and dangerous abbreviations)</p> <p>Describe the benefits and limitations of selected safety-enhancing technologies (such as, barcodes, Computer Provider Order Entry, medication pumps, and automatic alerts/alarms)</p> <p>Discuss effective strategies to reduce reliance on memory</p>	<p>Demonstrate effective use of technology and standardised practices that support safety and quality</p> <p>Demonstrate effective use of strategies to reduce risk of harm to self or others</p> <p>Use appropriate strategies to reduce reliance on memory (such as, forcing functions, checklists)</p>	<p>Value the contributions of standardisation/reliability to safety</p> <p>Appreciate the cognitive and physical limits of human performance</p>
<p>Delineate general categories of errors and hazards in care</p>	<p>Communicate observations or concerns related to hazards and</p>	<p>Value own role in preventing errors</p>

Knowledge	Skills	Attitudes
Describe factors that create a culture of safety (such as, open communication strategies and organisational error reporting systems)	errors to patients, families and the healthcare team Use organisational error reporting systems for near miss and error reporting	
Describe processes used in understanding causes of error and allocation of responsibility and accountability (such as, root cause analysis and failure mode effects analysis)	Participate appropriately in analysing errors and designing system improvements Engage in root cause analysis rather than blaming when errors or near misses occur	Value vigilance and monitoring (even of own performance of care activities) by patients, families, and other members of the healthcare team
Discuss potential and actual impact of national patient safety resources, initiatives and regulations	Use national patient safety resources for own professional development and to focus attention on safety in care settings	Value relationship between national safety campaigns and implementation in local practices and practice settings

(Cronenwett et al 2007:123; QSEN Institute 2014a)

2.6.2.6. Informatics

With the increased use of information technology systems in healthcare, this competency requires that the nurse be able to use information and technology to communicate, manage knowledge, mitigate error, and support decision making in the provision of patient centred care. The emphasis in this competency is documentation, data access and data utilisation. The nurse should be able to appreciate the importance of information and technology in the provision of safe patient-centred care as well as the role of communication technology and its impact on the quality and safety of healthcare. Table 2.10 describes the KSAs the student should achieve.

Table 2.10: Informatics

Knowledge	Skills	Attitudes
Explain why information and technology skills are essential for safe patient care	Seek education about how information is managed in care settings before providing care Apply technology and information management tools to support safe processes of care	Appreciate the necessity for all health professionals to seek lifelong, continuous learning of information technology skills
Identify essential information that must be available in a common database to support patient care Contrast benefits and limitations of different communication	Navigate the electronic health record Document and plan patient care in an electronic health record	Value technologies that support clinical decision-making, error prevention, and care coordination

Knowledge	Skills	Attitudes
technologies and their impact on safety and quality	Employ communication technologies to coordinate care for patients	Protect confidentiality of protected health information in electronic health records
Describe examples of how technology and information management are related to the quality and safety of patient care Recognise the time, effort, and skill required for computers, databases and other technologies to become reliable and effective tools for patient care	Respond appropriately to clinical decision-making supports and alerts Use information management tools to monitor outcomes of care processes Use high-quality electronic sources of healthcare information	Value nurses' involvement in design, selection, implementation, and evaluation of information technologies to support patient care

(Cronenwett et al 2007:123; QSEN Institute 2014a)

2.7 CONCLUSION

This chapter presented a literature review to support the research study. Literature was provided concerning patient safety and patient safety culture and the factors associated with the two. Next, a discussion about the state of patient safety in the healthcare professionals' education, specifically in nursing education, was provided with literature support. Finally, the conceptual frameworks guiding this research were discussed in detail.

Chapter 3 presents the research design and methodology for the study.

CHAPTER 3

RESEARCH DESIGN AND METHOD

3.1 INTRODUCTION

This chapter describes and explains in detail the research designs and methods that supported this research study. The researcher justifies the reasons for the choice of the designs and methods based on literature evidence of each. Further, the researcher describes the phases of the study, the methodology applied in each phase of the study and the data analysis technique used. Finally, the researcher explains the ethical considerations that were adhered to throughout the research process. The research was conducted in three phases which the researcher discusses the methodology for each in detail separately.

3.2 AIM AND OBJECTIVES OF THE RESEARCH

3.2.1 Aim of the study

The overall aim of this research was to investigate the extent to which patient safety concepts are integrated in the pre-registration Bachelor of Science in Nursing curriculum in Kenya and to understand the issues that influence the teaching, learning and practising of patient safety in the classroom and clinical settings. Ultimately the researcher developed strategies that will enhance the integration of patient safety concepts in the pre-registration nursing curriculum in Kenya so as to generate a patient safety-competent workforce and subsequently ensure delivery of safe healthcare services to the public. To achieve the purpose, the study was structured in phases with objectives for each that cumulatively achieves the purpose

3.2.2 Research objectives

1. Identify the explicit patient safety concepts in the formal pre-registration nursing curriculum.
2. Explore the perspectives of nursing faculty on patient safety education in the pre-registration nursing curriculum.

Phase one: Curriculum content analysis and faculty perspectives achieved objective one and two

3. Measure the patient safety knowledge and competencies as perceived by the nursing students.

Phase two: Nursing students' perceptions achieved objective three

4. Assess the patient safety culture that the students are exposed to in the hospitals that nursing students receive clinical education;
5. Explore the perceptions of the hospital staff on the preparation of the pre-registration nursing students in patient safety.

Phase three: Organisation patient safety achieved objective four and five

6. Develop strategies for the integration of patient safety concepts in the preregistration nursing curriculum.

3.3 RESEARCH DESIGN

The research design is the overall plan for obtaining answers to the research questions in a study (Polit and Beck 2012:58). Research design is thought of as a master plan that details what needs to be done to achieve the research objectives. It enables the researcher to obtain the information they aimed to achieve and that information answers the questions convincingly while minimising bias and error.

This study included quantitative, qualitative, descriptive and exploratory elements in the different phases of the study to enable the researcher to get in-depth information about patient safety concepts in the nursing education.

3.3.1 Phases of the study

3.3.1.1 Phase one: Curriculum content analysis and faculty perspectives – qualitative research design

In Phase 1, a qualitative content analysis of the nursing curriculum documents was performed to identify and describe aspects of patient safety that are covered in the pre-registration curriculum as well as how they are taught and assessed. In this phase the research collected the curriculum documents and practice assessment documents which were analysed using a predesigned coding frame with concepts drawn from relevant literature, the “WHO Patient Safety Curriculum Guide: Multi-professional Edition” and the QSEN concepts.

The researcher further explored the perspectives of the nursing faculty towards patient safety education in the nursing degree curriculum. To achieve this, key informant interviews were carried out to explore the extent to which the patient safety concepts are addressed in the nursing curriculum and the barriers and enablers to their integration in the curriculum of their institutions.

3.3.1.2 Phase two: Nursing students perceptions – quantitative research design

This phase was exploratory in nature where the researcher measured the perceptions of nursing students to patient safety knowledge and competencies from each level of the nursing programmes. To achieve this, the researcher employed quantitative research design by administering the Health Professional Education in Patient Safety Survey (H-PEPSS) Instrument, which measures the health professionals' self-reported patient safety competency on six sociocultural dimensions of patient safety.

3.3.1.3 Phase three: Hospital patient safety – Quantitative and Qualitative research design

The phase focused on the hospitals in which the nursing students undergo their clinical education. The aim was to get insight at how these hospitals view patient safety as well as their culture regarding patient safety.

- The SAQ – Short Form questionnaire was administered to the sample of healthcare professionals in the hospitals to assess the organisational patient safety culture in these sites.
- The researcher explored the perceptions of hospital staff on the preparation of the pre-registration nursing students in patient safety by conducting key informant interviews.

Below is a description of the research designs used in the study.

3.3.2 Descriptive research design

According to Burns and Grove (2015:212), a descriptive study design gives more information about the characteristics of a particular phenomenon and gives a picture of it with no manipulation at all. These studies are usually utilised when the field of study is not well understood, and the researcher wants to seek clarification, define new concepts

or simply to increase the understanding of the phenomenon from a different perspective. They mostly involve the use of surveys, measurement tools and interviews. Descriptive studies can take quantitative or qualitative approach. Quantitative description focuses on the prevalence, incidence, size, and measurable attributes of phenomena. Qualitative description describe the dimensions, variations, and importance of phenomena (Polit & Beck 2012:18).

3.3.3 Exploratory research design

Exploratory research is conducted when the researcher examines a new or persistent phenomenon and rather than simply observing and describing it, the researcher investigates the full nature of the it, the manner in which it manifests, and other related factors (Polit & Beck 2012:18). According to Babbie (2016:90) the purposes of exploratory research are to satisfy the researcher's curiosity and desire for better understanding, to test the feasibility of undertaking a more extensive study, and to develop the methods to be employed in any subsequent study. In this study not only does the researcher describe the phenomenon but rather goes further to understand it by carrying out surveys to understand the perception of the nursing students regarding their knowledge of patient safety, as well as the patient safety culture in the areas of clinical practice. The researcher also conducted interviews with nursing faculty and nursing managers to gain a better and in-depth understanding of the integration of patient safety in the nursing curriculum and the factors that affect the integration.

3.3.4 Quantitative research design

Quantitative research is a formal, objective, rigorous and systematic process for generating numerical information about a phenomena and is conducted to describe new phenomena, examine relations among variables or test the effectiveness of treatments in the world (Burns & Grove 2015:32). According to Polit and Beck (2012:13) quantitative research is:

1. Scientific: it uses a set of orderly, disciplined procedures to acquire information and use deductive reasoning to generate predictions.
2. Systematic: the researcher progresses logically through a series of steps according to a specified plan of action.
3. Controlled: conditions are enforced on the research situation so as to minimise bias.

4. Based on empirical evidence: the evidence is rooted in objective reality and gathered through the senses – observations are gathered through sight, hearing, taste, touch or smell.
5. Quantitative data – numerical data is collected from a formal measurement and then it is analysed statistically.
6. Generalisable: research findings can be generalised to individuals other than those who participated in the study.

This research uses a quantitative approach where the researcher used a formal and objective process to get numerical data that answer some of the research objectives. The researcher administered questionnaires in two of the phases to obtain data and then quantitatively analysed it.

3.3.5 Qualitative research design

According to Burns and Grove (2015:16), qualitative research is a systematic, subjective approach used to describe human experiences and situations and give them meaning. It has philosophically based interpretive, naturalistic and humanistic tenets and is concerned with understanding the meaning of social interactions. The following is a summary of the characteristics of qualitative research design (Creswell 2014:310: Polit & Beck 2012:14):

1. Naturalistic: emphasises the dynamic, holistic and individual aspects of human life and attempts to capture those aspects in their entirety, within the context of those who are experiencing them. It involves having face-to-face interactions with people by talking to and/or observing them within their context.
2. Field based: qualitative researchers prefer conducting the research in the field setting in order to observe the phenomena as they are lived and to preserve the contextual elements of the phenomena.
3. Inductive reasoning: the reasoning is from the specific observation to a more general rule. Qualitative research is therefore useful in theory generation.
4. Relativism: qualitative researchers believe that if there are multiple interpretations of reality that exist in people's minds, then there is no process by which the ultimate truth or falsity of the constructions can be determined.

5. The investigator is the instrument: unlike the quantitative approach that uses established tools, the tool in this approach is the investigator. To increase rigour, the investigator then uses accepted standards to reduce the biases that may occur.
6. Emergent: the entire research process is not rigid but rather tends to change once the researcher commences the interaction with the participants.
7. Holistic view: qualitative research looks at the issue under study in a holistic manner by integrating multiple perspectives and identifying the various factors that affect a situation.

Certain aspects of this research were qualitative in nature. To get a more in-depth understanding of the integration of the patient safety concepts in the curriculum, the researcher conducted interviews with key faculty members to get their views on the barriers and enablers to the process. Further, the researcher also conducted key informant interviews in the healthcare organisation to get more information about how the organisations view preparation of the nurse in matters of patient safety. Qualitative research focuses on small information-rich samples to get in-depth information. Therefore the researcher focused on a small group best placed in curriculum design and delivery.

3.3.6 Content analysis

Content analysis is an unobtrusive research approach to the analysis of documents and texts (printed or visual) thereby quantifying the content in terms of predetermined categories in a systematic and replicable manner (Babbie 2016:323; Bryman 2012:289) It involves in identification, retrieval, analyses and interpretation of data generated from the examination of documents and records relevant to a particular study. According to Altheide et al (2010:127), content analysis can be a quantitative or qualitative research design that emphasises discovery, description and search for contexts, underlying patterns and processes. However, Bryman (2012:290) points out that content analysis is firmly rooted in the quantitative research design because it aims at producing quantitative data in terms of the categories specified by the researcher in a systematic and objective manner. Nevertheless, Bryman appreciates that qualitative content analysis is the “most prevalent approach to the analysis of documents” (Bryman 2012:557).

Mayring (2014:39) defines qualitative content analysis as a set of techniques used for the systemic analysis of text which addresses the manifest content in the text, the themes

and core ideals found in the text as the primary content. The qualitative content analysis process uses inductive reasoning, whereby the themes and categories emerge from the text that the researcher actively examines. According to Schreier (2014:170) qualitative content analysis is characterised by three key features – it reduces data, it is systematic and it is flexible. In qualitative content analysis, the amount of material being studied by the researcher is reduced with the focus being on selected aspects of meaning which answers the research question. This is done by developing categories and subcategories of the aspects being studied which are then defined at both concrete and abstract levels. It is highly systematic because it requires a close scrutiny of every document or material that is relevant to the research and it follows a sequence of steps regardless of the research question and material. Furthermore, it involves coding and double coding for most parts of the material and therefore increasing the validity of category definitions. The process is also flexible in that it combines both concept-driven and data-driven categories in a coding frame. This means that the categories can be based on existing theory or prior research also known as *directed content analysis*, or the categories flow from the data being studied.

3.3.6.1 Coding in content analysis

Of importance in content analysis is the determination of the specific research questions that the research is supposed to answer. This then guides the selection of the document to be analysed and the coding of the raw data collected, as content analysis basically involves coding which identifies a part of the data as an instance of the concept (Schreier 2012:37). According to Saldana (2016:14) coding is a process that permits data to be divided, grouped, reorganised and linked in order to consolidate meaning and develop explanations. The codes can then be consolidated into categories and subcategories, which further progress towards thematic, conceptual and theoretical levels, as illustrated in Figure 3.1 below.

The researcher can choose to code the *manifest content*, that is, the visible surface content or can code the *latent content*, which is the underlying meaning of the document (Babbie 2016:328). The manifest content coding type is easy and reliable and gives precise methods of measurement of the content, but its validity is questionable because the level of measurement is limited to what the research has defined, yet there are many other ways of measuring the content. The latent content coding gives a much better understanding of the underlying meaning in the content. It allows for different views and

measurement of the content and therefore increasing its validity. However, this can be less easy and time consuming. Babbie (2016:329) advises that it is better for the researcher to use both methods of coding.

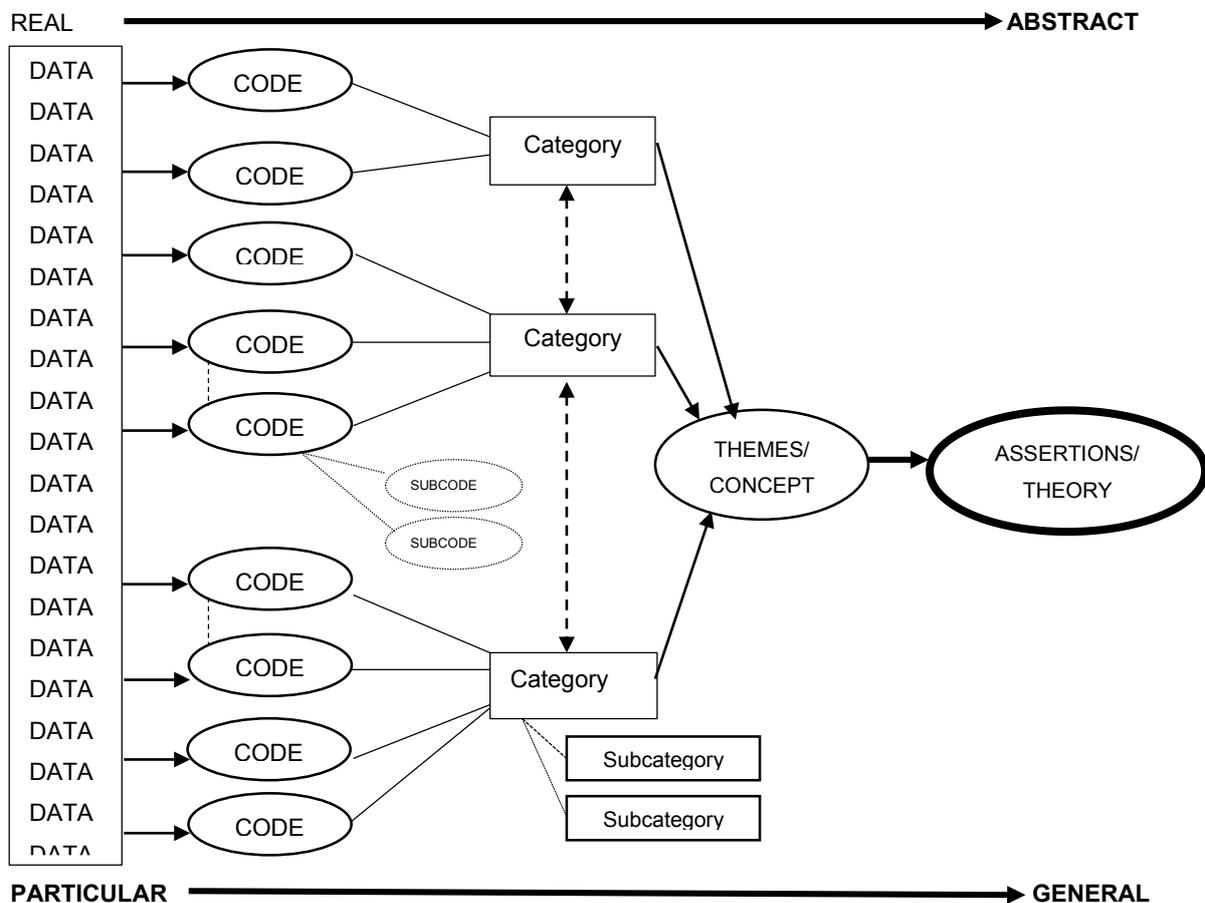


Figure 3.1: A streamlined codes-to-theory model for qualitative inquiry

(Saldana 2016:14)

If not correctly done, coding can lead to the wrong data being collected and not answer the research questions that the researcher intended to collect. Bryman (2012:303) advises that to avoid the dangers associated with poor coding, the researcher needs to ensure the following:

1. Discrete dimensions to be coded do not overlap conceptually or empirically.
2. Categories are mutually exclusive.
3. Categories are exhaustive.
4. Clear instructions are given to the coders on how to interpret what each dimension is about and the factors to take into account when assigning codes to each category.

3.3.6.2 *Coding schedule/frame and coding manual*

Quantitative content analysis usually entails a wide array of variables; therefore to get the right data, the researcher should design a coding schedule and a coding manual (Bryman 2012:298). A coding schedule is a form where all the data related to an item is entered. The form is usually divided into columns that indicate the dimensions to be coded. These codes are then transferred to a computer data file for analysis with a software package. The coding manual is a statement of instructions to the coders that includes all the possible categories for each dimension being coded. It includes all the dimensions that would be employed in the coding process, indications or the guidance for coders, and the kind of lists of categories that were created for each dimension. By providing this information, the coding manual therefore increases inter-coder reliability and intra-coder reliability.

In qualitative content analysis, it is also encouraged that the researcher should narrow down the objectives of analysis in category forms as done in the quantitative content analysis as this is the central instrument of analysis (Mayring 2014:40). Just as in the quantitative analysis, it increases inter- and intra-coder reliability as well as the stability of the process over time. In qualitative content analysis, different terminology is used that refers to the same thing as a “coding schedule” and “coding manual”. The term “coding frame” is used in place of “coding schedule”. The coding and the categorisation done in qualitative content analysis are further discussed below.

3.3.6.3 *Steps in qualitative content analysis*

Schreier (2014:174) describes the following sequence of eight steps that are followed in qualitative contents analysis:

1. Deciding on a research question;
2. Selecting the material;
3. Building the coding frame;
4. Segmentation;
5. Trial coding;
6. Evaluating and modifying the coding frame;
7. Main analysis; and
8. Presenting and interpreting the findings.

3.3.6.3.1 *Deciding on research question*

This step is usually defined by the researcher prior to deciding how to collect the data. The researcher defines what the research aims to achieve and derives the questions from it. The researcher then selects the material from which he or she can arrive at the answers to the research question. This follows the steps in a standard research development process.

3.3.6.3.2 *Selecting the material*

In qualitative content analysis various types of data can be analysed, for example open ended interviews, newspaper articles, existing documents and so on, but first the data has to be transformed into written text. In selecting the material, Mayring (2014:56) outlines three key steps that should be followed:

1. Define the exact material to be used for analysis, which includes defining the volume of material in its entirety; if samples of the material have been used they should be representative of the entire material and the sample should be selected using a proper sampling method.
2. Provide an exact description of where, from whom and under what circumstances the material originated.
3. Describe the formal characteristics of the material in the form it exists.

3.3.6.3.3 *Building the coding frame*

Schreier (2014:174) describes the coding frame as the heart of qualitative content analysis and it contains at least one main category and at least two subcategories. The main categories comprise of the aspects of the material that the researcher would like more information while the subcategories specifies what is said in the material in respect to the main categories. The further notes that a coding frame can have any number of categories, with subcategories having additional sub-subcategories.

Requirements of the coding frame include:

- The main categories should be unidimensional – they should cover only one aspect of the material only. But the main categories can be as many covering different dimensions;

- Subcategories should be mutually exclusive therefore ensuring that a unit of analysis can only be coded once under one main category;
- It should be exhaustive – all relevant aspects of the material must be covered by a category.

Building the coding frame follows the following steps:

1. Selecting the material: Building a coding frame requires only a small amount of the material and therefore it is important to select just a suitable amount of the material which is a representative of the whole material. Coding frames can also be built from previous related studies and theories. Therefore the researcher can choose to carry out inductive or deductive category formation (Mayring 2014:79). *Inductive category formation* is done when there are no previous studies or theories in that field and therefore the categories are developed from the raw data in the material. In *deductive category formation*, there usually exists a model or theory that one can base the initial category formation or one can adopt categories from previous studies.
2. Structuring and generation of the categories is done whereby structuring involves creating the main categories while generating involves creating the subcategories for each main category.
3. Categories are then defined with the definitions consisting of the category name, description of what is meant by the name, positive examples and decision rules. These definitions are usually done in a coding manual which allows for consistency during the coding process, especially when analysis is done manually;
4. After all the categories have been generated and defined, then they are revised to ensure there are no repetitions in the categories, and expanded if need be.

3.3.6.3.4 *Segmentation*

This involves dividing the material into units in a way that each unit fits into exactly one (sub) category of the coding frame, that is, parts of the material that can be interpreted in a meaningful way with regard to the subcategories. The size of the units should be chosen so as to match the definition of the categories (Schreier 2014:178). In qualitative criteria thematic criteria for dividing the units of coding is utilised which involves looking for topic changes and one unit corresponds to a theme.

3.3.6.3.5 *Trial coding*

In this step, the coding frame is tested on a sample of the text to check for consistency in the coding frame; this can be done using two coders working independently or one person coding and recoding the material on separate occasions.

3.3.6.3.6 *Evaluating and modifying the coding frame*

The coding frame is then evaluated for its consistency and validity by analysing the results of the trial coding. The coding frame is consistent if the units of coding are assigned to the same subcategories by the different coders or in the two rounds of coding. Validity – that is the extent to which the categories adequately describe the material and the concepts – in deductive category formation is best done by getting an expert in the research field to assess the coding frame, while in the inductive category formation, it is done by assessing the distribution of coding frequencies across the subcategories for a main category (Schreier 2012:166).

3.3.6.3.7 *Main analysis*

This is the stage where the entire material is coded and this is done by assigning the coding units to the categories in the coding frame. When done manually, the results are entered into a coding sheet. In the analysis, the researcher makes sense of the themes and categories, identifies them and draws inferences. It involves exploring the categories, identifying the relationships between categories while uncovering the patterns and testing categories against data (Zhang & Wildemuth 2009:312). Schreier (2014:180) points out that the results of the coding should be prepared so that they are suitable for answering the research question. Coding and analysis can also be conducted using computer software also known as Computer Assisted Qualitative Data Analysis Software, which measures references to specific concepts or themes within the text. Some of the software build and apply the categories, and therefore the researcher does not need to build them manually. Others allow for the researcher to apply predesigned categories and subcategories or develop their own (Saldana 2016:28).

3.3.6.3.8 *Presenting the findings*

Qualitative content analysis unearths themes, patterns and categories and therefore these are presented with illustrations made using quotes from the text. However,

depending on the research objectives, the researcher can choose to present the results using text matrices, graphs, charts, and conceptual frameworks (Schreier 2014:180).

3.4 RESEARCH SETTING

The research setting is the environment in which the research takes place, which can either be in the naturalistic settings or in controlled laboratory settings – the choice is usually based on the nature of the research question and type of information needed (Polit & Beck 2012:49).

This research was carried out in the natural settings with the researcher collecting the data in the field. The data was collected from two nursing training institution and from the hospitals in which the nursing students undergo their clinical practice. To achieve the overall aim of this study, the researcher recognised that there were certain characteristics that the nursing training institution had to possess to allow them to be most suitable to be in the sample. The inclusion criteria for the nursing training institution was:

- Had to be approved and accredited by the NCK;
- Trained pre-registration nurses (direct entry nurses and not RN-BScN upgrading nurses);
- Had completed a full four-year cycle of training; and
- Was willing to participate.

To maintain anonymity, the two schools will be identified as School A and School B while the hospitals were identified as Hospital A and Hospital B. Hospital A was utilised by School A for the clinical teaching while Hospital B was utilised by School B.

3.4.1 Profiles of the nursing schools

School A is a chartered public university located in the coastal region of Kenya. It offers a broad range of academic programmes to both undergraduate and graduate students and through various modes of learning such as e-learning, school-based, part-time and full-time. There are over 8,000 students enrolled in the academic programmes, ranging from short courses to doctoral studies at the university. The four-year Bachelor of Science Nursing programme, which commenced in 2011, is housed under the department of Nursing Sciences in the School of Health and Human Sciences. The programme is regulated and certified by both the NCK and the Commission of University Education (CUE) in Kenya.

School B, also a public university, is located on the western part of the Kenya. It also offers courses and programmes leading to CUE-recognised higher education degrees such as pre-bachelor degrees, bachelor degrees, masters degrees and doctoral degrees in several areas of study. The degree nursing programme is offered by the School of Nursing.

3.4.2 Profiles of the hospitals

Hospital A is a county-level five teaching and referral hospital in Kenya located in the coastal region of Kenya, with a bed capacity of 700, which caters for a population of three million. It provides both in- and outpatient services and serves as a referral hospital for the counties in the region. It has an average of 38,000 annual inpatient admissions and 198,000 annual outpatient visits. It is also an approved teaching hospital for most of the region's healthcare training institutions. Hospital B is also a county-level five hospital which is located in the western region of Kenya. It is a referral hospital that serves a population of over two million people residing in the counties around it. It has a bed capacity of 500, providing both in- and outpatient services. It is also an approved training hospital for the nursing, medical and paramedical programmes in the region

3.5 RESEARCH METHODOLOGY

Research methodology refers to the steps, procedures, and strategies employed to accomplish the specific aims of a research project (Polit & Beck 2012:733). The methods are derived from the research design and include the population to be studied, the sample and sampling technique, the data collection procedures and the data analysis plans.

In this section, a discussion on the methodologies employed in the various phases of the study will be presented. A brief definition and description of the concepts entailed will first be presented in the sections below.

3.5.1 Population

Babbie (2016:115) defined the population for a study as the group (individuals or elements) with similar characteristics about whom the researcher wants to draw conclusions. An element is that unit about which information is collected and that provides the basis of analysis. Population can further be divided into the *target population* and *accessible population*. The *target population* is the aggregate of cases about which the researcher would like to generalise while an *accessible population* is the aggregate of

cases that conform to designated criteria and the researcher is reasonably able to access for the study. It is imperative that a researcher defines the list of characteristics that are essential for membership into the study population and this referred to as the *eligibility criteria* or *inclusion criteria*. While defining the eligibility criteria, the researcher is required to consider whether the resulting sample is a good example of the population that he or she is interested in studying (Burns & Grove 2012:291; Polit & Beck 2012:274).

3.5.2 Sample and sampling

A *sample* is a subset of the population elements that is selected for a particular investigation and on whom the data is collected. It is considered to be representative of the accessible and target population. A sample is selected for study because it is considered to be more feasible, economical and practical instead of using the entire population. A sample is selected through a process known as *sampling* (Burns & Grove 2012; Neuman 2014:247).

Sampling is classified either as *probability sampling* or *nonprobability sampling*. In probability sampling, every element in the population has a probability of being selected for the sample and this can be achieved by doing the selection randomly. This then reduces the occurrence of bias and there is greater assurance of a representative sample. Probability sampling methods commonly employed in research are simple random, stratified random, cluster and systematic sampling. In nonprobability sampling, on the other hand, the selection of the elements is non-random, meaning that there is no estimate of the probability of each of the elements being included in the sample and therefore the representativeness of the sample is not assured. They include convenience sampling, quota sampling, purposive sampling, consecutive sampling and networking sampling (Babbie 2016:192; Burns & Grove 2012:298; Bryman 2012:186).

Different sampling methods were used for each phase of the study and are discussed in the sections below.

3.5.3 Sample size

The sample size for a population-based study is largely determined by three factors: the estimated prevalence of the variable of interest, the desired level of confidence and the acceptable margin of error.

3.5.4 Data collection

Polit & Beck (2012:725) define data collection simply as “the gathering of information to address a research problem”. It entails precisely and systematically gathering accurate, valid and meaningful information relevant to the objective, questions or hypothesis of the study. Data collection can either be done quantitatively or qualitatively. Quantitative data yield information about a research variable in numeric form while qualitative data are in narrative form – in the form of words rather than numbers (Polit 2012:104).

3.5.5 Reliability and Validity in quantitative research

3.5.5.1 Reliability

Reliability refers to the consistency of the measurement technique, that is, when applied repeatedly to the same object it yields the same result each time (Babbie 2016:146). According to Polit & Beck (2012:331), reliability of an instrument can be assessed in various ways, and the appropriate method depends on the nature of the instrument and on the aspect of reliability of greatest concern. Three key aspects are stability, internal consistency and equivalence.

Stability refers the extent to which similar scores are obtained on separate occasions despite extraneous influences to the tool. This is evaluated using test–retest methods and is reported objectively by computing a reliability coefficient, which is an index of the magnitude of the test’s reliability. The value of the reliability coefficient theoretically can range between –1.00 and +1.00 – the higher the coefficient, the more stable the measure (Polit & Beck 2012:331).

Internal consistency, also known as homogeneity, refers to the extent that the items in a tool measure the same trait and is evaluated with coefficient alpha (or Cronbach’s alpha). The normal range of values is between 0.00 and +1.00, and higher values reflect higher internal consistency (Burns & Grove 2012:333).

Equivalence, also known as interrater (or inter-observer) reliability, involves the comparison of two or more independent observers or coders measuring the same event and arriving at the same score (Polit & Beck 2012:334).

3.5.5.2 *Validity*

Validity is the extent to which an empirical instrument adequately reflects the real meaning of the concept being studied (Babbie 2016:148). Validity is appraised in various ways and each reflects different ways of gauging the validity of an instrument. These are face validity, content validity, criterion-related validity, construct validity, and convergent and discriminant validity

Face validity refers to whether the instrument reflects the content of the concept in question and this can be established by soliciting the opinion of experts whether on the face of the instrument it seems to measure the concept concerned (Bryman 2012:171).

Content validity refers to the degree to which an instrument has an appropriate sample of items for the construct being measured and adequately covers the construct domain. The content validity can be measured, like face validity, using an expert panel to evaluate its content (Polit & Beck 2012:337).

Criterion-related validity refers to the degree to which an instrument relates to some external criterion, that is, whether the instrument can predict other behaviours, experiences, or conditions (Babbie 2016:148). Polit & Beck (2012:338) make a distinction between two types of criterion-related validity – predictive validity and concurrent validity. Predictive validity refers to the adequacy of an instrument in differentiating between people's performance on a future criterion. Conversely, concurrent validity indicates the instrument's ability to distinguish individuals who differ on a contemporary criterion. By ensuring criterion-related validity, the end users of the results from the instrument are then assured the resultant actions will be effective, fair and valid.

Construct validity refers to whether the operational definition of a variable actually reflect the true theoretical meaning of a concept and it is usually closely linked to the content validity. Construct validation can be done using a statistical procedure called factor analysis which involves identifying clusters of related variables—that is, dimensions underlying a broad construct (Polit & Beck 2012:341).

Convergent validity is evidence that different methods of measuring a construct arrive to the same results whereas discriminant validity consists of providing evidence that different instruments that do not the same construct do not correlate strongly (Polit & Beck 2012:340).

3.5.6 Trustworthiness in qualitative research

As an alternative to reliability and validity, Lincoln and Guba (1985) and Guba and Lincoln (1994) proposed criteria for establishing and assessing the quality of qualitative research which are congruent with the tenets of qualitative research. The two primary criteria they proposed for assessing qualitative research are trustworthiness and authenticity. The criteria for developing trustworthiness are credibility, dependability, confirmability and transferability (Bryman 2012:390). According to Polit & Beck (2012:584), these criteria is equivalent to the criteria used to assess quantitative research of internal validity, reliability, objectivity, and external validity.

3.5.6.1 *Credibility*

In qualitative research, multiple accounts of a phenomenon under study can exist and therefore the researcher must arrive at the account that is credible and acceptable to all. Therefore credibility is the confidence in the truth of the data and its interpretation (Bryman 2012:390). To ensure the credibility of the findings, the researcher should ensure that the research is carried out ethically as well as present the results to the members of the study population for confirmation that the researcher correctly represented the phenomenon under study, also known as respondent validation. Lincoln and Guba (1985) further point out that credibility can be enhanced by use of triangulation, which is a process of using more than one approach or source of data to get different views of the phenomenon from different angles and these multiple approaches or sources should lead to the same conclusion.

3.5.6.2 *Transferability*

Unlike quantitative research, qualitative research involves studying a small group who share common characteristics intensively and in depth. The research must therefore be able to ensure transferability which refers to the extent to which findings can be transferred to or have applicability in other settings or groups or in a different setting from where the data were collected (Polit & Beck 2012:585). To increase transferability, a researcher firstly should ensure that the study participants are relevant to the phenomenon being studied. This can be by use of purposive sampling method, whereby the researcher consciously selects participants who are information rich. Secondly, the researcher should give a thick description of the phenomenon being studied as well as

ensuring that the research questions are fully answered which then provides a basis for the transferability of the results to other settings.

3.5.6.3 *Dependability*

The third criterion proposed by Lincoln and Guba is the dependability of the data over time and conditions which parallel reliability in quantitative research (Polit & Beck 2012:585). To do this, the researcher should ensure that all the records of all the phases of the research process are kept in an accessible form and can be available for audit by peers in all stages of the research to establish if the proper procedures were followed. This is known as an *audit trail*. The transparency of the audit trail increases the dependability of the research.

3.5.6.4 *Confirmability*

Qualitative research is by nature subjective, but the researcher should be seen to have acted in good faith and objectively in every aspect of the research process without letting his or her personal predispositions influence the results of the study. This can be achieved by establishing confirmability of the study (Polit & Beck 2012:585). Enhancing confirmability requires that the researcher is honest with any of the biases that may have influenced the study and uses the relevant methodological practices to explain them to the reader. The researcher also needs to describe in detail how the data was collected, coded and analysed as well as maintain an audit trail for external verification of the research process and data interpretation.

3.5.6.5 *Authenticity*

This refers to the extent to which the researcher genuinely and credibly shows the various realities experienced by the members of the population being studied including the lived experiences and the political and social implications of the research (Polit & Beck 2012:585). As cited by Bryman (2012:393), Lincoln and Guba proposed five ways of ensuring authenticity. These are:

1. Fairness: ensure that all members have fair access to the research inquiry and therefore all viewpoints are fairly represented.
2. Ontological authenticity: the individual member has a better understanding of the phenomenon that is being studied.

3. Educative authenticity: members of the study are better able to appreciate the perspectives of other members within their social setting.
4. Catalytic authenticity: the research has been able to act as a springboard for the members to take action to change their circumstances.
5. Tactical authenticity: the members have been empowered to act to sufficient degree to make the necessary changes.

3.5.7 Data analysis

Data analysis is a “systematic method of examining data gathered for a research investigation to support interpretations and conclusions about the data and inferences about the population” (Aaronson 2012:103). Data analysis is usually applied to both quantitative and qualitative research. Quantitative data analysis is the process of manipulation of numeric data through statistical procedures for the purpose of describing phenomena or assessing the magnitude and reliability of relationships among them. Qualitative data analysis is the organisation and interpretation of narrative data for the purpose of discovering important underlying themes, categories and patterns of relationships (Polit & Beck 2012:739).

Regardless of the type of analysis being carried out, Peck, Olsen, and Devore (2016:6) point out that it is important that the researcher understands the data analysis process. They outline the following steps in data analysis:

1. Understanding the nature of the problem: the researcher should understand the research objectives and questions that need to be answered by the data collected.
2. Deciding what is to be measured and how it will be measured: the researcher should know what information is needed to answer the research questions.
3. Data collection: the data then decides whether to use existing data or to collect new data to answer the research questions, the researcher then develops a comprehensive plan for the data collection.
4. Data summarisation and preliminary analysis: the data is then summarised numerically, graphically and in themes for the qualitative data, This provides the researcher with insight into the important characteristics of the data and hence assists the researcher in choosing the appropriate analysis method.
5. Formal data analysis: at this step, the researcher chooses and applies the most appropriate data analysis method.

6. Interpretation of the results: the researcher then uses the results to answer the research questions.

Below is a discussion of the main data analysis methods used in this study.

3.5.7.1 *Quantitative data analysis*

Quantitative data analysis involves using specific statistical tests or measures of association between two or more variables which are selected based on the specific research question and how well they represent the data to respond to the research questions (Aaronson 2012:103). The two main branches of qualitative data analysis are descriptive and inferential statistics.

3.5.7.1.1 *Descriptive statistics*

Descriptive statistics are used to describe the sample from which data was collected as well as summarise the data in a manner that allows for patterns to occur (Peck et al 2016:12). Descriptive statistics do not allow for drawing of conclusions from the data but rather they help in presentation of the data in a simpler and more meaningful way. Data can be described graphically and/or numerically. According to Ott and Longnecker (2016:82), the common ways of describing data graphically include using tables (also known as frequency distribution), graphs, pie charts, and/or histograms while the two most common methods of that are used to describe data numerically are measures of central tendency and measures of spread/variability. Measures of central tendency describe the central position of a frequency distribution for a group of data measurements. Statistics used to describe this include mode, median and mean. Measures of spread/variability summarise how the data measurements are spread out from the central position of the frequency distribution. Range, quartiles, variance and standard deviation are used to describe spread/variability.

3.5.7.1.2 *Inferential statistics*

Inferential statistics involves making generalisations from the sample about the population from which the sample was selected and assessing the reliability of such generalisations by quantifying the chance of an incorrect conclusion (Peck et al 2016:7). According to Ott and Longnecker (2016:233), populations are usually described by parameters that include mean, median, standard deviation and proportions. The two main categories of making inferences about the parameters are either by estimating the

value of the population parameter by calculating a confidence interval or by testing a hypothesis about the value of the parameter, also known as significance testing.

Inferential statistics deals with analysing two (called bivariate analysis) or more (called multivariate analysis) variables. There are many statistical tests or procedures that can be used to make inferences about a population. The decision of which statistical test to use depends on the research design, the distribution of the data, and the type of variable (continuous or categorical). Non parametric tests are used when the data is not normally distributed and parametric tests are used when the data is normally distributed. Table 3.1 describes some of the most common parametric statistical tests.

Table 3.1: Common parametric statistical tests

Statistical tests	Symbol	Independent variable	Dependent variable	Description
Chi square	χ^2	Categorical	Categorical	Tests for the strength of the association between two or more groups
Independent T-Test	t	Categorical	Continuous	Compare the means of two independent groups
Dependent T-Test	t	Categorical	Continuous	Compares the means of two paired groups i.e. there is only one group, but with two measurements for each item
Paired sample T-Test	t	-	Continuous	Compares two means (from represent two different or two different but related conditions) that are from the same individual, object, or related units.
Analysis of Variance (ANOVA)	F	Categorical	Continuous	Compare mean scores of two or more groups
Pearson correlation	r	Continuous	Continuous	Measure the strength of association between two variables and ranges between -1 (perfect negative correlation) to 1 (perfect positive correlation)
Simple linear regression		Continuous	Continuous	Models the relationship between a dependent (outcome) variable and one independent variable (predictor)
Multiple linear regression	R^2	Continuous	Continuous	Models the relationship between a dependent (outcome) variable and two or more independent (predictor) variable

(Ott & Longnecker 2016:555; Peck et al 2016:561)

3.5.7.1.2.1 Assumptions for statistical tests

According to Pallant (2016:189) statistical technique for testing significant differences between groups require that the following assumptions about the population from which the sample are drawn and the nature of the data are met:

1. The data is obtained from a random sample of the population
2. The dependent variable is continuous
3. The variables are normally distributed
4. The observations that make up the data are independent of each other
5. Samples are obtained from populations of equal variance

3.5.7.2 *Qualitative data analysis*

Flick (2014:5) describes qualitative data analysis as “the classification and interpretation of linguistic (or visual) material to make statements about implicit and explicit dimensions and structures of meaning-making in the material and what is represented in it”. It is aimed at describing the details of a phenomenon, to compare the differences between groups or individuals while giving explanations for the differences and developing a theory of the phenomenon under study. Van den Hoonaard and Van den Hoonaard (2008:186) point out that qualitative data analysis methods share the following common features:

1. It is an iterative process where data collection and analysis occurs simultaneously – early data analysis provided insights to enable gathering of further data.
2. It involves the use of memos whereby the researcher writes memos of ideas, questions and reflections that the researcher notices during data collection and analysis which are helpful in the data analysis.
3. Coding is a central aspect of most of the approaches used in the analysis, which involves purposely sorting and sifting through data to generate ideas and concepts in the raw data.
4. It requires that the researcher writes up the data as soon as possible to ensure that none of the ideas are lost.
5. It essentially moves towards creation of concepts/theories or relating to existing theories/concepts.

There are several approaches to qualitative data analysis, which include grounded theory analysis, phenomenological analysis, ethnographic analysis, critical discourse analysis, framework analysis, content analysis and thematic analysis (Bazeley 2013), but as Vaismoradi et al (2013: 398) observe, the approaches tend to overlap in terms of methods, procedures and techniques and therefore the researcher needs to choose the best approach to answer their research questions. Therefore, after an extensive literature

review, the researcher chose to utilise the thematic analysis approach to analyse the qualitative data. The rationale for using thematic analysis was that it is an approach that has been identified as a stepping stone for other approaches and it provides core skills for researchers to be able to conduct other forms of qualitative analysis (Vaismoradi et al 2013:400).

3.5.7.2.1 *Phases of thematic analysis*

Thematic analysis is described as a qualitative data analysis approach which entails data segmentation, categorisation based on themes and summarisation of the data so that the most important concepts are captured and reported thus providing a rich and detailed account of the data (Maxwell & Chmiel 2014:26; Braun & Clarke 2006:78). The key characteristic of thematic analysis is the process of coding, examination of the meaning and creation of a theme. A *theme* (sometimes known a category) is a concept derived from assessment of constructs within data that organise a group of ideas that answer the researcher's questions. Themes can further be divided to sub-themes, contain *codes* which are ideas or constructs within the data that are identified from the data explicitly which have a common point of reference and generally represent the same concept. According to Braun & Clarke (2006:79), themes can be identified through an inductive "data-driven" approach or deductive "theory-driven" approach. In the inductive approach, the data coding does not fit into a pre-existing coding frame, or the researcher's analytic preconceptions or theoretical interest but is rather derived from the data itself. Conversely, the deductive thematic analysis is driven by the researcher's theoretical or analytic interest in the area and the researcher may start the analysis with preconceived codes and themes based on literature review.

To carry out a successful thematic analysis, Vaismoradi, Jones, Turunen, and Snelgrove (2016:100) recommends that the researcher follows the following phases and stages in the analysis but cautions that a researcher should not follow a linear pattern with the analysis but rather follow a recursive process to achieve the results. The phases and stages are summarised in Table 3.2.

Table 3.2: Phases and stages of thematic analysis

Phases	Stages
Initialisation	Reading transcriptions and highlighting meaning units; Coding and looking for abstractions in participants' accounts; Writing reflective notes
Construction	Classifying; Comparing; Labelling; Translating & transliterating; Defining & describing
Rectification	Immersion and distancing; Relating themes to established knowledge; Stabilising.
Finalisation	Developing the story line

(Vaismoradi et al 2016:103)

1. Initialisation phase

a. Reading transcriptions and highlighting meaning

At this stage, the researcher immerses him- or herself in the data and becomes intimately familiar with it by reading and rereading the transcripts while noting all meaningful and recurrent ideas and issues in the data.

b. Coding and looking for abstractions in participants' accounts

The researcher then does coding of the ideas, which reduces the raw data to what is relevant to the research objectives. Through coding the researcher is able to move from the raw data to abstracts that lead to the development of the theme. Coding can also depend on whether the themes are “data-driven” or “theory-driven”. With data-driven coding the themes will depend on the data, but in the latter, the researcher approaches the data with specific questions in mind that one wishes to code.

c. Writing reflective notes

As noted in an earlier discussion, one of the key features of qualitative data analysis is the use of memos in which the researcher notes down ideas and reflections noticed during data collection and analysis. Vaismoradi et al (2016:105) point out that these reflective notes facilitate reflection of the entire process while providing an opportunity to remember, question and make meaning of the data.

2. Construction phase

a. Classifying

This entails grouping the large range of codes identified under a similar group that can be generalised to all despite their variety in details. The classification is largely based on the creativity of the researcher. Of importance is to ensure mutual exclusiveness of the codes so that a code is only assigned to one group that best fits it. During this stage, the themes become apparent as the recurrent unifying ideas.

b. Comparing

In this stage the researcher revises the codes, detects negative cases and connects codes to define the themes. The researcher identifies any groupings of codes that are repeated and transforms them into a general theme.

c. Labelling

The labels assigned to the themes give an understanding of the main ideas that developed the themes; therefore it is important that the researcher has a good knowledge of words and vocabulary that can be used as labels for the particular theme. More so, a simple phrase or sentence is more preferable than a word as it captures complete ideas.

d. Translating and transliterating

Translation is necessary because the researcher produces labels based on their own understanding of the concepts and experiences and therefore readers may not be able to understand the labels. This is especially the case in situations where the translation is from one language to another.

e. Defining and describing

It is important that the researcher describe how the themes were identified. The theme definition should capture the essence of what the theme is all about. The researcher should be able to describe the scope and content of each theme in a few sentences.

3. Rectification phase

a. Immersion and distancing

At this stage, Vaismoradi et al (2016:106) observes that in as much as it is important for researchers to immerse themselves in the data so as to have a better understanding, it is also important that they distance themselves from the data for a while or read the

analysis with an outsider perspective. This allows for self-criticism and also for looking at the analysis from a different angle.

b. Relating themes to established knowledge

Vaismoradi et al (2016:106) recommend that researcher carries out an inductive analysis in developing themes by postponing in-depth literature review before the data collection to prevent preconceived ideas and bias. But they also recognise that it is important that the researcher relates to the literature review as it allows for making inferences beyond the data itself.

c. Stabilising

In this stage, the researcher is required to describe the themes and the subthemes and to show their connections to each other.

4. Finalisation phase

a. Developing the story line

This is the last stage of the thematic analysis and in this stage the themes should be adequate enough to portray the story line based on the participants' accounts. The researcher is required to innovatively choose, chronicle and order the findings to be able to produce a story line and be able to also link the story to the literature.

3.6 PHASE ONE – CURRICULUM CONTENT ANALYSIS AND FACULTY PERSPECTIVES

In this phase, the researcher conducted a content analysis of the nursing pre-registration curriculum documents to identify and describe explicit aspects of patient safety that are covered in the curriculum as well as how they are taught and assessed. The researcher further explored the perspectives of the nursing faculty towards patient safety education in the nursing degree curriculum. To achieve this, key informant interviews were carried out to explore the extent to which the patient safety concepts are addressed in the nursing curriculum and the barriers and enablers to their integration in the curriculum of their institutions.

The methodology for each objective is discussed below.

3.6.1 Curriculum content analysis

3.6.1.1 *Sample and sampling technique*

A purposive sampling technique was used to select curriculum documents and practice assessment documents for content analysis. The documents were considered purposive because they were chosen based on the objectives of the study. The schools were informed to provide all the curriculum documents and materials they considered to be relevant for teaching and learning both in the classroom and the clinical settings. The documents sampled for analysis in each school are described in Table 3.3.

Table 3.3: Documents used for content analysis

Document	School	Description
Bsc Nursing curriculum	School A School B	This is a curriculum document that prescribes the four-year Bsc Nursing programme offered. It contains information on the philosophy of the programme, programme objectives, entry requirements, examination requirements and a description of the courses in the programme. The course outlines give more details of each course which include the course purpose, the expected learning outcomes, course content, learning and teaching methods, assessment methods and the course texts
NCK Manual of clinical procedures	School A School B	This is a manual that is produced by the NCK and given to each student designed as a guide to be used as a learning tool for the nursing students as well as the nurses in practice. It contains more than 146 clinical nursing skills categorised into five groups <ol style="list-style-type: none">1. Fundamentals of nursing2. Medical surgical nursing3. Obstetrics and midwifery nursing4. Mental health and psychiatric nursing5. Community health nursing
NCK Student training file	School A School B	This is produced by the NCK and serves as a guide for the student for the key competencies they are supposed to acquire both in the classroom as well as the during clinical practice
Student training log book	School A	This is a practice assessment document given to each student that stipulates the minimum number of selected procedures/activities in order to acquire key competences the student is required to perform during the practical sessions and clinical placements.

3.6.1.2 *Data collection and analysis*

As noted in the previous discussion, qualitative content analysis entails coding the raw data into categories of interest to the researcher, and key to doing this is the designing of a coding frame and a coding manual with distinct and clear dimensions and categories.

The researcher designed this based on patient safety concepts drawn from relevant literature, the “Patient Safety Curriculum Guide: Multi-professional Edition” and the QSEN concepts. (For the coding frame see Annexure K) The researcher then sought the opinion of patient safety practitioners to check the inclusiveness of the two. The documents were then searched for the key terms as specified in the coding frame using Microsoft Word and manually with pen and paper in the documents that were given in hard copy. The resultant search was summarised with the key phrases that contained the key word in context using direct quotes from the documents to ensure that the exact meaning of the data was captured.

3.6.1.3 *Reliability and validity*

As noted in the previous discussion, validity is concerned with ensuring that the empirical instrument adequately reflects the real meaning of the concept being studied. To increase the validity in content analysis, the research developed a coding frame and a coding manual with discrete dimensions mutually exclusive and exhaustive categories. A pre-test of the coding frame and the coding manual was carried out to ensure the suitability of the categories and the coding instructions. This was carried out on a curriculum for the post-registration programme in one of the nursing schools.

Reliability in content analysis entails ensuring that the measuring method yields the same result on repeated trials. The researcher increased reliability by using two coders to analyse each curriculum document during the trial coding. Of concern in content analysis is the inter-coder reliability whereby the two or more independent coders are measuring the same event and they have to arrive to the same answer. This is important because there is a high potential for subjective interpretation of responses by the coders. The trial coding mentioned above was also used to determine the inter-coder reliability whereby they checked if the units of analysis had received the same categorisation by the different coders.

3.6.2 *Perspectives of nursing faculty*

At this stage, the researcher sought the perspectives of nursing faculty on patient safety in the nursing curriculum in their schools. The researcher wanted to get an in-depth understanding on the extent to which the patient safety concepts are addressed in the nursing curriculum and the barriers and enablers to their integration in the curriculum of their institutions from the nursing faculty in the training institutions.

3.6.2.1 *Population*

The population in this segment of the study was the nursing faculty in the nursing training institutions.

3.6.2.2 *Sample and sampling technique*

The sampling technique used to get the sample was purposive sampling. Purposive sampling is a nonprobability sampling technique whereby the sample is selected based on the researcher's personal judgement on who is most informative and therefore is likely to give an in-depth view on a particular issue (Polit & Beck 2012:739). In order to get an in-depth understanding of the curriculum, the researcher identified the course leaders or their equivalent who are deemed to be influential in the curriculum design and operationalisation. The researcher also identified one other appropriate staff member (for example module leader, lecturer or clinical tutor) who was of additional value. A total sample of 13 faculty members were interviewed.

3.6.2.3 *Data collection*

Data collection was done through key informant interviews. According to Burns and Grove (2012:350), an interview is verbal communication between the researcher and the participant with the intention of getting information from the participant. An interview can be unstructured, semi-structured or structured. In an unstructured interview, the interview uses a brief set of prompts with a range of questions as a guide and allows the interviewee to respond freely. In semi-structured interviews, the interviewer has a list of questions or objectively specific topics to be covered, referred to as an interview guide, which the interviewee responds to freely with similar wording being used with each interviewee. In structured interviews, the researcher utilises techniques to limit the content of the interview and covers the specific set of questions that are to be answered with very little flexibility (Bryman 2012:470).

The researcher carried out semi-structured interviews on the sample participants. An Interview guide (See Annexure L) was developed which the researcher was able to:

1. Gather or clarify information about their undergraduate nursing curriculum;
2. Gain an understanding of patient safety from their personal view/perspective;
3. Identify where they think the topics/issues pertinent to patient safety lie within the curriculum;

4. Obtain descriptions of experiences with patient safety education;
5. Know the ways they teach patient safety; and
6. Get their opinion on ways in which patient safety education can be improved in Kenya.

3.6.2.4 *Data collection procedure*

The interviews were conducted in a location that was most suitable to the participant and at a convenient time for them. Most of them were done in their respective offices, which assured privacy and minimum interruptions. The researcher conducted the interviews personally to allow for better and deeper analysis of the information obtained. The researcher explained the purpose of the interview and requested permission to audiotape the interview and also take notes. The participant was also provided with written information in the interview consent form (see Annexure L) about the research and after agreeing with that the participant understood it, they were asked to sign and date the consent form. The researcher conducted the interviews based on the interview guide but also exercised flexibility so as to gain more information. The interviews lasted between 10 and 20 minutes.

3.6.2.5 *Measure to ensure trustworthiness*

The researcher made all efforts to ensure that trustworthiness and authenticity was ensured throughout the interview planning and implementation stage. The researcher utilised purposive sampling to get information-rich participants for the interviews to increase the transferability of the study results. To ensure this consistency, the researcher developed an interview guide based on extensive literature review of other similar studies that have been conducted in other areas but in somewhat different settings and this was used consistently with the interviewees with flexibility at the discretion of the interviewer. The entire proceedings were recorded and later transcribed. The records were maintained in case an audit trail was required to be carried out. (See Annexure Q for excerpt of one of the interviews).

3.6.2.6 *Data analysis*

The researcher followed the steps described in section 3.5.7.2.1 to carry out a thematic analysis of the faculty interviews. The researcher immersed herself in the data by carrying out the transcription of the audio recordings, and to increase validity the researcher then

listened to the interviews and compared them with the transcription to ensure accuracy of the data. The researcher reviewed any other memos that she had made during the data collection for any value addition information. Despite having predetermined theory-driven themes, the researcher systematically read through the transcripts and highlighted all the salient data related to the research objective which was translated into codes. The codes were then sorted into potential themes and subthemes and those that were not relevant to the objective were discarded. To ensure that the exact meaning of the data was captured, the researcher then noted the specific interviewees' phrases using their own words. The researcher reread all data related to each theme to ensure that themes were coherently linked to the data and necessary adjustments were made.

3.7 PHASE TWO: NURSING STUDENTS' PERCEPTIONS

In this phase the researcher utilised quantitative research methods to achieve the third objective of the study, which was to measure the perceptions of nursing students to patient safety knowledge and competencies. This was achieved by administering the Health Professional Education in Patient Safety Survey (H-PEPSS) Instrument to nursing students in schools A and B. The H-PEPSS measures the health professionals' self-reported patient safety competency on clinical and sociocultural dimensions of patient safety.

3.7.1 Population

The study population was the nursing students in the nursing training institutions sampled in the first phase. This included all the students in the 2nd, 3rd and 4th year level of study. From the university records, there was a total of 321 students undertaking a nursing degree in both universities at the levels of interest to the researcher.

3.7.2 Sample and sampling technique

3.7.2.1 *Sample size calculation*

The researcher used the formula below to calculate the sample size for a known population as outlined in Suresh (2014:232).

$$n_r = Z^2 \left[\frac{P(1-P)}{E^2} \right]$$

Where:

1. Z = level of confidence (1.96)
2. P = baseline level of the indicators (0.50, if no previous data are available on the target population)
3. e = margin of error (0.05)

$$n_r = 1.96^2 \left[\frac{0.50(1-0.50)}{0.05^2} \right]$$

$$n_r = 384$$

Because the researcher knew the population size, a finite population correction factor was applied using the following formula:

$$n_a = \frac{n_r}{1 + \frac{(n_r - 1)}{N}}$$

Where

1. n_a = the adjusted sample size
2. n_r = the original required sample size
3. N = population size

$$n_a = \frac{384}{1 + \frac{(384 - 1)}{321}}$$

$$n_a = 176$$

The researcher took into account the possibility of non-response and therefore multiplied the adjusted sample size with a non-response rate of 10%; thus the sample size for the study was 194.

3.7.2.2 Sampling technique

To get a representative sample, the researcher utilised a stratified random sampling technique. Stratified random sampling is a probability sampling technique whereby the population is divided into homogenous subsets or strata from which an appropriate and proportional number of samples are selected at random. This then ensures that the resultant sample is distributed in the same way as the population in terms of the stratifying criteria (Bryman 2012:192; Polit & Beck 2012:281). The researcher used the stratified random sampling by first grouping the population into stratas according to the level of

study. From the nursing schools records, it showed that 30% of the students were in the second year, 40% in the third year and 30% in the fourth year. From these stratas the sample was selected randomly.

3.7.3 Data collection tool

To measure the perceptions of the nursing students, the researcher administered a self-administered closed-ended questionnaire. The choice of the H-PEPSS as the tool of choice for this study was based on the fact that the H-PEPSS is a survey entrenched in a patient safety competency framework, focusing mainly on the sociocultural aspects of patient safety including culture, teamwork, communication, managing risk and understanding human factors. It was originally designed to measure health professionals' self-reported patient safety competence around the time of entry to practice; however its usage in other studies has shown it is a valid tool for evaluating gaps in patient safety knowledge and competences in health professionals students, thus helping the students reflect on patient safety-related issues (Bressan et al 2016:209; Ginsburg et al 2012:676; Stevanin et al 2015:926).

3.7.3.1 Structure of the data collection tool

The data collection tool (See Annexure O) was divided into two sections:

1. Part A – Demographic Information: The respondent provided demographic information about themselves.
2. Part B – The H-PEPSS survey tool.

The H-PEPSS measures the student's confidence level on six domains of patient safety competencies. These are:

1. Contribution to a culture of patient safety;
2. Working in teams for patient safety;
3. Communicating effectively for patient safety;
4. Managing safety risks;
5. Optimising human and environmental factors; and
6. Recognising, responding to and disclosing adverse events.

The H-PEPSS is further divided into three sections. Section 1 contains 27 items that assess the students' confidence in learning about the six sociocultural domains of patient

safety and the clinical aspects of safety (safe clinical practice in general, hand hygiene, infection control and safe medication practices). According to the developers of the tool, inclusion of the clinical aspects of safety section serves the purpose of helping the respondents to differentiate between the clinical and sociocultural features of patients and therefore shift their focus to the latter (Ginsburg et al 2012:678). Each item begins with the stem “I feel confident in what I learnt about ...” and the respondents are asked to respond separately about their confidence in what they learnt in the classroom setting versus the clinical setting. Therefore the H-PEPSS is able to measure the self-reported patient safety competence in the two learning environments. Section 2 assesses the perception of the student on how the patient safety issues are addressed in the health professional education while Section 3 measures how comfortable they are speaking up about patient safety.

All items are answered using a 5-point disagree–agree Likert type scale and include a “neutral/unsure” option. Mean scores are then calculated and analysed from the items in each dimension for each learning setting separately because the two learning environments provide very different educational experiences.

3.7.4 Validity and reliability

The construct validity of the H-PEPSS was established by the developers of the tool using the confirmatory factor analysis (CFA) which they explained that it was a better measure as it represented a measurement model which depicted the links between latent variables (the six PS competency domains) and their observed measures, that is the 23 items used to measure these six domains. The internal consistency reliability of the six dimensions of PS competence was also established by the developers using Cronbach’s alpha coefficients, with it exceeding 0.80 for all six dimensions (Ginsburg et al 2012:678).

3.7.5 Pre-testing of the research instrument

The survey instrument was pre-tested on ten nursing students from a nursing training institution that was not included in the study. The sample size of the pretest was based on the guidelines by Patrick et al (2011: 982) that it be based on the diversity of the population under study and the complexity of the tool. The population was homogenous and were university students who use English language for instruction and the tool was a simple tool that has been validated and used extensively in other studies. The objectives were to ensure that the tool was understandable and there were no ambiguous

or confusing statements, the tool was comprehensible and clear and the data it produced was reliable.

The results of the pre-test showed that the tool was easy to complete, and did not take a long time to complete. Of the ten students, only one took 26 minutes to complete the questionnaire. No ambiguity was reported and the questions were clear and concise. One of the students reported difficulty in the word “ergonomics”. The researcher included a footnote that explained what the word meant.

3.7.6 Data collection procedure

The questionnaire, which was a self-administered tool, was distributed to the participants during their break times from class. They were informed that the completion of the questionnaire was voluntary, and refusal to participate was not punishable. Those who were willing to participate were given an opportunity to read and understand the questionnaire information and instructions at the front page of the tool and then ask any questions. If they were in agreement, they were required to sign and date the consent. They were allowed privacy and time to complete the questionnaire.

3.7.7 Data management and analysis

Data entry was done based on the coding done on the questionnaire and this was entered to a data matrix created on the IBM SPSS version 21. The questionnaire was divided into two sections: Part A where the respondent provided demographic information about themselves and Part B which was the H-PEPSS survey tool. The findings are therefore presented for the two parts. These demographic characteristics consisted of age, gender, university and year of study. The gender, university and year of study were on a categorical scale of measurement; therefore these were presented in the form of frequencies and percentages. The age of the respondents was entered on a continuous scale, and therefore this was presented in the form of mean and standard deviation. A chi square test for independence was conducted to analyse if there was a significant association between the gender and the year of study while a Kruskal–Wallis test was used to examine the relationship of year of study and the age of the respondents.

The Part B of the questionnaire which comprised the H-PEPSS, was further divided into three sections. Section 1 contained 27 items that assessed the students’ confidence in

learning about patient safety in the classroom and clinical settings under the following subscales:

1. Clinical aspects of safety – 4 items
2. Culture of patient safety – 4 items
3. Working in teams with other health professionals – 6 items
4. Communicating effectively – 3 items
5. Managing safety risks – 3 items
6. Understanding human and environmental factors – 3 items
7. Recognise, respond to and disclose adverse events – 3 items.

Each subscale began with the stem “I feel confident in what I learnt about ...” and the respondents were asked to respond separately about their confidence in what they learnt in each item both in the classroom setting and the clinical setting. All items were answered using a 5-point disagree–agree Likert-type scale and included a “neutral/unsure” option. The Likert items were coded as follows 1 = strongly disagree, 2 = disagree, 3 = neutral/unsure, 4 = agree, 5 = strongly agree. “Strongly agree” or “agree” responses indicated confidence of the nursing students in what they learn about the items. Mean and standard deviation scores were then calculated and analysed from the items in each subscale for each learning setting separately because the two learning environments provided very different educational experiences as per the authors’ recommendation. Section 2 contained seven items that assessed the perception of the student on how the broader patient safety issues are addressed in health professional education while Section 3 contained three items that assessed how comfortable the students were in speaking up about patient safety. Mean scores and standard deviations were also analysed for the items in each section

In addition, the independent sample T-test was used to examine the differences between genders on the subscales and means of the H-PEPSS while paired T-test was used to examine the differences in self-reported confidence in patient safety learning in the classroom setting compared to learning in the clinical setting (2-tailed test). One way ANOVA test was used to examine the relationship of year of study and H-PEPSS mean scores. To verify if the data met the assumptions of the statistical tests, the Levene’s test was done to check the homogeneity of variance and Shapiro Wilk test was used to check for the distribution of the data. A p value less than 0.05 was considered significant.

Data is presented in tables, graphs and charts in Chapter 4.

3.8 PHASE THREE: ORGANISATIONAL PATIENT SAFETY

The phase was focused on the healthcare organisations to which the nursing students undergo their clinical education. The researcher assessed the patient safety culture of the organisation in the clinical sites as this plays a great role in the “hidden curriculum” as detailed in the literature review. The healthcare organisations that were included in this phase were the two main hospitals that are mainly used for clinical education by the nursing schools sampled in objective one. The researcher also explored the perceptions of the hospital staff on the preparation of the pre-registration nursing students in patient safety. By conducting key informant interviews, the researcher sought the perceptions of those in a position to inform how the nursing students handle matters related to patient safety on how well the pre-registration curriculum prepares them to handle patient safety in the clinical areas, the role of the clinical sites in patient safety education, including the facilitators and barriers to performing their roles.

3.8.1 Assessment of the healthcare organisation patient safety culture

As pointed in the literature review, the patient safety culture that students are exposed to during their clinical teaching and learning process plays a crucial role in shaping their patient safety practice. Therefore the researcher found it prudent to understand the patient safety culture of these healthcare organisations. This forms a basis for further research to determine how this culture affects the student.

3.8.1.1 *Population*

The population for this study was doctors, clinical officers and nurses working in the two hospitals that the nursing training institutions use for clinical teaching and learning. The researcher’s rationale for inclusion of the three occupational groups was that in the healthcare system the three groups have the most frequent interaction in patient care and usually function as a team which is a major dimension of patient safety culture. Their interaction and attitudes play a key role in patient care provision as well as shaping the safety behaviour of the healthcare professional student. The researcher also aimed at explicitly comparing the groups in regard to their patient safety behaviour. However, at the time of data collection in Hospital B there was a nationwide doctors’ strike in Kenya and therefore there only a few were available doctors in that hospital. However, in

Hospital A, doctors were available when the data was collected. Data from the hospital management showed that there was a total of 729 nurses and clinical officers working in the two hospitals.

3.8.1.2 *Sample size and sampling technique*

With a population size of 729, the researcher calculated a sample size of 277 at a 95% confidence level, a margin of error of equal to or less than 5% and a non-response rate of 10%, using the formula described in section 3.7.2.1. Simple random sampling was used to get a representative sample of the staff in the hospitals. This sampling technique is the most basic of the sampling techniques that ensures that each unit of the population has an equal probability of being included as a sample (Burns & Grove 2012:299). To carry out simple random sampling, the researcher has to define the study population, develop a sampling frame and determine the sample size for the study. The researcher then assigns each unit in the study population a number and then using either a table of random numbers or a computer programme, the researcher selects different random numbers that lie between one and the total population. A simple random sampling technique reduces bias (conscious or unconscious).

3.8.1.3 *Inclusion criteria*

To be eligible for inclusion in this phase of the research, participants were required to be:

- A nurse – nurse manager, staff nurse or intern;
- A doctor – Consultant, medical officer, intern;
- A registered clinical officer; and
- Willing to participate in the study and had given their written consent.

3.8.1.4 *Data collection tool*

To assess the patient safety culture in the healthcare organisation, the researcher utilised a structured approach to data collection by using the SAQ – Short Form. The SAQ –Short Form is a self-administered closed-ended questionnaire which was developed by Sexton et al (2006) and is owned by the University of Texas Health Science Center at Houston – Center for Healthcare Quality and Safety team. The development of the tool has been discussed in detail in the literature review.

The SAQ has various versions for use in different settings. These versions are:

1. Safety Attitude Questionnaire – Short Form
2. Safety Attitude Questionnaire – Teamwork and Safety Climate
3. Safety Attitude Questionnaire – Ambulatory Version
4. Safety Attitude Questionnaire – ICU Version
5. Safety Attitude Questionnaire – Labour and Delivery Version
6. Safety Attitude Questionnaire – Operating Room Version
7. Safety Attitude Questionnaire – Pharmacy Version
8. Safety Climate Survey.

According to the developers, the SAQ versions were developed with the understanding that each clinical area is unique, with distinctive characteristics, and members from the same unit are likely to have similarities in the way they perceive their work areas. However, they recommend that researchers utilise the SAQ – Short Form for which they have also included the scoring key and the scale computational instructions (Center for Healthcare Quality and Safety 2016).

Because SAQ – Short Form is a copyrighted questionnaire, the researcher obtained permission to use the questionnaire, which was granted on 22 October 2015 for use of any version of the tool with the understanding that the developers did not have the editable version of the tool, but the researcher could make modifications to fit the research (see Annexure P). Based on this agreement, the research made slight modifications to the tool by dividing the tool into two sections.

Section A: Demographic information

This collected the demographic data of the study participants which included gender, age, professional status, academic qualifications, work experience, current unit of assignment and the length of time in the current unit of assignment

Section B: SAQ – Short Form

The researcher ensured that all the 36 items included in the copyrighted questionnaire were included in the modified document as they are in the copyrighted questionnaire (See Annexure O for both questionnaires).

3.8.1.4.1 Structure of the Safety Attitude Questionnaire – Short Form

The SAQ – Short Form is a 36-item questionnaire that measures patient safety culture on six domains:

1. Teamwork climate: perceived quality of collaboration between personnel;
2. Safety climate: perceptions of a strong and proactive organisational commitment to safety;
3. Job satisfaction: positivity about the work experience;
4. Stress recognition: acknowledgement of how performance is influenced by stressors;
5. Perceptions of management: approval of managerial action – measured at two levels – unit and hospital); and
6. Work conditions: perceived quality of the work environment and logistical support.

The questionnaire is self-administered, whereby for each of the respondent answered using a six-point strongly disagree–strongly agree Likert-type scale and included a “neutral” and “not applicable” option. Clear instructions were outlined on the front page of the SAQ – Short Form.

3.8.1.5 *Validity and reliability*

The validity and reliability of the SAQ – Short Form has been established by the developers of the tool and this was discussed in detail in the literature review. According to Sexton et al (2006:5), the construct and convergent validity of the tool is demonstrated by its repeated and consistent use in various studies and by various organisation in assessing their patient safety culture. They note that some of the organisations, for example Johns Hopkins Hospital, use the SAQ – Short Form to assess their patient safety culture at the clinical area level annually, and use the information as part of their quality-improvement projects. Further, they have also established the construct validity by carrying out multi-level CFA with the final tool demonstrating satisfactory validity. To further demonstrate that the SAQ – Short Form is a psychometrically sound instrument they established the composite reliability using the Tenko Raykov’s coefficient, which resulted in a coefficient value of 0.90, indicating strong reliability

3.8.1.6 *Pre-testing of the research instrument*

The SAQ – Short Form was pre-tested by administering it to five nurses from a hospital that was not included in the study to check for clarity, simplicity and ambiguity. The participants in the pre-test then provided feedback to the researcher on the various aspects of the questionnaire. The researcher was able to identify the aspects of the tool that were difficult to understand or were ambiguous as well as to establish if the tool was culturally sensitive. The participants in the pre-test reported that the questionnaire was

simple and easy to understand. However, it was noted that the use of “Disagree Slightly” and “Agree Slightly” was confusing. The researcher therefore changed these to “Disagree” and “Agree”.

3.8.1.7 *Data collection procedure*

The questionnaire which was a standard self-administered tool was distributed to the respective participants in different units of the two hospitals. Prior to completion of questionnaires, the research assistants requested the participant to read and understand the information provided on the front page of the questionnaire. If they were in agreement, they signed and dated the consent form. The research assistants gave the participants further information on how to fill in the questionnaire before they started and requested them not to write any identifying data anywhere on the questionnaire. A serial number was allocated for each questionnaire for data entry purposes. Respondents were expected to spend 15 to 20 minutes to filling in the questionnaire and they were each given the necessary privacy to complete the questionnaire. After completion of the questionnaire the research assistants checked each of them to ensure they were filled in correctly.

3.8.1.8 *Data management and analysis*

Data entry and analysis was done using a data matrix created on the IBM SPSS version 21.0. The demographic data collected was gender, age, professional status, academic qualifications, work experience, current unit of assignment and the length of time in the current unit of assignment, which were categorical data. For better analysis, the professional status of the participants was regrouped whereby nurse–staff and nurse–intern were grouped as “staff nurse”, while the medical officer and intern doctor were grouped as “doctor”, therefore yielding four groups of doctor, nurse manager, staff nurse and clinical officer. The respondents were also asked to write down the unit they were currently working from which the respondents gave various answers. For ease of analysis, the researcher grouped the units as medical, surgical, obstetrics & gynaecology (Obs/Gyn), paediatrics and outpatient department (OPD)

The second section of the questionnaire was the SAQ – Short Form which is a 36 item questionnaire that measures patient safety culture on six dimensions and the items are grouped as follows:

1. Teamwork climate: Items 1–6
2. Safety climate: Items 7–13
3. Job satisfaction: Items 15–19
4. Stress recognition: Items 20–23
5. Perceptions of management: Items 24–28 (each item measured at unit and hospital)
6. Work conditions: Items 29–32.

According to the SAQ authors, the items 14 and 33–36 are not part of the scales above and are treated as independent items but were included in the computation of the total mean of the SAQ –Short Form. All the items were answered following a five-level Likert scale which was coded as 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree. The final scores ranged from 0 to 100, where zero represents the worst and 100 the best perception of the safety culture. The computation of the 100-point scores for each dimension was done as per the instructions of the authors of the instrument as follows:

1. Items 2, 11, and 36, which are negatively worded, were all reverse scored which means that higher scores referred to more positive safety attitude.
2. The mean of each set of items from the scale was calculated.
3. One was subtracted from the mean.
4. The result was multiplied by 25.
5. The score was therefore ordered as follows: disagree strongly equals 0 points, disagree 25 points, neutral 50 points, agree 75 points and agree strongly 100 points.
6. The items in each domain were then added up and divided by the number of questions in each domain and a final score was given for each domain.

Descriptive statistics was used to analyse and describe the demographic data of the participants and the scores of the SAQ dimensions. Frequency counts and percentages were used to describe the participant characteristics while mean and standard deviations were used to summarise the scores.

The following inferential statistics were done to summarise the data:

1. Independent sample T-test was used to compare the mean scores for categories that had two independent categorical data. This included gender and hospital.
2. One-way ANOVA test was used to compare the mean scores of more than two categorical groups, and Tukey's post hoc tests were conducted to identify the

differences when the ANOVAs were significant. This included age, position held, highest qualification, years of experience, type of unit worked, and length of time in current unit.

To verify if the data met the assumptions of the statistical tests, the Levene's test was done to check the homogeneity of variance and Shapiro Wilk test was used to check for the distribution of the data. All analyses used a significance level of $p < 0.05$ and 95% confidence interval. The results are presented in the form of tables, charts and graphs in Chapter 4.

3.8.2 Perceptions of the hospital staff on pre-registration patient safety education

The researcher explored the perceptions of the hospital staff on the preparation of the pre-registration nursing students in patient safety by conducting key informant interviews, that is, representatives from the nursing management, those linked to patient safety and the frontline nurses who are involved with student learning in the clinical areas. The researcher sought the perceptions of those in a position to inform how the nursing students handle matters related to patient safety on how well the pre-registration curriculum prepares them to handle patient safety in the clinical areas, the role of the clinical sites in patient safety education, including the facilitators and barriers to performing those roles.

3.8.2.1 *Sample and sampling technique*

Purposive sampling was used to select the most suitable participants for this stage of the study since the researcher was interested in obtaining specific information from them. The researcher was interested in getting the perceptions of those in a position to inform how the nursing students handle matters related to patient safety and how well the pre-registration curriculum prepares them to handle patient safety. Therefore the most informed were selected from nursing management, those linked with quality patient safety and the frontline nurses who are involved with student learning in the clinical areas

3.8.2.2 *Data collection*

Semi-structured key informant interviews were carried out based on an interview guide (Annexure M). The researcher developed an interview guide taking into account the following:

- The questions had to be guided by the objective of the study.
- The questions were based on literature review.
- The language of communication was standard.

3.8.2.3 *Data collection procedure*

The researcher commenced the data collection procedure by meeting with the heads of nursing in the two hospitals to assist in the recruitment of eligible nursing staff who were best able to provide the relevant information for the study and were interested in the study. A choice of nurses was made ranging from those who were in charge of the wards that the nursing students undertake the clinical learning, the clinical educators responsible for the students in the hospital and the preceptors/mentors who support and guide the students during their clinical rotations. The researcher contacted the interested participants to ensure eligibility criteria were met and also informed them the purpose of the study. An appointment was set to perform data collection at the participants' locations of choice.

The interviews were conducted in a quiet office outside the work stations so as to reduce interruptions and also to ensure privacy. Any further questions by the participants about the study were addressed and the researcher requested permission to audiotape the interview and take notes. If the participant agreed to be interviewed, they signed and dated the interview consent form (See Annexure L). The researcher utilised a semi-structured interview guide to carry out the interviews (See Annexure M) which lasted between 20 and 30 minutes.

3.8.2.4 *Measures to maintain trustworthiness*

As per the requirements for maintaining validity and reliability in qualitative studies, the researcher ensured trustworthiness throughout this stage of the study. The researcher utilised purposive sampling and therefore was able to get the most informed participants for the interviews. The researcher also used an interview guide in all the interviews which were taped and then later transcribed. The tape records and the transcribed interviews were maintained as part of the audit trail and made available for audit purposes.

3.8.2.5 *Data analysis*

The researcher conducted a thematic analysis of transcribed interviews following the steps described in section 3.5.7.2.1.

The researcher conducted the transcription of the audiotaped interviews and then listened to the interviews while comparing with the transcription notes to ensure accuracy. In so doing she was able to note all meaningful and recurrent ideas and issues in the data and this became the initial coding from which the themes and the subthemes would emerge. The researcher then read through the transcripts again and determined any other new codes that had been missed during the initial coding and also collapsed others that were similar by comparing similar participant interview excerpts. During the process, the researcher avoided personal bias by remaining open and spontaneous. The codes were then revised and connected to define the themes and subthemes – any codes unrelated to the research objective were detected and removed. The researcher then critically reread the transcripts again with the emergent themes and subthemes while trying to maintain a different angle as a form of self-criticism to ensure that nothing was missed.

3.9 ETHICAL CONSIDERATIONS

In conducting research involving human participation, it is important that the researcher is aware and adheres to the agreements by researchers on what is ethical and moral. Silva (2012:156) refers to ethics as “what one morally ought to do or be in conducting, evaluating, disseminating, and applying research to practice”. In the different disciplines, codes of ethics have been introduced that govern the practice and also guide the professions in conducting the research. Nonetheless the recurring aspect of all these codes of ethics is the adherence to the universal ethical principles which protect the rights of the participants and mainly focus on respect for autonomy, nonmaleficence, beneficence, and justice. Silva (2012:157) asserts that ethics go further than just ethical principles but also include the moral character of the researcher – he or she should aim to be morally upright by being caring and having compassion, trustworthiness and integrity. The lack of these qualities in research is referred to by Babbie (2016:68) as deception. In this section the researcher outlines the ethical and moral principles and the efforts that she made to ensure that they were all adhered to.

3.9.1 Ethical principles

3.9.1.1 *Autonomy*

Research in some cases involves intrusion into people’s lives and requires them to give personal information which is required to answer some of the research questions. The

principle of autonomy protects the participants and ensures that their participation is voluntary in nature and that they were not coerced (Babbie 2016:62). According to Silva (2012:156), a researcher can assure the participant of autonomy through issuance of informed consent statements which assure the participants of voluntariness, comprehension of the information and freedom from external influences in the research process. Furthermore, the informed consent statement contains the purpose of the research, duration and nature of the participants' involvement in the data collection process, the anticipated benefits and risks, information on the voluntariness, anonymity and confidentiality of the information and the need to carefully understand all the aspects of the research before they consent to participate.

The researcher ensured the autonomy of the participants by ensuring that in all the stages of the data collection, the participant was provided with information in written form and verbally (where it was necessary). They were informed of their rights in the study and were allowed to withdraw without any repercussions. After reading the information form only then was the participant asked to sign the consent. See Annexures L & M.

3.9.1.2 *Nonmaleficence and beneficence*

Nonmaleficence refers to doing no harm, while beneficence refers to preventing harm and doing good. These are two principles which deal with the risks and benefits involved in the research process. During the data collection, the participant can be harmed or benefitted physiologically, psychologically or financially. While the benefits may increase participation, the researcher should take measures to ensure that the participant is protected from these harms (Silva 2012:157). Babbie (2016:65) reports that besides the harm that the participant may encounter during the data collection phase, a participant can also suffer from harm during the data analysis and reporting process whereby a participant may be able to identify themselves in a report although they are not mentioned by name and if the report is not favourable, they may find themselves troubled by the report hence harming them psychologically.

To enforce the principle of nonmaleficence and beneficence, the research assured the participants that the study had no known risks or benefits and assured them that the data from the study was not to be used at any time to evaluate their performance in their workplaces. To ensure confidentiality, the data collection tools were all coded in a format that would not be used to refer back to the participant. The phrases used for reporting

the data analysis results of the interviews were referred to using special codes developed by the researcher.

3.9.1.3 Justice

Justice entails the participants' right to fair treatment and their right to privacy (Polit & Beck 2012:155). Fair treatment ensures that the risks and harms of the research are distributed equitably to all and the selection of the participants is based on the requirements of the research, which should be done ethically. The researcher is also obliged to treat fairly the participants who decide to opt out of the research and should honour any agreements that they had with these participants. They should also give participants access to the researcher staff for further clarification as well as information on who to contact in case they feel their rights are being violated.

The right to privacy ensures that the research does not intrude into the participants' lives more than necessary and assures the participant that their privacy will be maintained throughout the research process (Polit & Beck 2012:156). Babbie (2016: 65) outlines that two ways of ensuring privacy are by maintaining the anonymity and the confidentiality of the participants. Anonymity is guaranteed when the subjects identity cannot be linked, even by the researcher, to their individual responses (Burns & Grove 2012:117). However, Babbie (2016:65) notes that a researcher may not always be able to assure anonymity in some of the research methods, for example interviews, because the information is collected directly from an identifiable person. In such cases the researcher should go further to assure confidentiality of the information they provide, where the researcher assures the participant that the information will not be shared without the authorisation of the participant.

To ensure justice, the participant was assured of anonymity by use of codes on the data collection tools. During the quantitative surveys, the participants were allowed to fill in the questionnaires at their chosen location to ensure privacy while the interviews were carried out in private spaces chosen by the participant. They were also assured that all the information provided was confidential and the records generated from the study kept secure and in the secure possession of the researcher.

3.9.2 Securing informed consent

The above principles can be formalised by getting participants to sign an informed consent form. Bryman (2012:140) outlines that informed consent forms provide the participants an opportunity to be informed about the nature of the research and what their participation entails. The researcher also maintains this form as a record of their consent in case any concerns should arise in future about how the researcher ensured that the research was ethical.

The researcher therefore conformed to the ethical principles by providing informed consent forms at all the phases of the study. In the survey stages, the researcher included a participant informed consent form, which was attached to the front of each survey tool. The informed consent form outlined what the research was about, the identity of the researcher, the role of the participant, the purpose of the research, the anticipated risks and benefits and an assurance of anonymity, confidentiality and voluntary participation. Further, the researcher included the contact of the investigator as well as who to contact in case they had concerns about their rights as a research participant (See Annexures L and M). During the interviews, the researcher provided the interviewees with interview consent forms which they signed before the commencement of the interview (see Annexures L and M).

3.9.3 Permission to conduct the study

In order to ensure objectivity in ensuring ethical principles, it is important that the entire research is reviewed by an independent body to ensure that the researcher has adhered to the ethical principles. This is achieved by institutional ethics committees or institutional review boards. These committees/boards usually serve a primary purpose of ensuring that the risks faced by the participants are minimal. They also protect institutions by ensuring that the researcher behaves in a way that the research does not cause any legal or moral issues to the institution (Babbie 2016:71; Bryman 2012:134). The researcher therefore submitted an application to the Pwani University Ethics Review Committee and attached the research proposal including all the relevant documents that have been referred to in this chapter, see Annexures A and B for the ethical clearances from UNISA and Pwani University.

The researcher also obtained permission to conduct the study from the respective universities and the hospital boards (See Appendices C–J for the requests for approval and permission letters).

3.9.4 Scientific integrity of the research

Thought out the research process ensured scientific honesty and integrity by ensuring that all the ideas and expressions that were attributed to others were accredited with a citation and the relevant reference. The researcher maintained objectivity in the selection and application of the research methods as well as in the analysis, reporting and discussion of the results. She also acknowledged how her involvement with the data collection and analysis may affect the findings and introduce bias. She described how she was able to curb any biasness and establish authenticity of the study findings.

3.10 CONCLUSION

In this chapter, the researcher discussed the various designs and methodologies used in the entire study. The researcher described the research designs, the study population, the sample and sampling techniques applied, data collection methods used as well as the process of data collection. Further, the researcher explained how validity and reliability were maintained at every stage of the research and how the data was analysed. Ethical considerations and how they were adhered to were also described in detail.

In Chapter 4 the results will be presented and described in detail.

CHAPTER 4

PRESENTATION AND DESCRIPTION OF THE RESEARCH FINDINGS

4.1 INTRODUCTION

The study, as described in Chapter 3, was divided into three phases and the researcher utilised both quantitative and qualitative research methods to achieve overall aim of the research which is to explore and describe the integration of patient safety concepts in the undergraduate nursing programmes in Kenya. The specific objectives for each phase were as follows:

- Objective 1: Identify the explicit patient safety concepts in the formal pre-registration nursing curriculum.
- Objective 2: Explore the perspectives of nursing faculty on patient safety education in the pre-registration nursing curriculum.
- Objective 3: Measure the patient safety knowledge and competencies as perceived by the nursing students.
- Objective 4: Assess the patient safety culture that the students are exposed to in the hospitals that nursing students receive clinical education;
- Objective 5: Explore the perceptions of the hospital staff on the preparation of the pre-registration nursing students in patient safety.
- Objective 6: Develop strategies for the integration of patient safety concepts in the preregistration nursing curriculum

The purpose of this chapter therefore, is to present the results of the data analysis for the three phases of this study. Chapter 5 will present a discussion of the emergent themes from the consolidated findings.

4.2 PHASE ONE: CURRICULUM CONTENT ANALYSIS AND FACULTY PERSPECTIVES

4.2.1 Overview

The first phase of this study was to identify the explicit patient safety concepts in the formal pre-registration nursing curriculum and also get the faculty perspectives on patient safety concepts in the nursing curriculum. The researcher performed a qualitative content analysis of the pre-registration nursing degree curriculum documents and the practice

assessment documents from two universities to identify and describe aspects of patient safety that are covered in the pre-registration curriculum as well as how they are taught and assessed. The researcher also carried out semi-structured interviews on key informants to get an understanding of the nursing curriculum and explore the extent to which the patient safety concepts are addressed in the nursing curriculum and the barriers and enablers to their integration in the curriculum of their institutions. The two objectives were related to each other as they provide information about patient safety in the curriculum and how they are taught and assessed through the content analysis and the faculty interviews.

4.2.2 Descriptions of the nursing programme

The nursing programme under study in both schools was at the degree level which runs for four years. It was based on the prescribed curriculum by the NCK and therefore followed the same structure. The students admitted into the programme are both government-sponsored and self-sponsored students. In both cases candidates must obtain the prescribed minimum grades in the Kenya Certificate of Secondary Education in Biology, Chemistry, Physics/Mathematics and English/Kiswahili. Each year of the programme was divided into three trimesters – two trimesters for theory and one trimester for practice – each 16 weeks long.

The first year of both programmes was an introductory and foundational year where the student was taught the fundamentals of nursing – which deal with basic nursing skills – and the biological courses like anatomy, physiology, biochemistry which lay a foundation for the specific nursing course for the subsequent years. In the second and third year, the curriculum entailed the nursing-specific courses of adult nursing, paediatric nursing, community nursing, mental nursing as well as introduction to research and nursing education. The fourth year was composed of specialities in nursing, that is, critical care nursing, renal nursing, trauma and emergency nursing, forensic nursing, palliative nursing and health systems management. In both programmes, the students were also required to complete a research project as part of their coursework.

Teaching and learning for both programmes was mostly through the traditional lecture method but in most cases the choice of delivery method was left to the discretion of the faculty member. The various methods of teaching the concepts will be discussed in detail in the results of the faculty interviews. However, in both schools there was a skills lab

through which the students practised their skills through simulation. Both schools were using low-fidelity simulators. The overall assessment of the student's performance was done for each unit at the end of every semester and it comprised continuous assessments and written examinations. In some specific units, oral and practical examinations were administered as part of continuous assessments.

In both programmes there were stipulated key competencies that the student was required to achieve through the clinical placements in the hospital and the community. The third trimester was dedicated solely to this, where the student achieved these competencies through placement in different units for a prescribed and mandatory period. For each clinical placement, clinical follow up, clinical teaching and assessments were carried out. For School A, the key competencies to be achieved by the students during the training were recorded in the student's log book, which was then signed by both the student and the mentor in the clinical area. Teaching and learning in the clinical areas was left to the discretion of the clinical instructors and the mentors in the clinical areas. These will be discussed further in the results of phase three in Chapter 6. Both programmes had key assessments for practice that were carried out throughout the four years.

4.2.3 Curriculum content analysis

A qualitative content analysis of the nursing curriculum documents was performed to identify and describe aspects of patient safety that are covered in the pre-registration curriculum as well as how they are taught and assessed. In this phase the research collected the curriculum documents and practice assessment documents (See Table 3.3) which were analysed using a predesigned coding frame with concepts drawn from relevant literature, WHO Patient Safety Curriculum Guide: Multi-professional Edition and the QSEN concepts.

4.2.3.1 Results of the content analysis

An analysis of the curriculum documents in Table 3.3 did not identify any explicit patient safety course, theme, competence or assessment in either programme. However, patient safety was implicit within the curriculum as a series of statements and inferences to patient safety in both programmes. Both programmes had some common specific content areas as examples of patient safety issues. Below is a presentation of the key words and

statements in the curriculum documents in the two programmes that applied to patient safety as well as the examples of the specific content areas.

4.2.3.1.1 *Safe, safety and quality*

The Bsc Nursing curriculum document for School B made reference to safe practice as well as quality improvement in the programme as the philosophical underpinning of their nursing programme. They described the undergraduate nursing programme as one that

... prepares entry level generalists to provide safe and quality care ...

... to deliver safe client centred care emphasising evidence based practice, quality-improvement approaches and emerging technologies.

In addition to this, one of the expected learning outcomes for the overall programme required that the nursing student was able to

Incorporate theoretical and empirical knowledge.....into nursing practice and utilise the knowledge and skills to provide safe and quality nursing care.

In the student training log book from School A, the word safe was identified once in one of the specific objectives of the clinical placement where the students were required to

... demonstrate safe & caring clinical practice.

Other references of the word “safe” or “safety” in the curriculum documents that were found in the curriculum included:

- *Safe provision of appropriate First Aid* – course content for basic life support and emergency care of both schools;
- *Safety – personal hygiene practices and handling of sample* – in the microbiology course content for both schools;
- *Asepsis and client safety* – in nursing informatics course in School B;
- *Injection safety* – in fundamentals of nursing course in School A; and
- *Occupational Health and Safety* – A course unit in the curriculum.

4.2.3.1.2 *Common specific content areas*

The content analysis demonstrated that patient safety was not an explicit content area in the curricula for both nursing programmes. However there were specific content areas

which were identified that were related to patient safety. (This was further supported by the sentiments by the faculty who identified these areas as the patient safety topics within their curriculum as presented below.) The topics identified are summarised below:

1. Professionalism, ethics and law – these were introductory courses that were offered under fundamentals of nursing, which is taught in the first year in both schools.
2. Infection prevention and control – both schools had topics on this in fundamentals of nursing and microbiology course units. Both units were taught in first year in both schools.
3. Medication administration and adverse drug effects – identified in the fundamentals of nursing course and clinical pharmacology course in both schools. Clinical pharmacology was taught in second year in both schools.
4. Blood and blood product transfusion – identified in the fundamentals of nursing course in both schools.
5. Quality management – identified in the health systems management course unit in both schools as well as the leadership and management clinical placement objectives for School B. Both of these areas were undertaken in the third year of study in both schools.

4.2.4 Faculty perspectives of patient safety education

The researcher in this phase of the study also explored the perspectives of the nursing faculty towards patient safety education in the nursing degree curriculum for their respective schools. To achieve this, key informant interviews were carried out to:

1. Gather or clarify information about their undergraduate nursing curriculum;
2. Gain an understanding of patient safety from their personal view/perspective;
3. Identify where they think the topics/issues pertinent to patient safety lie within the curriculum;
4. Obtain descriptions of experiences with patient safety education;
5. Know the ways they teach patient safety; and
6. Get their opinion on ways in which patient safety education can be improved in Kenya.

In order to determine to gain an understanding of the integration of patient safety in nursing curriculum, the researcher asked these nurses the following questions:

1. Describe/define what you believe patient safety to be (be about/entail/cover/include their definition of patient safety).
2. Can you clarify which parts of the course (skills/topics/subject areas) you feel relate most to patient safety?
3. How do you feel patient safety education is developing within your curriculum?
4. What are some of the ways you teach patient safety?
5. Have you had any form of formal training in patient safety or in teaching patient safety concepts?
6. What do you believe the influences are on patient safety education (people, policy, publicity)?
7. How best can we improve patient safety in nursing education in Kenya?

4.2.4.1 Description of the research participants

The researcher described in Chapter 3 how she used purposive sampling to identify the course leaders or their equivalent who are deemed to be influential in the curriculum design and operationalisation. The researcher also identified one other appropriate staff member (for example a lecturer and clinical instructor) who was of value addition. A total of 13 faculty members were interviewed. To maintain anonymity and confidentiality, the researcher used codes to refer to the participants – NS01 to NS13.

Of the 13 participants, nine were male while four were female. One participant held a doctoral degree, 10 held a master's degree and two had bachelor degrees as their highest qualification. Three heads of departments, seven lecturers and three clinical instructors were interviewed. A summary of the participant's demographic data is provided in Table 4.1.

4.2.4.2 Presentation of the results

After the interviews had been transcribed (see Annexure Q) for a sample of the transcribed interview), the data was analysed in the way that has already been described in Chapter 3. From the analysis of the transcripts, four key themes emerged in the following areas:

1. Aspects of patient safety in nursing education;
2. Teaching and learning patient safety;
3. Challenges in patient safety education; and

4. Strategies to improving patient safety education.

The themes were further structured into subthemes and categories as described in Table 4.2.

Table 4.1: Faculty interviews – participant’s demographic data

Code	Gender	Position	Highest qualification
NS01	Female	Lecture	Masters
NS02	Male	Head of department	Doctorate
NS03	Male	Clinical instructor	Bachelor
NS04	Female	Lecturer	Masters
NS05	Male	Head of department	Masters
NS06	Female	Clinical instructor	Bachelor
NS07	Male	Lecturer	Masters
NS08	Male	Lecturer	Masters
NS09	Male	Lecturer	Masters
NS10	Male	Lecturer	Masters
NS11	Female	Lecturer	Masters
NS12	Male	Head of department	Masters
NS13	Male	Clinical instructor	Masters

The presentation and discussions of the findings below will be guided by the framework of the themes and subthemes.

4.2.4.2.1 Theme 1: Aspects of patient safety in nursing education

This theme relates to the aspects of patient safety in the formal nursing curriculum as identified by the faculty. The researcher sought to gain an understanding of how the faculty conceptualised patient safety and how the patient safety aspects and concepts evolved in the curriculum of their respective schools. Four subthemes and categories under them emerged from the interviews which will be discussed below.

Table 4.2: Emerging themes, subthemes and categories

Theme	Subthemes	Categories
Aspects of patient safety in nursing curriculum	Simple, broad and difficult definitions	
	Underpinning all nursing programmes	
	Common patient safety topics	<ol style="list-style-type: none"> 1. Clinical safety 2. Professionalism, law and ethics 3. Clinician safety
Teaching and learning of patient safety	Formal teaching	
	Informal teaching	
Challenges in patient safety education	Curriculum issues	<ol style="list-style-type: none"> 1. Rigid curriculum 2. Implicit vs explicit 3. Faculty preparation 4. Attitude of the student
	Patient safety in the clinical sites	<ol style="list-style-type: none"> 1. Patient safety culture 2. Lack of resources 3. Lack of patient safety consciousness
	Clinical education issues	<ol style="list-style-type: none"> 1. Theory – practice gap 2. Mentorship 3. Clinical assessment
Strategies to improving patient safety education	Curriculum changes Capacity building of HCWs Patient engagement	

4.2.4.2.2 *Simple, broad and difficult definitions of patient safety*

One of the purposes of this interview was to gain an understanding of how the nursing faculty defined patient safety. All the interviewees had a general understanding of patient safety, but the definitions ranged between simple and broad definitions. Some of the interviewees had simple and to-the-point definitions of what patient safety with a clear understanding of what it was all about. Some of the simple descriptions of patient safety were:

... .Is my therapeutic service harmful to him or not. So if it not harmful, that is patient safety ... (NS01)

Patient safety, simply, the patient does not get harmed by commission or omission of the people taking care of the patient. (NS02)

In simple it means to ensure that a client – in this case a patient now – in the course of being managed, or in the course of their treatment, there is no harm intended or not intended in a certain way, you ensure that the patient does not gain in anyway unnecessary harm arising from the treatment they undergo (NS12)

Other interviewees gave broad definitions of patient safety which were multifaceted and related to many factors including patient factors, environmental as well as staff factors. An interviewee described it in terms of the care provided as well as the safety of the clinician themselves whereas another described it as concerning the environmental safety. One even included issues of physical safety and security for the patient. Below are the descriptions respectively.

Patient safety to me is ensuring our patients are safe, and we can say they are safe in different ways. They can be safe in terms of the care we are providing ... Ok. So safety is, we are thinking how safe is our patient in terms of the kind of care that you are providing are they really safe? ... I'd say patient safety and clinician safety at the same time. Even the clinicians themselves have got to be safe from the patient. Why? Because they can sometimes be beaten up, they can be abused, anything can happen ... Ok. So patient safety actually is totality in terms of the care we are providing to the patient. If it is something that is going to harm the patient, then the patient is not safe at all (NS05)

Patient safety is that either intervention, communication which guarantees the wellness of a patient in terms of away from injury, in terms of knowledge the side of the patient and the side of the environment – generally to be conducive for the patient (NS07)

... the safety itself literary. For example when the patient is in hospital, how safe are they from danger? Because we have had people being attacked in hospital- both the staff and the pt. So to me, that is one aspect. The physical safety as we know it (NS13)

However, for one of the participants, it was a daunting task to explain what patient safety was in their own terms.

Patient safety ... is more like uummm how well service providers ummmmm how do I put it. How safe the patients are ... mmmmm under the care of nurses ... aaahhh I'm ... (chuckling) ... I have thought block (laughs) (NS04)

4.2.4.2.3 Underpinned in all nursing programmes

The lack of visibility of the term “patient safety” in curriculum documents was reflected in the interviews with faculty who struggled to define it as a discrete concept. Most of them viewed patient safety as all-encompassing and was underpinned in all aspects of the

nursing programme and not just a single topic that they could pin point. Following are some of the excerpts of faculty views about patient safety topics.

Heeee right from the basic nursing therapeutic, we do a lot, we do a lot! And then from there we go and do the advance nursing therapeutic that has a lot of relations, coz that's where they learn all the basic procedures and we tell them what to do in each thing so that the patient is safe. If I am giving an injection, what am I supposed to do. If you are going to, to, let's say dress a wound, if I am going to manage this patient with a certain condition, what are you supposed to do, what you are supposed to do ... and that's where they learn the nursing process and how to take care, whole care of this patient so that there is no gap missed out ah throughout the care and that one I think guarantees safety for that patient (NS01).

Talking about the basic nursing skills – they are important. Advanced nursing skills, they are important. And then all the clinical courses because they end with the nurse doing something on the patient, yes they are important. But even the basic sciences so that the nurse understands physiology, pathophysiology – they all add up to the safety of the patient (NS02).

Then we also look at – its almost cutting across all subjects. In medical surgical nursing. We look at nursing activities and in the nursing activities, we look at patient safety as one of the priority areas that the nurse needs to address when they are taking care of the patient. Go to pharmacology, patient safety like rights of the patient – right drug, right time and all those – all those are geared towards patient safety. Going into issues like psychiatric as a course, It really talks about patient nurse relationship and the patient safety that comes with proper nurse patient relationship and how the various laws can be brought in to ensure that patients are safe from injury – bodily injuries and also from perceived injuries, psychological and other traumas that may be done to them because they are vulnerable. So it purely cuts across all cadre of patients (NS06).

Well I think it starts with the introduction where you do attitude of nurse to the patient. Then nursing skills – how to handle patients. And then getting to understand the various conditions and how to manage patients with particular conditions. And then more so, medication. Maybe pharmacology, issues of dosages ... (NS08).

Every unit that has a time they need to be exposed maybe to the clinical area, it has an element of safety and how to take care of the pts and even themselves (NS11)

However all the other units that are related in nursing management, ideally have streamlined issues of patient safety. Because in as much as the unit which I can say is like an introductory in the nursing profession, gives the broader perspective of patient safety to ensure maybe what the student are supposed to be doing with the pt so that they are safe (NS12).

4.2.4.2.4 *Common patient safety topics*

The study participants were also requested to identify specific topics or subject matters within their curriculum which they felt most identified with patient safety. Further to them identifying patient safety as a concept that was crosscutting in the entire nursing curriculum, faculty also identified some of the patient safety topics or themes that they indicated were related to patient safety. These topics, presented below, were mainly related to the clinical aspects of safety. None of the faculty referred to the core and broader sociocultural aspects of patient safety in their identification of themes under patient safety.

4.2.4.2.5 *Clinical safety*

The clinical safety aspects of patient safety include infection prevention and control, medication safety and safety of invasive procedures. Of these, the most common of the topics identified was in regard to infection prevention and control. One of the participants defined patient safety as:

Patient safety according to me means the patient – when a patient is presented to you we prevent or we avoid anything that can bring in an infection that was not there to the patient, that we should only deal with the infection that the patient came with. So we have to put a barrier, we have to use whichever ways and means to prevent the patient from acquiring the anything else they did not come with in the hospital (NS10).

The participant above was asked to identify topics or skills that they felt were most related to patient safety, they went further to identify topics that were more related to infections in the curriculum. He stated:

Ummmm for example these students are learning a lot on microbiology. That is one, on how infections can get into people and we also have the medical surgical nursing where we have seen how particular infections and how they, you know, they are getting into the pts. I think these two areas will help the student, will train the students to have an understanding on how to control or prevent infections from coming to a person. They also do parasitology and all these will help the student to know how to deal with infections (NS10).

Another clinical safety topic identified was on medication safety. Below are excerpts of the interviews regarding medication safety as narrated by the participants.

And then more so, medication. Maybe pharmacology, issues of dosages ... (NS04).

Go to pharmacology, patient safety like rights of the patient – right drug, right time and all those – all those are geared towards patient safety (NS06).

Also administration of the drugs – if they are not administered in the right way, maybe the injections and even orals may cause harm to the pt. – they are an important component of safety for the patient (NS09).

4.2.4.2.6 Professionalism, law and ethics

Professionalism, law and ethics are an integral part the nursing programme and these govern the nursing practice in any situation. The interviews showed that one of the core areas that all the students are taught was professionalism, which includes the legal and ethical framework under which the nurse practise. Participants affirmed that the first thing that they introduce to the nursing students was on professionalism, law and ethics as well as patient rights which laid the foundation for patient safety. This was because these topics ensured that the student was aware of their scope of practice right from the beginning and therefore ensuring safety. The participants stated:

One we start with the nurse herself to get the safety ah, to get the safety, we do a lot of umm, we do a lot of nursing ethics and professionalism, so through that you know some do's and don'ts, your limits.(NS01)

So in professionalism, we are making the student to know the malpractices that can, things that can account to circumstances that lead to a malpractice, things they can expose a nurse to be liable to punishment by the law because of the role the way they carry out their duties with the patients and also the way the nurse needs to present herself to ensure the patient is safe in regard to various aspects of care (NS06).

The other aspect that come in terms of PS, I'd say in matters I'd say of ethics. Nursing ethics that are there. And in the ethics, what is being taught is how a nurse is supposed to conduct herself, the ethical principles that are there issues for example of not doing harm, the way it is [inaudible]. And then also in ethics it comes the issue of law – issues of law and the practice – on things that the nurse will be liable for to be sued or rather to have a suit in court by virtual again of having omitted or commissioned something that was not safe for the patient (NS12).

4.2.4.2.7 Clinician safety

Some of the participants felt that patient safety was not all about the patient but also entailed the protection of the nurse, ensuring they are not harmed in the course of their duties.

Coz one of the things in patient safety, here also includes to the clinician is when you are breaking the vial, how should you break the vial coz you don't know what comes out of it.

It maybe the fumes, it maybe the tiny tiny pieces of glass that may enter your eyes or whatever – how do we take care of that?.(NS05).

4.2.4.3 Theme 2: Teaching of patient safety

Despite patient safety not being explicit in the curriculum, the faculty reported that they did in fact integrate some patient safety concepts in their teaching as reported in the results above. The researcher sought from them the methods that they used for teaching of these concepts. The faculty identified that they use both formal and informal methods of teaching. These are discussed below.

4.2.4.3.1 Formal teaching

The faculty felt that patient safety concepts are embedded in the formal curriculum which they teach the students. As identified in the previous theme, these concepts are mainly the clinical aspects of patient safety, for example infection control, medication safety and injection safety. The faculty reported that they used a variety of methods to teach these concepts that were in the formal curriculum. The methods they identified included the use of demonstration and return demonstration in the skills lab, reflective practice, role play and low fidelity simulation. The comments for each are as below:

Whereby now the first thing the student does is that they observe. They observe an activity being performed, then secondly, as they are observing, whoever is doing actually now walks, they walk the students through as they are doing it. Then thirdly, you now ... the student does as this other person is observing. Then later, you can now have them do it – an independent work but now at least we have a senior person trying to oversee (NS03).

The other bit we normally do is we also encourage reflection. This reflection bit, it assists mostly when they talk about what they are actually going through, we get to know the areas they did not do so well. I did this and this or this happened, I saw this nurse doing ABC and then you feel like no there's a gap here and then you'll then move in and actually correct them. We call it reflective practice (NS03).

And in the clinical sites we are already having the patients, so its mainly demonstration ad sometimes role-playing and all other aspects of eliciting the right attitude that the student should show the patient, you can show them how the student can treat the patient. In the skill lab, you demonstrate how to handle the mannequins (NS06).

You can also do practically, either you use a model, or when you are doing the clinical teaching, maybe practically you show the students on how, what are the procedures to follow so that you prevent them from getting infectious diseases (NS10).

4.2.4.3.2 *Informal teaching*

The faculty also reported since they were nurses with most of them having worked in the hospitals, they had been exposed to patient safety issues. They therefore used their own personal experiences as examples to illustrate various patient safety issues and these they felt provided the students with an opportunity to learn about patient safety despite it not being in the formal curriculum. The participants conveyed to the students through these examples the complexities of healthcare and giving them ideas of some of the situations that they may encounter in real life. They reported:

In our curriculum we do not have a specific area that is covering patient safety, however during the teaching you may find that the lecturer or teacher may want to give an example to the student which may not be highlighted in the curriculum (NS07).

Ok One of the ways, like the one which I have done, is by giving examples of probably you want to administer medication then you need to follow the prescribed format of giving drug administration to avoid patient injury – maybe administering the wrong drug, administering the wrong dose. Yah. Then also, apart from that by giving examples, personal experiences.....Yah, so when I am teaching, I always give my student an example that I had when I was working in one of the hospitals (NS08).

Well they are not articulated well in the curriculum, but in the process of my teaching, I always emphasise about PS because without ensuring safety of the PS then you cannot say you are offering quality nursing care (NS09).

Some of the ways we teach PS, first and foremost is trying to tell the student about for example ahhh issues to do with patient injuries or rather accidents in the workplace (NS12).

One participant even noted that the lack of clinical experience in some of the faculty may compromise the teaching of students on the unwritten aspects of patient safety.

If it is someone who has had previous experiences with patient safety you will find that in his or her teaching, they will try to highlight it. But that might not be found in a lecturer or a teacher who has got no hands-on experience (NS07).

4.2.4.4 **Theme 3: Challenges in patient safety education**

The third theme that emerged from the analysis of the interview transcript was the challenges of integration of patient safety in the nursing curriculum. Three subthemes with categories emerged and these are presented below.

4.2.4.4.1 *Preparing a safe nurse*

One of the challenges that emerged was related to how best to educate the nurse so that they are patient safety competent. The main categories were the rigidity of the curriculum, implicit vs explicit curriculum to patient safety, faculty preparation and the attitude of the students towards safety.

4.2.4.4.2 *Rigid curriculum*

The first challenge is the curriculum itself that is prescribed in the nursing schools to prepare for the nursing degree. Both nursing schools had an almost similar curriculum with the same structure and almost similar contents. One participant explained that the Bsc Nursing curriculum is uniform across the country because the nursing schools develop the curriculum along the guidelines of the NCK, which is the regulatory body for all nursing-related training at whichever level. He explained:

But this curriculum of course it was the one that was developed by NCK with the assistance of the lecturers or the experts in those specific areas. Now in terms of ah ... Now that's the structure is based on what we have gotten from the NCK that is uniform thought out Kenya for all the students (NS05).

This statement was supported by the results of the content analysis which showed that both nursing schools had similar curriculum documents with most being documents published by the NCK.

4.2.4.4.2.1 *Implicit vs explicit curriculum*

The interviews with the faculty demonstrated a similar overall picture to that revealed by the analysis of the curriculum documents - that patient safety was not a discrete and explicit topic but rather was implicit and integrated in the nursing curriculum. Several of the interviewees pointed out that they could not pin point an explicit patient safety component within their curriculum:

So, but I don't think that there's any particular topic on patient safety that is, that we can isolate and say that we are teaching our students something on patient safety. So I don't think that is isolated and probably that is the reason why ... they realised that there's a problem with patient safety (NS05).

In our curriculum we do not have a specific area that is covering patient safety ... (NS07).

Well it may not be very well articulated in the current curriculum ... (NS09).

...because as it is right now, as I said it (patient safety) is something which is like it is hidden, or rather it is masked down by other things yet it is an important aspect....(NS12)

4.2.4.4.2.2 Faculty preparation

When the patient safety concepts are not visibly evident in the curriculum, then it is not given the emphasis it requires and it is left to the discretion of the lecturer to integrate it in the curriculum in their own way. Therefore it requires that the faculty is knowledgeable about core aspects of patient safety. However, the earlier results showed that some of the faculty struggled to describe patient safety as a discrete concrete. This is further supported by the reports of the faculty that they had not had any training in patient safety concepts. When asked if they had had any training in patient safety concepts or ways of teaching patient safety concepts, most of them stated that they had not had any training. Others explained further as reported below.

Personally? Infection prevention and the rest of the trainings are the ones I got at school (NS06).

Well yes, when I was still in the clinical areas. We had infection prevention practices training. We had injection safety, which was more or less the same. And then we had waste management training and then also communication. Communication skills – I think it's part of patient safety (NS08).

As a lecturer, I have never had or rather have not known any formal training which is specifically on PS issues (NS12).

4.2.4.4.2.3 Attitude of the student

The attitude of the student to nursing was also a concern that was raised. The participant reported that without the right attitude towards nursing in general, the student was likely to become less patient centred, which is a core prerequisite in being safety conscious during their practice. They reported:

... is the choice of the students we pick. Because, if you pick any person that is passing to be called a nurse, there are people you will never change their attitude. They are there because they have been sent there to do the course, it is a way of earning. So to them, the touch with the patient is not there. So it has to start right from inside (NS06).

4.2.4.4.3 Patient safety in the clinical sites

In the literature review, the role and influence of the social activities and cultures that formally or informally exist in an organisation, also known as the hidden curriculum, was

discussed. It was established that the hidden curriculum informally shapes the behaviours, attitudes and practices of the students and prepares them for real life situations. In the analysis of the interviews, participants supported this by identifying the culture of the clinical sites as one of the challenges in the integration of patient safety in the nursing education. Three categories emerged from this subtheme, which are discussed below.

4.2.4.4.3.1 Patient safety culture

Participants acknowledged that the safety culture of the clinical sites greatly affects the way the student learns about safety. Participants noted that some of the clinical sites have a defensive, concealing and blaming culture that may intimidate the student. They commented:

When we talk about patient safety, again much of it is in the incidence report that scares all kinds of nurses and student nurses. So to us patient safety, means that you have got to fill that incidence report, you might have given the wrong drug, you might have given to the wrong site, the patient might have fallen down and you were with the patient, but most of the times you don't report it, why? Because you fear that there will be negative repercussions (NS05).

In our clinical setting, particularly in the developed countries, developing countries, patient safety is something that is put in the back burn, we don't report (NS08).

There are issues like patient falls, because they fall under patient safety. Now in practice, there were issues that when a patient falls, there is what is called an incident report being written. However in certain aspects, this incident report was being used as a matter of punitive to the nurses taking care of that patient, not as a way of addressing the problem but as a punitive measure. So in that regard also people usually shy away from writing those reports (NS12).

One resounding perspective on the status of patient safety culture in the clinical sites was that it was below average. Most of the participants summarised patient safety in the clinical sites as substandard and in the extreme, non-existent. The participants commented:

Patient safety in this country is taken for granted. That if you are a competent nurse, then any patient is safe in your hands (NS02).

How can we improve it [patient safety]? You cannot improve even what you are not doing! (NS05).

In Kenya specifically, I think patient safety is quite poor. Yes because students are not exposed to patient safety in the hospitals. Quite a lot of patient safety is taken for granted. Not until an accident has happened it is when we reflect on the same (NS07).

I think patient safety particularly in our public hospitals is in jeopardy (NS10).

As it is, in our scenario, it [patient safety] is not something that is being taken... or rather I'd say it is being taken lightly – let me use that word, lightly (NS12).

4.2.4.4.3.2 Lack of resources

Another challenge that was raised by the participants was the issue of resources in the clinical sites which are necessary for the learning of the student in matters related to safety. They noted that some of the clinical sites did not have proper and adequate supplies and equipment and therefore the healthcare workers had to improvise, and these improvisations were not always safe for the patient. The participants lamented:

... to improve patient safety is that we must ensure that the supplies and items are also available because, ok I can give an example whereby someone would like to inject a child but within their setup they are not having maybe a gauge 23 needle, they only have a gauge 21. So going by the scenario, and you are having an emergency, what would that person do? They'll be forced to actually adopt ... They would like to assist but there are no supplies being availed (NS03).

Right now, in the clinical areas students do not have the sterilised packs, in fact most of them are seeing them for the first time when they are preparing for assessment (NS05).

And there are issues to do with equipment, equipment are lacking. The supplies that maybe required to help in controlling infections are also lacking. So I think there's much needed to be done (NS10).

4.2.4.4.3.3 Lack of patient safety consciousness

Furthermore, participants pointed out in some sites, healthcare workers were not conscious of patient safety in their practice and therefore contributed to the poor patient safety culture in that site. Therefore students at these sites witness unsafe practices that differ from what they are taught in the classroom setting. Participants stated:

Then the other issue is the issue of communication within the healthcare setting with healthcare workers. A good example is during drug administration, you are asking a student "can you withdraw for me ah oxytocin". The student will go and withdraw, do you confirm that this is oxytocin before administration? But there are so many activities and people don't even confirm. So what do they do, they administer. Like, we had a case of someone trying to administer a wrong drug because the vials look the same (NS03).

Patient safety includes even when we are giving children drugs, what do we use? There are, it's supposed to be that cup but what are students using and nurses, a whole big mug! Wanaweka tablet na syrup hapo ndani halafu wanapea wagonjwa [they put the tablet and syrup inside and then give the patient] and the syrup the whole thing remains in the cup. Patient safety means what now? This patient will not have gotten the full dose (NS05).

Because I think in the developed countries, patient safety is a very key thing. In the developed countries, it is a very big mistake, for you to administer a drug – before for example finding out about allergies. But here we just do it without thinking about it yet it is a patient safety issue (NS013).

Other participants summed up the healthcare workers' lack of patient safety consciousness as a result of their incompetence and the only way to improve patient safety culture is to ensure that the staff are competent.

Because you see, most of the other healthcare workers are not so competent they do things that actually endanger the patient (NS03).

Some of these procedures are being performed nurses who are not qualified, by students who are not qualified under no supervision at all. So are they really safe (NS08).

4.2.4.4.4 Clinical education issues

Another sub-theme that emerged as a challenge is on the clinical education. Three categories were identified – the theory–practice gap, issues of mentorship, and clinical assessments. These are presented below.

4.2.4.4.4.1 Theory–practice gap

A concern that was raised was the disparity between classroom teaching and clinical teaching. One participant explained that the curriculum may not be translated and delivered as intended in the clinical settings, and therefore patient safety concepts may not be taught to the students as intended in the curriculum, especially in relation to acquisition of skills and achievement of the right safety attitude.

I think what I'd say about PS in our nursing education, is our systems there may be having a disconnect between the skills and what the skills are conceptualised on as what they want the student to gain and what the hospitals are having and how our students when it comes to patient safety are they being mentored enough. Coz that is where they learn the skill that is where they learn the attitude. So our concepts may end up being lost, they are not being translated from what we actually having in the curriculum (NS06).

4.2.4.4.2 *Mentorship*

Appropriate support, guidance and supervision in the clinical setting is an important aspect in the student clinical learning process. But as participants pointed out, this is not always available to the students. The mentors were not chosen following any criteria, were not well oriented to their role as mentors and they did not always carry out clinical teaching. Additionally, some of the nurses who had the role of mentoring the students, did not explicitly link their teaching to patient safety. The participants stated:

We have no specific criteria for choosing the mentors. Basically we just use the ward in charges and their deputies. So that when we send out students there, they report to them and they work under them. but most of the time, we find that most of the things like teaching them, we have to go there and do it ourselves from there because there are those mentors who are well oriented and those who are not well oriented (NS06).

So you might find a nurse talking about infection prevention to students but they are just talking about it without bringing in the aspect of patient safety - that this is actually an issue of patient safety (NS08).

4.2.4.4.3 *Clinical assessment*

Another challenge that was identified under clinical education is the lack of inclusion of patient safety aspects in clinical assessment. This challenge supports the result from the document content analysis which showed that patient safety was not included in the practice assessment tools. A participant pointed out:

And more so because we usually have clinical assessments, one of the ways to ensure we instil that we can actually incorporate issues of patient safety on the assessment tools to ensure that now that actually is something that the students they know it shall be an important aspect for them to know especially when they know it is something that shall be assessed (NS12).

4.2.4.5 *Theme 4: Strategies to improving patient safety education*

This theme relates to strategies that can be put in place to improve patient safety education in the country. Analysis of the transcripts showed that improvement of patient safety education could be achieved in three main ways – by making changes in the nursing curriculum in the country; by improving the patient safety status in the country; and by capacity building for both the faculty and the healthcare workers. These three sub-themes are presented below.

4.2.4.5.1 Curriculum changes

Most of the participants expressed that the best way to improve patient safety education, was by making it a core and explicit curriculum topic. The reframing and refocusing of the nursing curriculum to a more patient safety oriented curriculum, would have to start from the regulatory body, that is, the NCK, followed by all schools making it a core topic of their curriculum.

The first way is improve the curriculum, let it be one of the core (NS01).

So that we have ahhhh we need to have explicit unit, for example if it is a unit, on PS or not necessarily a unit but a topic specifically touching on all the aspects of PS. Such that when a lecturer is teaching that aspect, it is known that actually there is a topic on PS (NS08).

If we can put a unit on patient safety and maybe the precautions you expect the student nurses and the nurses who will qualify, what you expect them to do (NS11).

I think we need to have it, maybe not as a unit, but as a main topic in one of the units. Maybe we can include it as a topic in one of the topics in first year. So that as the students come along, they are able to understand these concepts and adding on to the knowledge they shall already have received in 1st year (NS13).

One participant expounded further on how to improve patient safety education by pointing out that universities needed to adapt the WHO Multi-professional Patient Safety Curriculum Guide.

We need a totally isolated curriculum on patient safety and we need to adopt the WHO curriculum on patient safety. It is already there and it can be used, it can be implemented. It is an international curriculum, I don't see why it should be left out at NCK. You can use it the way it is, it is all there (NS05).

The participant, however, warned about nursing schools adopting a curriculum on patient safety from other bodies without being conversant with ways of implementing. He proposed that schools could get mentorship from other universities in the world who have successfully adopted and integrated patient safety in their curriculum. Below is what the participant commented about patient safety integration:

One thing is we need to look at our entire curriculum and look at what is there in the WHO curriculum. Look at the areas that can be more or less be taught in similar course or units and see how we can integrate it within those units ... in fact if you look at WHO plus other organisations, those that are already doing very well on patient safety, they are able to merge WHO curriculum and what they are offering and see how they can be able to

integrate it. So that it doesn't take an extra unit or course that will be too heavy for the students ... the main reason is that we come up with curricula but we don't know how to implement it and that I think is our biggest weakness. So how can we go about that? When we come up with a curriculum, I think it is for us also to try and identify universities out there that are doing it well to mentor us first before we can take it up on our own (NS05).

4.2.4.5.2 Capacity building of faculty and healthcare workers

As presented above, one of the challenges to integration of patient education that emerged was the lack of faculty preparation in dealing with patient safety concepts. Moreover, the faculty also drew attention to the issue of incompetence in dealing with matters related to patient safety by healthcare workers in the clinical sites. As a result, most of the participants felt that one of the key ways to improve patient safety education was through continuing training. They stated:

Then also helping out maybe trainings to see whether it can help to prevent occurrences that may not be safe for the patient (NS04).

I wish that the current staffs in the clinical areas, they can be exposed more to patient safety in terms of what does it constitute. Quite a number of us do not know what patient safety is – we may think of it in quite a narrow way but it entails a lot (NS07).

I think first and foremost in anything you want to improve, usually there is something we call knowledge. That people need to be empowered. And usually knowledge has to start from above. The managers of the hospital need to understand that this concept of safety is important and you can package it in several ways (NS12).

I think it has to start with training of the staff. We need to train all the cadres of staff – nurses, medical officers, COs and everybody. So they need to have on job training so that we can awaken their thinking around patient safety issues (NS13).

4.2.4.5.3 Patient engagement

The importance of improving patient safety culture and practices in the hospitals that the students go to for clinical learning was emphasised by the participants. One of the strategies they pointed out was that it could be done through engagement of the patient in safety efforts in the hospitals. Some of the ways they identified of engaging the patient were increasing public awareness on patient safety as well as empowering them to know their rights, to identify when errors are occurring and to speak up when something is going wrong. In addition, the need for patient advocates was identified as a necessary

measure in improving patient safety whereby the patient advocates can support and promote patients' rights in regard to patient safety.

Well like the way we are talking about it – creating awareness about the need for patient safety. It could be a problem, depending on what you found it could be a problem. So making people aware there could be problems with patient safety (NS04).

Patient teaching must be done in such a way the patient is getting what is being put across. It must be given prominence, it's not a matter of going to the bedside for one minute and then telling the patient "aahh do you understand?" (NS02).

Then the other bit is to empower the patient themselves. So that they now tell us, "I am supposed to take this medication, I don't take this other one" ... Otherwise, now if they don't know their drugs for example, they don't know the procedures, we'll always do things to them that are not even right and nobody will ever question (NS03).

Litigation is one way that will wake us up, but it's still very very low. The patient[s] lose because we don't have patient advocates. So we need patient advocates particularly in terms of patient safety. There are lots of errors, medication errors, provision errors and we get away with it. But it affects the patient. But the patient being ignorant and not represented, the case ends there. So me I would think we need patient safety advocacy (NS04).

4.3 PHASE TWO: PATIENT SAFETY KNOWLEDGE AND COMPETENCE

4.3.1 Overview

This section presents the results for the second phase of the study during which the researcher assessed the perception of nursing students regarding their patient safety knowledge and competence measured by what they learnt in the classroom setting versus the clinical setting.

4.3.2 Response rate

The response rate for the questionnaire was 91.8%, with 178 questionnaires completed and returned by participants out of the anticipated sample size of 194. Cases with missing data were excluded from the data analyses.

4.3.3 Demographic characteristics

The demographic characteristics consisted of age, gender, university and year of study, which are summarised in Table 4.3. The minimum age of the respondents was 19 years while the maximum age was 29 with a mean age of 22.1 years (SD±1.45). Out of the 178

respondents, 91 (51.1%) were male while 87 (48.9%) were female. The respondents were from two schools of nursing with 95 (53.4%) from School A and 83 (46.6%) from School B. In addition, 42 (23.6%) were in the second year of study, 83 (46.6%) in the third year and 53 (29.8%) were in the fourth year.

Table 4.3: Demographic characteristics of the respondents (n = 178)

Age Mean (SD)	22.1 (1.45)	
Gender	n	%
Male	91	51.1
Female	87	48.9
University		
School A	95	53.4
School B	83	46.6
Year of study		
2 nd	42	23.6
3 rd	83	46.6
4 th	53	29.8

The demographic characteristics of the students per year of study were also analysed. A chi square test for independence was conducted to analyse if there was a significant association between the demographic characteristics and the year of study while a Kruskal–Wallis test was used to test the relationship between age and year of study; $p < 0.05$ was considered statistically significant (Table 4.5). The age of the respondents across the years of study was statistically significant ($p = 0.00$) with an increase in age from the second year of study to the fourth year as depicted in Table 4.4. However there was no significant difference in the gender across the academic years ($p > 0.05$).

Table 4.4: Description of participants per year of study

	Year of study			χ^2
	2 nd	3 rd	4 th	
Age - Mean (SD)	20.7 (1.2)	22.1 (1.16)	23.3 (1.21)	0.00*
Gender - (n (%))				
Male	21 (23.1%)	42 (46.2%)	28 (30.8%)	0.96
Female	21 (24.1%)	41 (47.1%)	25 (28.7%)	
University - (n (%))				
School A	29 (30.5%)	34 (35.8%)	32 (33.7%)	0.01*
School B	13 (15.7%)	49 (59.0%)	21 (25.3%)	

4.3.4 Specific patient safety content areas

4.3.4.1 Clinical safety

The *Clinical safety* subscale of the H-PEPSS looked at the clinical aspects of safety and included four items – safe clinical practice in general, hand hygiene, infection control and safe medication practice. According to the authors of the tool, this subscale was included in the H-PEPSS to help the respondents differentiate between the clinical aspects and the sociocultural aspects of patient safety, because the focus of the tool was mainly the latter. Table 4.5 shows the frequency distribution of the confidence level in classroom learning as reported by the participants to each item in the clinical safety domain. “Strongly agree” or “Agree” responses indicated confidence of the nursing students in what they learn about the items in the classroom. As reflected on the table, most of the participants were confident about what they learnt about clinical safety in the classroom setting. The valid responses this section were 174 and out of those, 137 (78.7%) participants reported they were confident about what they learnt about the general aspects of safe clinical practice in the classroom, 145 (83.3%) about hand hygiene, 141 (81.5%) about infection control and 136 (78.6%). The mean score for the classroom setting confidence as reported by the students was 4.00 (SD 0.79).

Table 4.5: Confidence in learning clinical safety in classroom setting

Item	Disagree n (%)	Neutral n (%)	Agree n (%)
Safe clinical practice in general	14 (8.0%)	23 (13.2%)	137 (78.7%)
Hand hygiene	13 (7.5%)	16 (9.2%)	145 (83.3%)
Infection control	10 (5.8%)	22 (12.7%)	141 (81.5%)
Safe medication practices	9 (5.2%)	28 (16.2%)	136 (78.6%)
Mean Score (SD)	4.00 (0.79)		

Respondents also evaluated their confidence in learning about the clinical safety aspects of patient safety in the clinical setting (Table 4.6). A high percentage of the respondents reported confidence in their learning in the clinical setting about safe clinical practice in general (76.3%), hand hygiene (84.7%), infection control (76.1) and safe medication practices (76.3%). The mean confidence score for learning about clinical safety was 3.94 (SD 0.79). The results in Tables 4.7 and 4.8 indicate that the respondents were confident about what they learnt in the classroom as well as the clinical setting. This is also reflected

in prior studies that have been done on nursing students as well as other healthcare professionals (Doyle et al 2015:135; Lukewich et al 2015:930; Raymond, Medves & Godfrey 2017:56).

Table 4.6: Confidence in learning clinical safety in clinical setting

Item	Disagree n (%)	Neutral n (%)	Agree n (%)
Safe clinical practice in general	14 (7.9%)	28 (15.8%)	135 (76.3%)
Infection control	9 (5.1%)	18 (10.2%)	149 (84.7%)
Hand hygiene	15 (8.5%)	27 (15.3%)	134 (76.1%)
Safe medication practices	16 (9.0%)	26 (14.7%)	135 (76.3%)
Mean Score (SD)	3.94 (0.79)		

4.3.4.2 Culture of patient safety

This subscale aimed at analysing the respondents' confidence in classroom and clinical learning about the complexity of healthcare, the importance of having a questioning attitude, the impact of having a supportive environment and the nature of systems. Tables 4.7 and 4.8 show the results in the classroom setting and clinical setting respectively.

Table 4.7: Confidence in learning culture of safety in classroom setting

Item	Disagree n (%)	Neutral n (%)	Agree n (%)
Complexity of healthcare	24 (13.7%)	37 (21.1%)	114 (65.1%)
Importance of having a questioning attitude	20 (11.4%)	34 (19.4%)	121 (69.1%)
Impact of having a supportive environment	17 (9.7%)	30 (17.0%)	129 (73.3%)
The nature of systems	22 (12.5%)	44 (25.0%)	110 (62.5%)
MEAN (SD)	3.76 (0.78)		

As depicted in Table 4.8, the majority of the students reported confidence in what they learnt about the culture of safety in the classroom. One hundred and twenty-nine (73.3%) reported that they were confident in learning about the impact of a supportive environment, 121 (69.1%) about the importance of having a questioning attitude, 114 (65.1%) about the complexity of healthcare while 110 (62.5%) about the nature of systems. The mean score for this subscale in the classroom setting was 3.76 (SD 0.78).

Table 4.8: Confidence in learning culture of safety in clinical setting

Item	Disagree n (%)	Neutral n (%)	Agree n (%)
Complexity of healthcare	31 (17.4%)	40 (22.5%)	107 (60.1%)
Importance of having a questioning attitude	29 (16.6%)	32 (18.3%)	114 (65.1%)
Impact of having a supportive environment	27 (15.3%)	39 (22.2%)	110 (62.5%)
The nature of systems	33 (18.6%)	59 (33.3%)	85 (48.0%)
MEAN (SD)	3.56 (0.90)		

The frequency distribution of those who agreed on the items of the subscale were also lower as compared to the classroom setting, with 65.1% of the students reporting that they were confident about what they learn about the importance of having a questioning attitude, which was lower than the classroom setting. The confidence level by the respondents on learning about culture of safety in the clinical settings was relatively lower than the classroom setting with a mean score of 3.56 (SD 0.90). The frequency distribution of those who agreed and strongly agreed on the items of the subscale was also lower as compared to the classroom setting as depicted in Figure 4.1.

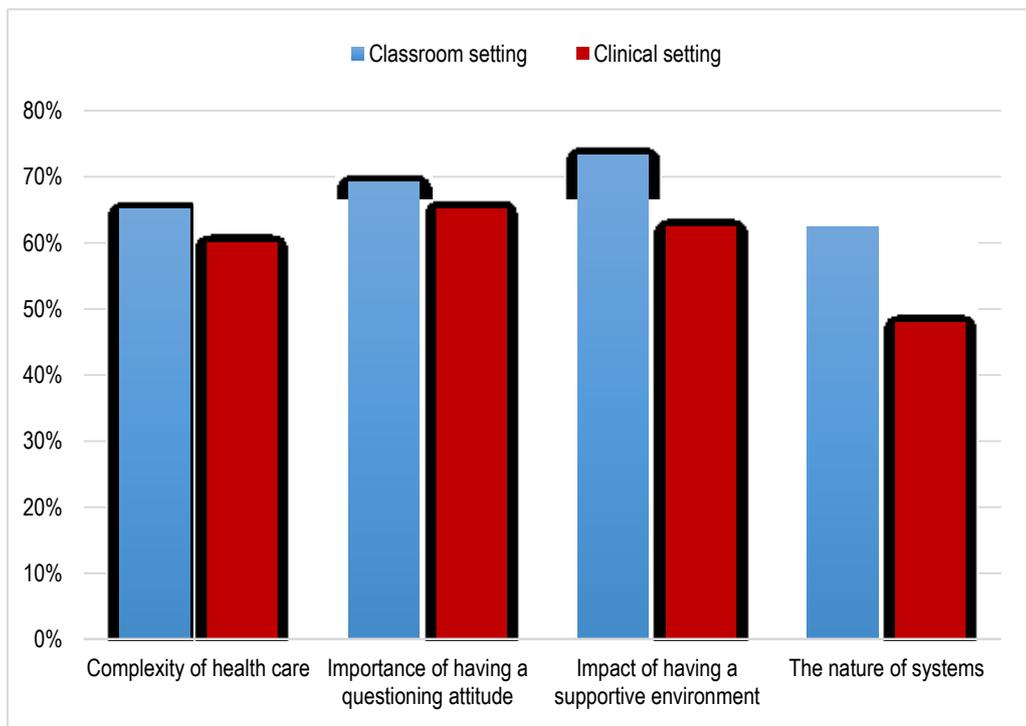


Figure 4.1: Culture of safety: Classroom vs Clinical

This differences in the confidence of the students reported in this study are similar to the reported confidence by nursing students in Saudi Arabia in a study by Colet et al (2015:418). In that study, the self-reported confidence mean score on the culture of safety subscale in the classroom setting was 4.24 while the score in the clinical setting was 3.72.

4.3.4.3 Working in teams for patient safety

This subscale evaluated the students' confidence in learning about working with other members of healthcare team in ensuring patient safety. Key items in this subscale included their confidence in learning about team dynamics and power differences, managing interpersonal conflict, debriefing and supporting team members, engaging patients as central participant, sharing authority, leadership and decision making as well encouraging team members in addressing patient safety issues. The results of the confidence level for both classroom and clinical setting as reported by the student are depicted in Tables 4.9 and 4.10 respectively.

Table 4.9: Confidence in learning about working in teams in classroom setting

Item	Disagree n (%)	Neutral n (%)	Agree n (%)
Team dynamics and power differences	26 (14.7%)	42 (23.7%)	109 (61.6%)
Managing interprofessional conflict	26 (14.7%)	44 (24.9%)	107 (60.5%)
Debriefing and supporting team members after an adverse event	25 (14.2%)	45 (25.6%)	106 (60.2%)
Engaging patients as a central participant in the healthcare team	14 (7.9%)	47 (26.6%)	116 (65.5%)
Sharing authority, leadership, and decision making	17 (10.0%)	40 (23.5%)	113 (66.5%)
Encouraging team members in addressing safety issues	21 (11.9%)	33 (18.6%)	123 (69.5%)
MEAN (SD)	3.70 (0.78)		

A majority of the students agreed that they were confident about their learning about working in teams for patient safety with the percentage of those agreeing to the items in the subscale ranging between 69.5% and 60.2%. The lowest percentage of nursing students who either agreed or strongly agreed was seen in their confidence in learning about debriefing and supporting team members after an adverse event (n = 106, 60.2%) and managing interpersonal conflict (n = 107, 60.4%).

Table 4.10: Confidence in learning about working in teams in clinical setting

Item	Disagree n (%)	Neutral N (%)	Agree N (%)
Team dynamics and power differences	32 (18.2%)	47 (26.7%)	97 (55.1%)
Managing interprofessional conflict	36 (21.2%)	45 (26.5%)	89 (52.4%)
Debriefing and supporting team members after an adverse event	33 (18.8%)	57 (32.4%)	86 (48.9%)
Engaging patients as a central participant in the healthcare team	31 (17.6%)	44 (25.0%)	101 (57.4%)
Sharing authority, leadership, and decision making	35 (20.6%)	49 (28.8%)	86 (50.6%)
Encouraging team members in addressing safety issues	28 (16.0%)	40 (22.9%)	107 (61.1%)
MEAN (SD)	3.49 (0.85)		

The overall mean score for this subscale in the clinical setting (3.49, SD \pm 0.85) was lower than the classroom setting (3.70 SD \pm 0.78). The frequency of those who agreed that they were confident in learning about working in teams ranged between 61.1% and 48.9%, much lower than in the classroom setting (see Figure 4.2).

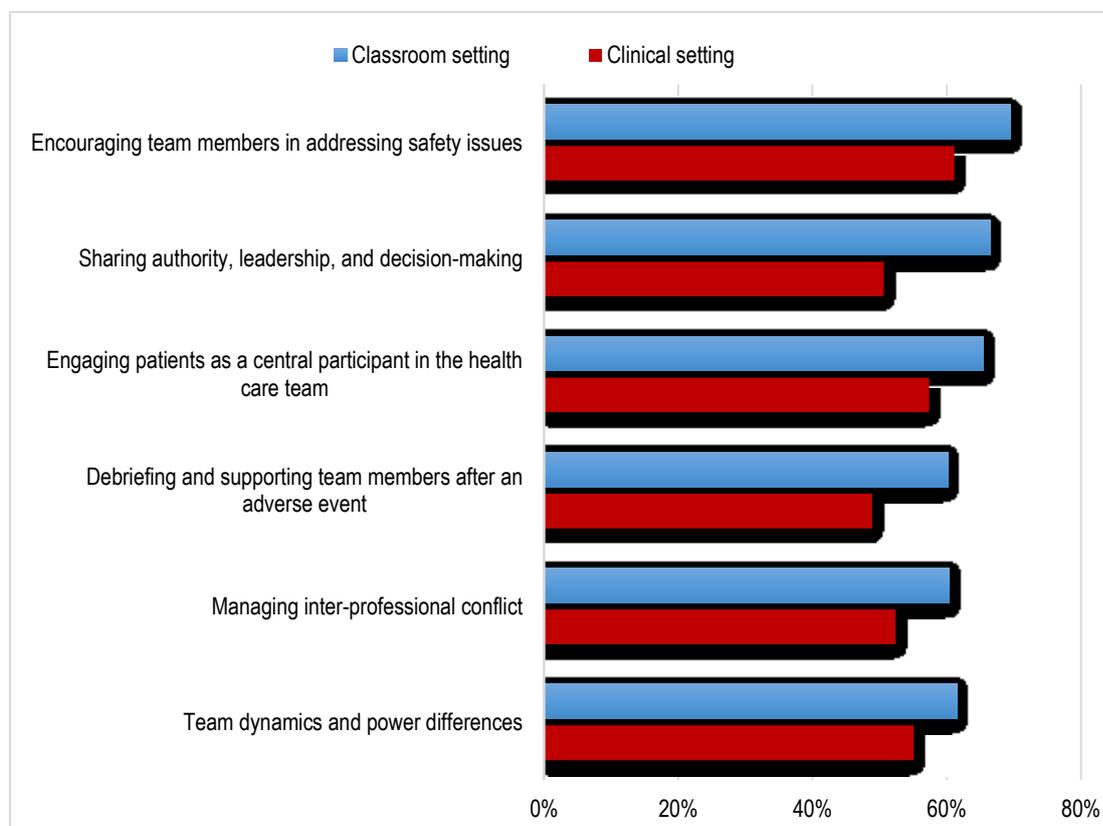


Figure 4.2: Working in teams: Classroom vs Clinical

These findings are in line with other studies where students reported less confidence in learning about working in teams in the clinical setting as compared to the classroom setting. Ginsburg et al (2013:147) in a similar study on health professionals found that all the health professionals (nursing, doctors and pharmacists) reported a lower confidence in learning about working in teams in the clinical setting as compared to the classroom. The nursing confidence mean score for classroom and clinical setting was 3.89 and 3.62 respectively – this was higher compared to the pharmacists’ and the doctors’ confidence mean score in both settings. However, Doyle et al (2015:135) found that the participants were slightly more confident in the clinical setting (mean score 3.7) than in the classroom teaching (mean score 3.6).

4.3.4.4 Communicating effectively for patient safety

Respondents were also asked to evaluate their confidence in learning about communicating effectively in the healthcare to improve patient safety. Items assessed here were confidence in enhancing patient safety through use of clear and consistent communication with patient, through effective communication with other healthcare providers and effective verbal and nonverbal communication abilities to prevent adverse events. They were required to evaluate this in the classroom and clinical setting and the results are as shown in Table 4.11 and 4.12 respectively.

Table 4.11: Confidence in learning about communicating effectively in classroom setting

Item	Disagree n (%)	Neutral n (%)	Agree n (%)
Enhancing patient safety through clear and consistent communication with patients	13 (7.3%)	24 (13.5%)	141 (79.2%)
Enhancing patient safety through effective communication with other healthcare providers	16 (9.0%)	25 (14.0%)	137 (77.0%)
Effective verbal and nonverbal communication abilities to prevent adverse events	16 (9.0%)	31 (17.4%)	131 (73.6%)
MEAN (SD)	4.03 (0.93)		

The mean score for the Communicating Effectively subscale was high at 4.03 (SD 0.93) with a high percentage of the students showing confidence in what they learnt in the classroom about communication. In the classroom setting, 141 (79.2%) of the nursing students were confident in what they learnt about enhancing patient safety through clear and effective communication with patients, 137 (77%) confident in learning about effective communication with other healthcare providers and 131 (73.6%) confident in learning about verbal and nonverbal communication to prevent adverse events.

Table 4.12: Confidence in learning about communicating effectively in clinical setting

Item	Disagree n (%)	Neutral n (%)	Agree n (%)
Enhancing patient safety through clear and consistent communication with patients	25 (14.0%)	35 (19.7%)	118 (66.3%)
Enhancing patient safety through effective communication with other healthcare providers	22 (12.4%)	41 (23.0%)	115 (64.6%)
Effective verbal and nonverbal communication abilities to prevent adverse events	22 (12.4%)	50 (28.1%)	106 (59.6%)
MEAN (SD)	3.75 (0.96)		

Compared to the scores of learning in the classroom setting, a lower mean score was reported for confidence in learning about communicating effectively in a clinical setting. A lower mean score was reported for confidence in the clinical learning about effective learning (3.75 ± SD 0.96). This was supported by the lower percentages (66.3% to 59.6%) of students agreeing to each item of the subscale as shown in the comparison in Figure 4.3.

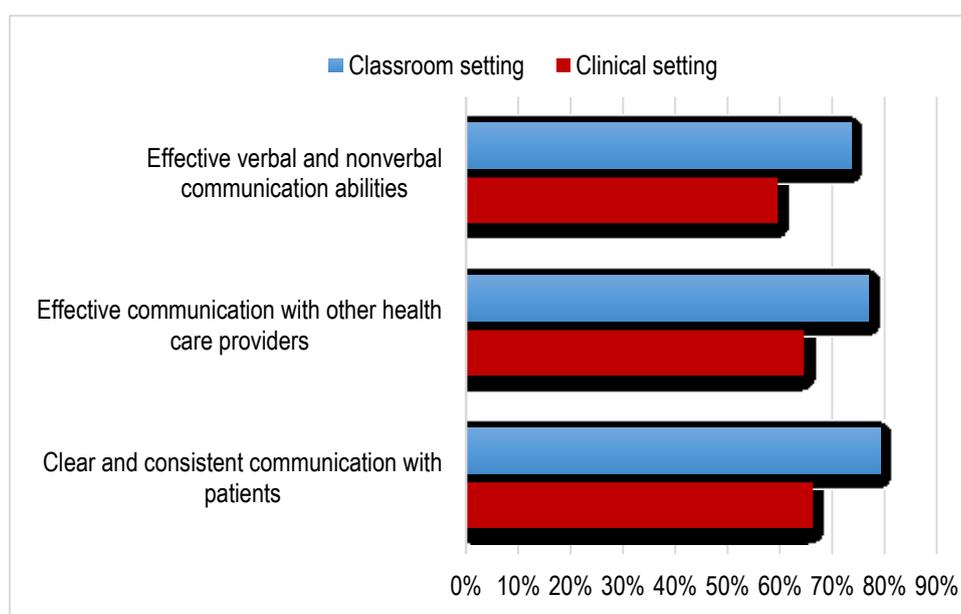


Figure 4.3: Communicating effectively: Classroom vs Clinical

The findings of this subscale were the opposite of what was reported in the study by Doyle et al (2015:135). They reported higher mean scores in the students' confidence in learning about communicating effectively in the clinical settings as compared to the classroom setting (3.9 and 3.8 respectively). Other studies, however, have reported higher confidence scores in the classroom learning as compared to clinical learning (Raymond et al 2017:56; Usher et al 2017:89).

4.3.4.5 *Managing safety risks*

Learning about managing safety risks entailed that the student was confident in learning about being able to recognise routine situations and setting in which safety problems may arise, identifying and implementing safety solutions and the also be able to anticipate and manage high-risk situations. The results show that the nursing students were more confident in learning the items in this subscale in the classroom setting than in the clinical setting with a mean score of $3.75 \pm \text{SD } 0.90$ for the classroom setting and $3.56 \pm \text{SD } 0.94$ for the clinical setting. The results are presented in Table 4.13 and 4.14 below.

Table 4.13: Confidence in learning about managing safety risks in classroom setting

Item	Disagree n (%)	Neutral n (%)	Agree n (%)
Recognising routine situations and settings in which safety problems may arise	23 (12.9%)	35 (19.7%)	120 (67.4%)
Identifying and implementing safety solutions	16 (9.0%)	38 (21.3%)	124 (69.7%)
Anticipating and managing high-risk situations	23 (12.9%)	40 (22.5%)	115 (64.6%)
MEAN (SD)	3.75 (0.90)		

The item that most students reported to be confident about in the classroom setting on this subscale was about identifying and implementing safety solutions with 69.7% students agreeing with the statement.

Table 4.14: Confidence in learning about managing safety risks in a clinical setting

Item	Disagree n (%)	Neutral n (%)	Agree n (%)
Recognising routine situations and settings in which safety problems may arise	30 (16.9%)	43 (24.2%)	105 (59.0%)
Identifying and implementing safety solutions	28 (15.7%)	42 (23.6%)	108 (60.7%)
Anticipating and managing high-risk situations	30 (17.1%)	42 (24.0%)	103 (58.9%)
MEAN (SD)	3.56 (0.94)		

In the clinical setting, a similar trend was seen as that in the classroom setting whereby 60.7% of the students indicated that they were had learnt about identifying and implementing safety solutions. In the clinical setting, a similar trend was seen as that in the classroom setting whereby the item that most of the students (60.7%) indicated they were confident about learning was about identifying and implementing safety solution.

However, learning in the clinical setting was lower than learning in the classroom setting as depicted in Figure 4.4.

The results of this subscale both in the classroom setting and the clinical settings were comparable to what has been reported in other studies. Colet et al (2015:418) administered the same tool to nursing students in Saudi Arabia. In the Managing Safety Risks subscale, they reported a mean score of 3.80 for the classroom setting and a mean score of 3.69 for the clinical setting. They also found that the item in the subscale that most students reported that they were confident in what they learnt was “Identifying and implementing safety solutions” where the percentage of those who were in agreement was 72.3% (N=138) for the classroom setting and 69.1% (N=132) for the clinical setting.

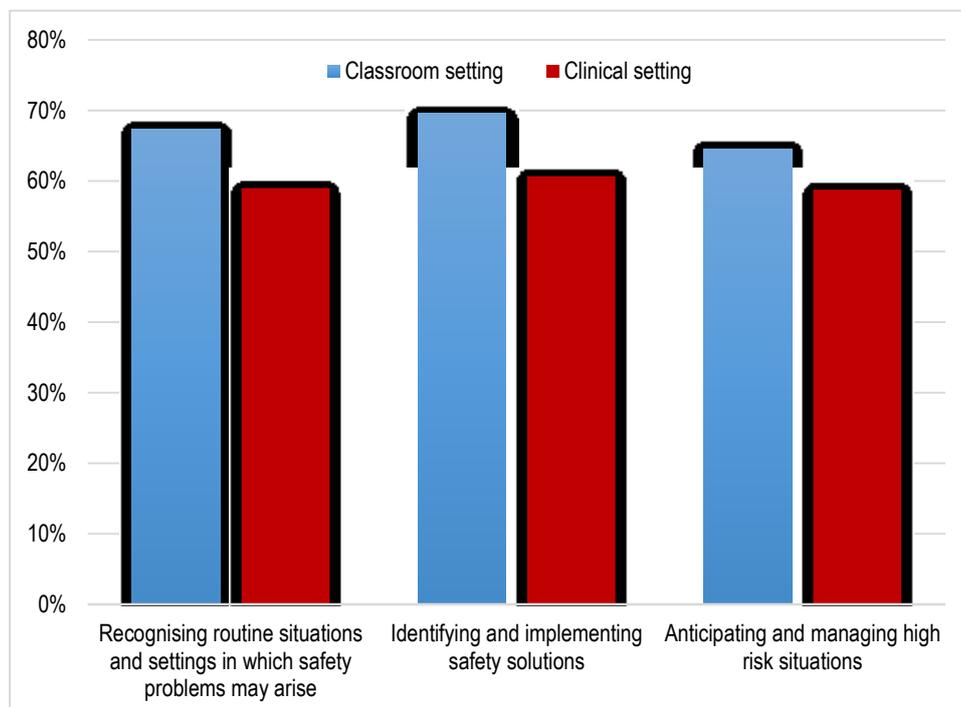


Figure 4.4: Managing safety risks: Classroom vs Clinical

4.3.4.6 Understanding human and environmental factors

This subscale measures the confidence in learning about human and environmental factors in relation to patient safety. It had three items: the role of human factors that affect patient safety, safe application of health technology and the role of environmental factors that affect patient safety.

Table 4.15: Confidence in learning about human and environmental factors in a classroom setting

Item	Disagree n (%)	Neutral n (%)	Agree n (%)
The role of human factors that affect patient safety	20 (11.3%)	37 (20.9%)	120 (67.8%)
Safe application of health technology	28 (15.7%)	50 (28.1%)	100 (56.2%)
The role of environmental factors that affect patient safety	19 (10.7%)	42 (23.6%)	117 (65.7%)
MEAN (SD)	3.69 (0.85)		

Tables 4.15 and 4.16 show the results for the confidence by the students in learning about the role of the human and environmental factors in in the classroom and clinical setting respectively. The item that most students were confident about learning was “the role of human factors that affect patient safety” both in the classroom and clinical setting with 120 (67.8%) students agreeing that they were confident in learning about the item in the classroom and 103 (57.9%) in the clinical setting. The students were least confident in learning about the safe application of health technology with only 56.2% of the students agreeing they were confident.

Table 4.16: Confidence in learning about human and environmental factors in a clinical setting

Item	Disagree n (%)	Neutral n (%)	Agree n (%)
The role of human factors that effect patient safety	34 (19.1%)	41 (23.0%)	103 (57.9%)
Safe application of health technology	40 (22.5%)	53 (29.8%)	85 (47.8%)
The role of environmental factors that effect patient safety	38 (21.5%)	46 (26.0%)	93 (52.5%)
MEAN (SD)	3.44 (0.91)		

The mean score for the subscale in the classroom was higher ($3.66 \pm \text{SD } 0.85$) than that of the clinical setting ($3.44 \pm \text{SD } 0.91$).

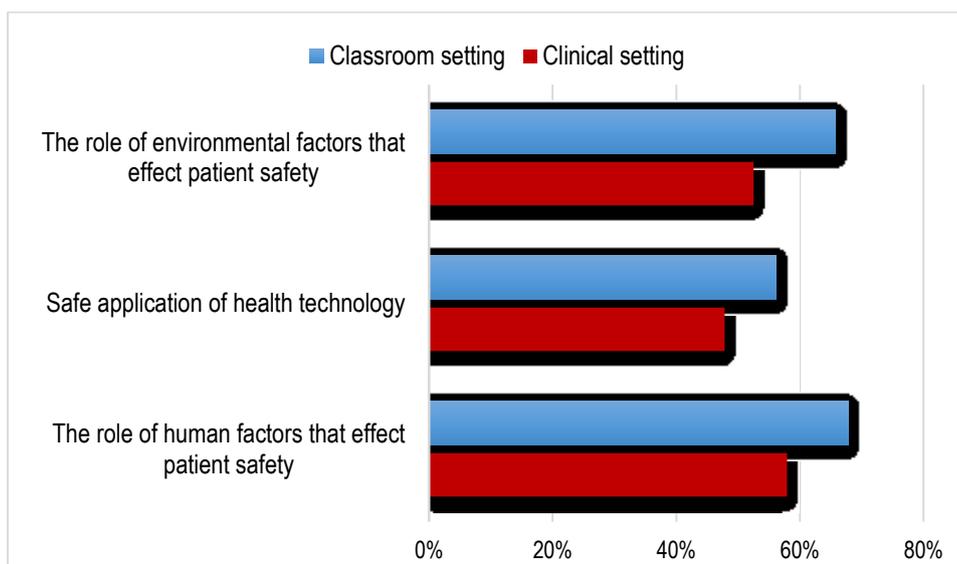


Figure 4.5: Understanding human and environmental factors: Classroom vs Clinical

Figure 4.5 displays the results of the confidence in the subscale in the classroom setting, which was higher than that of the clinical settings. Usher et al (2017:89) in a multisite study on nursing students in Australia found that the students were more confident about learning this subscale in the clinical setting (4.0 ± 0.87) than in the classroom setting (3.9 ± 0.89), the opposite of what was found in this study.

4.3.4.7 *Recognising, responding to and disclosing adverse events*

The last subscale in section one of the H-PEPSS asked the respondents to rate their confidence in the classroom and clinical learning about four items: Recognising an adverse event or close call, reducing harm by addressing immediate risks for patients and others, disclosing the adverse event to the patient and participating in activities in order to prevent recurrence. The results for the subscale are presented in Tables 4.17 and 4.18.

Table 4.17: Confidence in learning about recognising, responding to and disclosing adverse events in the classroom setting

Item	Disagree n (%)	Neutral n (%)	Agree n (%)
Recognising an adverse event or close call	26 (14.7%)	43 (24.3%)	108 (61.0%)
Reducing harm by addressing immediate risks for patients and others involved	11 (6.3%)	40 (22.7%)	125 (71.0%)
Disclosing the adverse event to the patient	20 (11.3%)	51 (28.8%)	106 (59.9%)
Participating in timely event analysis, reflective practice and planning in order to prevent recurrence	26 (14.7%)	35 (19.8%)	116 (65.5%)
MEAN (SD)	3.69 (0.80)		

In the classroom setting, the highest confidence was reported in their learning about reducing harm by addressing immediate risks for patients and others involved, with 71.0% reporting that they were confident. The lowest confidence was reported in disclosing the adverse event to the patient item (59.9%).

Table 4.18: Confidence in learning about recognising, responding to and disclosing adverse events in a clinical setting

Item	Disagree n (%)	Neutral n (%)	Agree n (%)
Recognising an adverse event or close call	34 (19.2%)	48 (27.1%)	95 (53.7%)
Reducing harm by addressing immediate risks for patients and others involved	32 (18.2%)	51 (29.0%)	93 (52.8%)
Disclosing the adverse event to the patient	34 (19.1%)	55 (30.9%)	89 (50.0%)
Participating in timely event analysis, reflective practice and planning in order to prevent recurrence	29 (16.3%)	47 (26.4%)	102 (57.3%)
MEAN (SD)	3.45 (0.85)		

In the clinical setting the item that most students (57.3%) were confident about was participating in timely event analysis, reflective practice and planning in order to prevent recurrence.

The mean scores for the subscale in the classroom and clinical setting were 3.69 (SD 0.80) and 3.45 (SD 0.85) respectively, which were lower than what has been reported in other studies on nursing students and other health professionals. Stevanin et al (2015:926) in a similar study on nursing studies reported higher mean scores in the classroom setting (4.15 ± SD 0.60) and the clinical setting (4.11 ± SD 0.65) as compared to this study with similar results being found in studies by Usher et al (2017:89) and Ginsburg et al (2013:147).

A comparison of the confidence in the classroom and clinical learning of this subscale shows that the students were more confident about their classroom learning than the clinical learning as depicted in Figure 4.6.

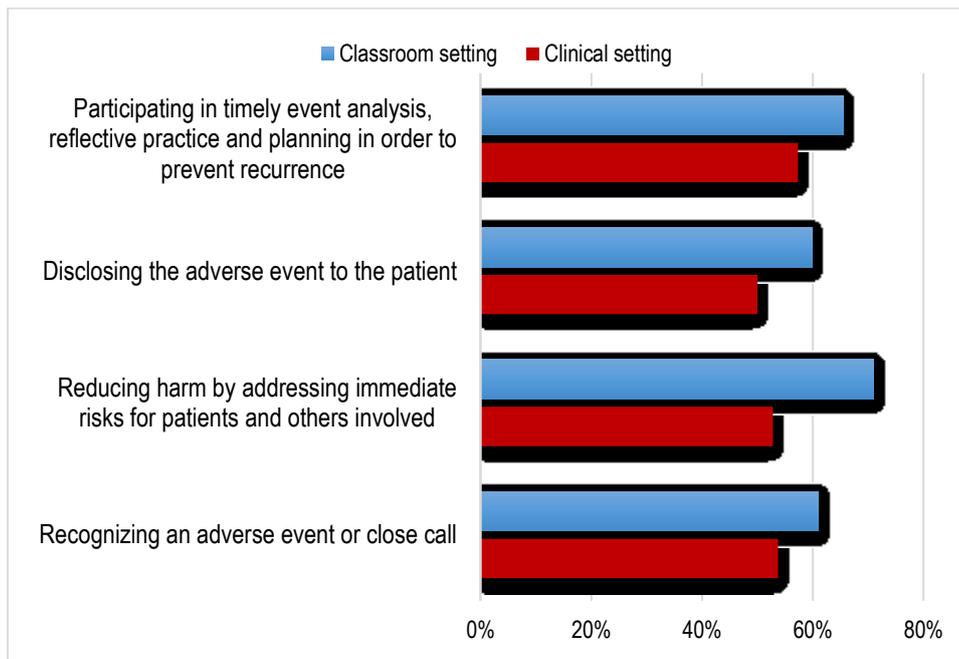


Figure 4.6: Adverse events: Classroom vs Clinical

4.3.4.8 Differences in the self-reported patient safety competence in different learning settings

The comparison of the mean scores on the self-reported competence in learning between classroom and clinical settings among the nursing students was examined using the paired t-test. A p value of less than 0.05 was noted as statistically significant. In addition, a Cohen’s *d* effect size was calculated for each subscale to quantify the difference between the two settings, The researcher used Cohen’s suggestions on the interpretation of the effect size whereby *d* = 0.2 be considered a “small” effect size, 0.5 represents a “medium” effect size and 0.8 a “large” effect size (Sullivan & Feinn 2012:279). Table 4.19 shows the comparison of the mean scores of the two settings, the t-values and the effect sizes.

Table 4.19: Differences on self-reported patient safety competence in different learning settings

Subscale	Learning Setting	Mean	SD	Mean diff	t-value	Two-tailed p Value	<i>D</i>
Clinical safety	Classroom	4.00	.79	0.08	1.93	0.06	0.10
	Clinical	3.92	.79				
Culture of safety	Classroom	3.76	.79	0.21	4.30	0.00*	0.25
	Clinical	3.55	.90				
Working in teams with other health professionals	Classroom	3.70	.78	0.23	4.37	0.00*	0.28
	Clinical	3.48	.85				

Subscale	Learning Setting	Mean	SD	Mean diff	t-value	Two-tailed p Value	D
Communicating effectively	Classroom	4.03	.93	0.29	4.43	0.00*	0.31
	Clinical	3.75	.96				
Managing safety risks	Classroom	3.75	.90	0.19	3.00	0.00*	0.21
	Clinical	3.56	.94				
Understanding human and environmental factors	Classroom	3.69	.85	0.25	3.62	0.00*	0.28
	Clinical	3.44	.91				
Recognise, respond to and disclose adverse events	Classroom	3.69	.80	0.24	4.83	0.00*	0.30
	Clinical	3.45	.85				

* Statistically significant

The results indicate that in the classroom setting the students were most confident in what they learnt in the *Communicating effectively* and the *Clinical safety* subscales with mean scores of 4.03 (\pm SD 0.93) and 4.00 (\pm SD 0.79) respectively. They were least confident about what they learnt in *Understanding human and environmental factors* and *Recognise, respond to and disclose adverse events* with mean scores of 3.69 (\pm SD 0.8) on both subscales. In the clinical setting the students were more confident in what they learnt on the *Clinical safety* (3.92 \pm SD 0.79) and *Communicating effectively* (3.75 \pm 0.96) subscales. They demonstrated the same pattern as the classroom setting whereby the subscales they were least confident were *Recognise, respond to and disclose adverse events and close calls* and *Understanding human and environmental factors* with mean scores of 3.45 \pm SD 0.85 and 3.44 \pm SD 0.91 respectively.

The paired t-tests for the subscales indicated that there was a statistically significant decrease in the mean scores of the subscales from the classroom setting to the clinical setting in all the subscales except the *Clinical safety* (p value 0.06). This therefore meant that in all those subscales except the *Clinical Safety* subscale, the students felt more confident in what they learnt in the classroom than in the clinical settings. The Cohen's *d* for those subscales with a significant difference indicated that there was a small to moderate size effect ranging from 0.21 to 0.31, thus indicating that learning in the classroom setting increased confidence in these subscales to a greater extent than the clinical setting.

The same results as those in this study have been reported in similar studies. Raymond et al (2017:56) and Usher et al (2017:89) in both their studies reported that the subscales that the students were most confident about in their learning were *Clinical safety* and the *Communicating effectively* subscales both in the clinical setting and the classroom

setting. This was supported by an earlier study by Duhn et al (2012:526) who also reported higher student confidence in clinical safety. They further went on to postulate that this was the case because the pre-registration nursing curriculum usually reinforces the clinical aspects of patient safety (hand hygiene, infection control and medication safety) more than the sociocultural aspects of patient safety. These findings are also consistent with the results from the curriculum document analysis and the faculty interviews which showed that the clinical aspects were well integrated in the curriculum but there was glaring evidence of the absence of the sociocultural aspects of patient safety.

The theory-practice gap in nursing education was also validated by the results above, which showed that the students felt more confident in what they learnt in the classroom setting as compared to the clinical setting. This finding conforms to the results from other studies that report students are more confident in classroom learning than in the clinical learning (Doyle et al 2015:135; Stevanin et al 2015:926). As noted in literature, the clinical setting is complex and there are many underlying factors that may influence learning as compared to the classroom setting thus making learning more difficult for the students (Forber et al 2015:1114). In addition, the students may not get enough clinical teaching from the preceptors who have other competing roles and therefore are not able to dedicate time to teaching the students (Madhavanpraphakaran et al 2014:28).

4.3.5 Broader patient safety issues

Section 2 of the H-PEPSS contained seven items which assessed the perception of the student on how the broader patient safety issues are addressed in the health professional education. A mean score for each item was calculated and frequency counts for each responses on each item on the Likert scale were calculated as shown in Table 4.20.

Self-reported confidence in how the broader patient safety issues are addressed in the health professional curriculum was generally lower than confidence in the seven subscales of section of the H-PEPSS with mean scores ranging between 3.25 and 3.85 as compared to the Section 1 means which ranged between 3.44 and 4.03.

Table 4.20: Broader patient safety issues

Item	Mean SD	Disagree n (%)	Neutral n (%)	Agree n (%)
As a student, the scope of what was “safe” for me to do in the practice setting was very clear to me	3.67 (0.93)	20 (11.3%)	40 (22.6%)	117 (66.1%)
There is consistency in how patient safety issues were dealt with by different preceptors in the clinical setting	3.25 (1.09)	47 (26.6%)	48 (27.1%)	82 (46.3%)
I have sufficient opportunity to learn and interact with members of interdisciplinary teams	3.38 (1.03)	41 (23.8%)	42 (24.4%)	89 (51.7%)
I have gained a solid understanding that reporting adverse events and close calls can lead to change	3.74 (1.02)	25 (14.2%)	33 (18.8%)	118 (67.0%)
Patient safety is well integrated into the overall programme	3.53 (0.99)	29 (16.7%)	46 (26.4%)	99 (56.9%)
Clinical aspects of patient safety are well covered in the programme	3.85 (0.94)	18 (10.2%)	37 (20.9%)	122 (68.9%)
“System” aspects of patient safety are well covered in our programme	3.67 (0.92)	23 (13.0%)	39 (22.0%)	115 (65.0%)

The item that the students were most confident about was on the coverage of the clinical aspects of patient safety (hand hygiene, transferring patients, medication safety) by the nursing programme, with a mean score of 3.85 (\pm SD 0.94) and 69% (N=122) validating this statement. This is consistent with the results of Section 1 of the H-PEPSS which show that the subscale that the students were most confident in the learning both in the classroom and clinical setting was the *Clinical safety* subscale. The item that the students reported they were least confident about in this section was on how patient safety issues were dealt with by the different preceptors in the clinical areas with only 46.3% (N = 82) of the students agreeing that there was consistency between the preceptors. The confidence mean score was also low for the item at 3.25 (\pm SD 1.09). The findings of this study are consistent with the finding by Lukewich et al (2015:930) in the study in Canada. The highest reported confidence was on the coverage of the clinical aspects of patient safety the nursing programme with a mean score of 4.26 (\pm SD 0.77) while the item the students were least confident on was how patient safety issues were dealt with by the different preceptors in the clinical areas, with a mean score of 3.16 (\pm SD 1.03). The inconsistency by the preceptors in clinical teaching could explain the finding of Section 1 which showed that the students felt more confident in what they learnt in the classroom

than in the clinical settings. The role of the preceptor and the challenges that influence the role that could lead to inconsistencies in the way they deliver teaching to the students are well documented in literature (Chang et al 2015:220; Madhavanpraphakaran et al 2014:28). Some of the characteristics of the preceptor that have been reported in relation to teaching patient safety is the patient safety practices of the preceptors themselves as well as the previous experience of the preceptor (Mansour 2013:157)

Other items that had low confidence scores included the opportunity to learn and interact with members of interdisciplinary teams which only 51.8% (N = 89) of the students agreed that they had been given sufficient opportunities. The low mean score in this item (3.38 \pm SD 1.03) was consistent with the low mean score in clinical learning on the subscale "Working in teams with other health professionals" that was reported by the students in Section 1 of the H-PEPSS (3.48 \pm SD 0.85).

Another item with low confidence score was in regard to the integration of patient safety in the overall programme, where only 56.9% (N = 99) of the students agreed that it was well integrated in the programme with a mean confidence score of 3.53 (\pm SD 0.99). This finding affirms the need for integration of patient safety in the health professional's curriculum is well documented. In addition, the integration should be in both the classroom and clinical settings, while ensuring that there is consistency in what is taught in both settings.

The students were also asked if the scope of what was "safe" for them to do in the practice setting was very clear and 66.1% (117) agreed that it was clear to them what safety was in the practice setting with a mean confidence score of 3.67 (\pm SD 0.93).

4.3.6 Comfort speaking up about patient safety

The three items in this section were focused on the safety behaviour in terms of speaking up about patient safety by the student in the clinical setting despite them being knowledgeable about patient safety. The results of this section are tabulated in Table 4.21.

Table 4.21: Comfort in speaking up about patient safety

Item	Mean SD	Disagree n (%)	Neutral n (%)	Agree n (%)
In clinical settings, discussion around adverse events focuses mainly on system-related issues	3.42 (1.00)	29 (16.4%)	55 (31.1%)	93 (52.5%)
In clinical settings, reporting a patient safety problem will result in negative repercussions for me	3.33 (1.07)	42 (23.9%)	42 (23.9%)	92 (52.3%)
If I see someone engaging in unsafe care practice in the clinical setting, I feel safe to approach them	3.46 (1.13)	35 (19.8%)	42 (23.7%)	100 (56.5%)

In the clinical settings, 93 students (52.5%) agreed that the discussion around adverse events focused mainly on system-related issues instead of the individual most responsible for the event, with a mean confidence score of 3.42 (\pm SD 1.00). Ninety-two (52.2%) students agreed that reporting a patient safety problem will result in negative repercussions for them (mean score 3.33 \pm SD 1.07) while 100 (56.4%) of the students reported that they felt safe approaching someone whom they observed engaging in unsafe care practice (mean score 3.46 \pm SD 1.13).

The results of the first and second items in this section were indicative of the patient safety culture of the clinical settings which supported the findings in the subscale *Culture of safety* in Section 1 of the H-PEPSS where the students reported a mean score of 3.55 in learning about this subscale within the clinical setting. The implication of this finding is that the culture of the clinical setting, which forms part of the hidden curriculum that the students are exposed to, influences the students' learning about patient safety. A patient safety culture is one which instead of blaming individuals for errors uses those errors as opportunities to improve the system and prevent harm (Ulrich & Kear 2014:447). Another key element in establishing a safety culture is the reporting and speaking up about any concerns on patient safety by the staff as well as the students. As reported in this study, 52.2% of the students agreed that reporting a patient safety problem would result in negative repercussions for them. Further, only 56.4% of the students agreed that they felt safe approaching someone who they observed engaging in unsafe care practice. The findings of the current study are consistent with literature that shows that underreporting and failure of raising concern about errors is a common issue in many organisations, both by the students as well as by staff (Andrew & Mansour 2014:311; Blair et al 2016:488). The Council of Deans of Health (2016:23) conducted a literature review related to supporting nursing, midwifery and allied health professional students in the UK to raise

concerns with the patient safety. Three key themes emerged from the evidence – students need to be empowered and supported so as to voice concerns about safety issues, there are certain patient safety issues that students consider as more dangerous, thus prompting them to speak up, and the student may fail to report an incident fearing that it would impact the clinical assessment outcomes.

4.3.7 Relationship between demographic characteristics and H-PEPSS scores

The researcher further analysed the differences in self-reported patient safety competence based on the demographic characteristics of the participants. The main demographic characteristics that were compared were gender, university and the academic level of the students. Age was not included in this analysis as this was a homogenous group without major differences in the ages of the students.

4.3.7.1 Gender differences in the self-reported patient safety competence

To determine if there was significant difference in the self-reported patient safety competence between the male and female students, an independent t-test was done where $p < 0.05$ was considered significant. Further, the researcher also calculated the Cohen's *d* effect size to determine the magnitude of the difference between the two groups. The results are reflected in Table 4.22. In the H-PEPSS subscales, the male students reported higher mean confidences than female students in all the subscales. In the *Clinical safety* and *Culture of safety* subscales, the male students reported significantly higher mean scores than the female students ($p < 0.05$, two-tailed) in both the classroom and clinical setting. The magnitude of the differences in their mean scores in these two subscales was a moderate range (effect size = 0.34 – 0.47). In addition, the male students were significantly more confident than the females in learning about *Working in teams with other health professionals* and *Understanding human and environmental factors* in the clinical settings with effect sizes of 0.38 and 0.46 indicating moderate differences in the mean scores.

Table 4.22: Differences between genders on the h-pepss subscales

H-PEPSS subscale	Setting	Male	Female	t	p	Effect size
		Mean (SD)	Mean (SD)			
Clinical safety	Class	4.13 (0.70)	3.87 (0.86)	2.20	0.03*	0.34
	Clinical	4.08 (0.72)	3.79 (0.84)	2.47	0.02*	0.37
Culture of safety	Class	3.93 (0.67)	3.60 (0.86)	2.79	0.01*	0.42
	Clinical	3.74 (0.81)	3.38 (0.96)	2.68	0.01*	0.40
Working in teams with other health professionals	Class	3.79 (0.78)	3.62 (0.78)	1.39	0.17	0.21
	Clinical	3.64 (0.85)	3.33 (0.82)	2.52	0.01*	0.38
Communicating effectively	Class	4.08 (0.88)	3.99 (0.98)	0.63	0.53	0.1
	Clinical	3.78 (0.99)	3.71 (0.94)	0.44	0.67	0.07
Managing safety risks	Class	3.86 (0.86)	3.65 (0.94)	1.56	0.12	0.23
	Clinical	3.67 (0.94)	3.44 (0.94)	1.60	0.11	0.24
Understanding human and environmental factors	Class	3.79 (0.850)	3.59 (0.85)	1.58	0.12	0.24
	Clinical	3.64 (0.88)	3.23 (0.90)	3.08	0.00*	0.46
Recognise, respond to and disclose adverse events	Class	3.75 (0.80)	3.63 (0.81)	0.95	0.35	0.14
	Clinical	3.49 (0.87)	3.40 (0.83)	0.69	0.49	0.1

* Statistically significant at $p < 0.05$

Additionally, the researcher also sought to find out if there were any differences in gender on perceptions of how the broader safety issues are addressed in the nursing programme as well as comfort in speaking up about patient safety. The results are reflected in Table 4.23. In Section 2 of the H-PEPSS, the male students reported a higher confidence overall, with higher means scores in all the items as compared to the female students. There was a statistically significant difference between the male and female mean scores in their perception about “the clarity on scope of safety”, “consistency of the preceptors in clinical settings” and “sufficiency of the opportunities to learn and interact with members of the interdisciplinary teams”. The magnitude of the difference in mean scores was moderate, with effect sizes of 0.37, 0.47 and 0.33 respectively. In the comfort in speaking up about patient safety section, the female students scored higher than male students in feeling that reporting a patient safety issue would result in negative repercussions for them (3.42 and 3.24 respectively), but this was not statistically significant ($p = 0.28$). In previous similar studies, male students have shown higher

confidence levels on the patient safety competence than the female students (Colet et al 2015:418). However, of great interest is the gender difference in the perception that reporting a patient safety issue would lead to negative repercussions to the students.

Table 4.23: Differences between genders on the H-PEPSS Sections 2 and 3

Item	Male	Female	t	p	Effect size
	Mean (SD)	Mean (SD)			
Section Two: Broader aspects of patient safety					
As a student, the scope of what was “safe” for me to do in the practice setting was very clear to me	3.83 (0.92)	3.49 (0.91)	2.467	0.02	0.37
There is consistency in how patient safety issues were dealt with by different preceptors in the clinical setting	3.50 (1.12)	3.00 (0.99)	3.138	0.00	0.47
I have sufficient opportunity to learn and interact with members of interdisciplinary teams	3.55 (1.02)	3.21 (1.03)	2.18	0.03	0.33
I have gained a solid understanding that reporting adverse events and close calls can lead to change	3.80 (1.00)	3.68 (1.04)	0.777	0.44	0.12
Patient safety is well integrated into the overall programme	3.60 (1.02)	3.47 (0.97)	0.909	0.37	0.13
Clinical aspects of patient safety are well covered in the programme	3.88 (0.92)	3.82 (0.97)	0.434	0.67	0.06
“System” aspects of patient safety are well covered in our programme	3.71 (0.92)	3.62 (0.93)	0.652	0.52	0.1
Section Three: Comfort speaking up about patient safety					
In clinical settings, discussion around adverse events focuses mainly on system-related issues	3.47 (1.01)	3.37 (0.99)	0.658	0.51	0.1
In clinical settings, reporting a patient safety problem will result in negative repercussions for me	3.24 (1.14)	3.42 (0.99)	-1.084	0.28	0.17
If I see someone engaging in unsafe care practice in the clinical setting, I feel safe to approach them	3.50 (1.15)	3.43 (1.12)	0.438	0.66	0.06

* Statistically significant $p < 0.05$

4.3.7.2 Year of study and self-reported patient safety competence

The researcher carried out one way between groups ANOVA with post hoc tests to check if there was a statistically significant difference between the mean score of the H-PEPSS across the three academic levels. In addition, effect sizes were calculated to quantify the magnitude of the difference (for those with statistical significance). The mean patient safety dimension scores for the classroom and clinical settings by year of study are reported in Table 4.24 and Figure 4.7, which show that in all the years, the mean scores

were higher for all the subscales in the classroom setting than the clinical setting, indicating that the students felt more confident about what they learnt in the classroom setting. There was no statistical significance ($p > 0.05$) in the reported mean scores in the seven subscales across the three years for the classroom and the clinical settings.

Table 4.24: H-PEPSS subscales mean scores per year of study

Subscale	Setting	Year of study			F	p
		2nd	3rd	4th		
		Mean (SD)	Mean (SD)	Mean (SD)		
Clinical safety	Class	3.96 (0.77)	3.93 (0.80)	4.14 (0.79)	1.18	0.31
	Clinical	3.85 (0.72)	3.85 (0.78)	4.15 (0.83)	2.68	0.07
Culture of safety	Class	3.67 (0.71)	3.82 (0.83)	3.75 (0.77)	0.54	0.59
	Clinical	3.55 (0.78)	3.60 (0.90)	3.52 (1.00)	0.11	0.89
Working in teams with others	Class	3.70 (0.67)	3.73 (0.84)	3.67 (0.79)	0.08	0.93
	Clinical	3.53 (0.81)	3.47 (0.84)	3.48 (0.90)	0.08	0.93
Communicating effectively	Class	3.94 (0.72)	4.10 (0.85)	4.00 (1.17)	0.44	0.65
	Clinical	3.75 (0.81)	3.70 (1.04)	3.81 (0.96)	0.22	0.80
Managing safety risks	Class	3.82 (0.78)	3.73 (0.92)	3.75 (0.98)	0.14	0.87
	Clinical	3.51 (0.98)	3.55 (0.90)	3.62 (1.00)	0.19	0.83
Understanding human & environmental factors	Class	3.56 (0.77)	3.68 (0.84)	3.82 (0.93)	1.12	0.33
	Clinical	3.27 (0.92)	3.44 (0.89)	3.59 (0.92)	1.47	0.23
Recognise, respond to and disclose adverse events	Class	3.57 (0.74)	3.75 (0.81)	3.70 (0.84)	0.77	0.47
	Clinical	3.26 (0.83)	3.45 (0.88)	3.59 (0.79)	1.77	0.17

The mean scores for classroom setting in the subscales “communicating effectively”, “culture of safety”, “recognising adverse events” and “working in teams” were higher for the third-year students as compared to the second-year students, but the reported mean scores dropped in the fourth year group (See Figure 4.7). However, the mean scores for the subscales “clinical safety” and “understanding human and environmental factors” was highest in the fourth year group as compared to the other two groups.

As depicted in Figure 4.8 in the clinical setting of the subscales *Managing safety risks*, *Understanding human & environmental factors* and *Recognise, respond to and disclose adverse events* showed an increase in the mean confidence between the second year and third year and between the third year and fourth year. In subscales *Culture of safety*

there was a drop in mean score for the fourth year as compared to the third year but was higher than the second year.

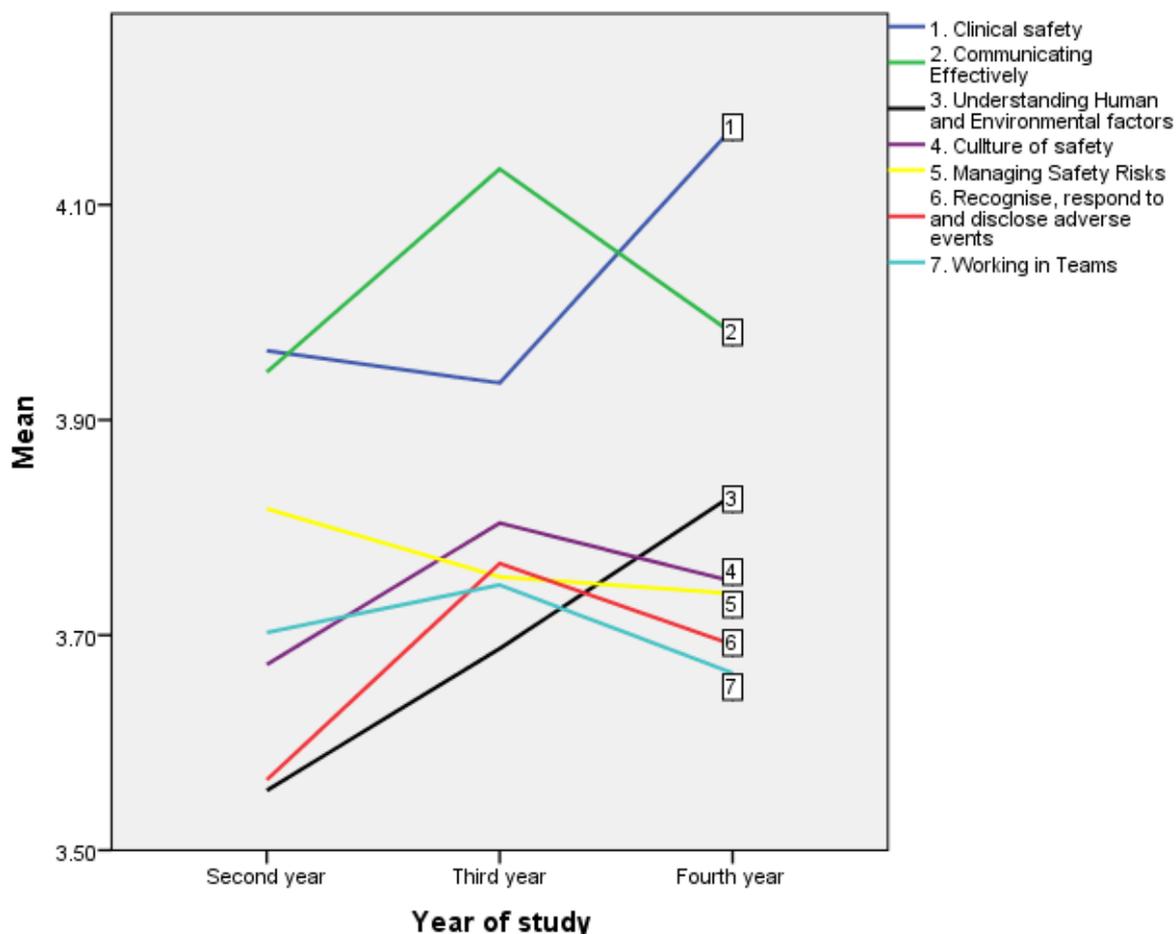


Figure 4.7: Patient safety perceived competence per year of study – Classroom setting

These results are comparable to other similar studies that have investigated the relationship between the year of study and the patient safety knowledge and competence confidence as perceived by the nursing student. Doyle et al (2015:135), in a study on medical students, found that the students in the upper years were less confident in their learning around items related to working in teams and the culture of safety as compared with those in the lower years. Further, Colet et al (2015:418) in Saudi Arabia reported that the perceived patient safety competence in classroom and clinical setting decreased slightly to moderately from the second year to the fourth year. This was further supported by Lukewich et al (2015:930) who also found that the nursing students' self-reported confidence in learning about patient safety in the clinical setting tended to decline as they progressed through their academic programme. However, in another study by Stevanin

et al (2015:926), the third-year nursing students (highest academic level) reported significantly higher mean scores on all the subscales in the H-PEPSS as compared to the first- and second-year students both in the classroom and clinical setting.

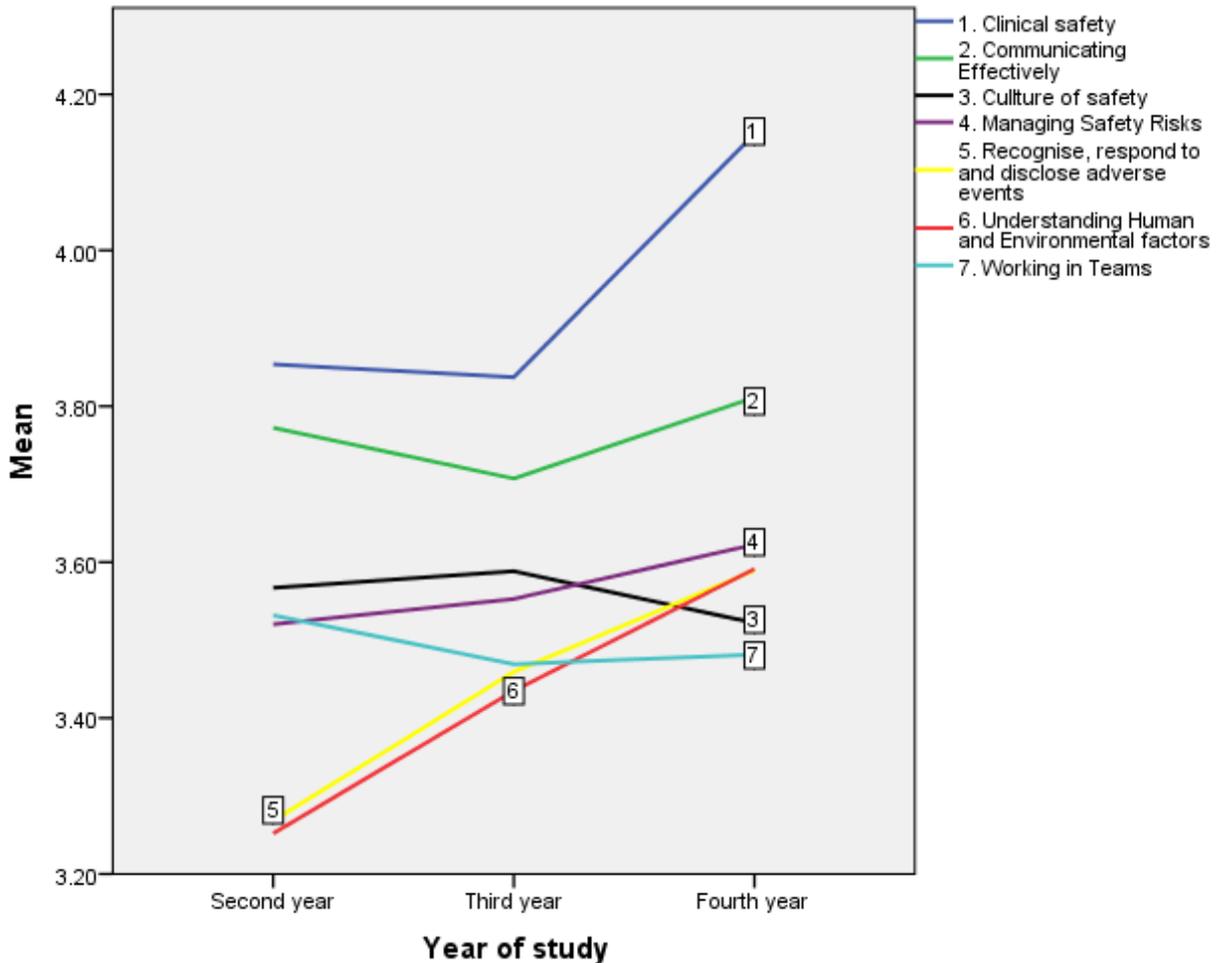


Figure 4.8: Patient safety perceived competence per year of study – Clinical setting

Table 4.25: H-PEPSS Sections 2 and 3 mean scores per year of study

Item	Year of Study			F	p	Eta
	2nd	3rd	4th			
	\bar{x} (SD)	\bar{x} (SD)	\bar{x} (SD)			
Section Two: Broader aspects of patient safety						
As a student, the scope of what was “safe” for me to do in the practice setting was very clear to me	3.62 (0.94)	3.65 (0.79)	3.74 (1.11)	0.22	0.80	
There is consistency in how patient safety issues were dealt with by different preceptors in the clinical setting	3.21 (1.07)	3.20 (1.15)	3.38 (1.00)	0.49	0.62	
I have sufficient opportunity to learn and interact with members of interdisciplinary teams	3.05 (0.99)	3.57 (0.93)	3.37 (1.17)	3.61	0.03*	0.20
I have gained a solid understanding that reporting adverse events and close calls can lead to change	3.57 (0.99)	3.81 (0.92)	3.75 (1.18)	0.80	0.45	
Patient safety is well integrated into the overall programme	3.51 (1.03)	3.46 (0.91)	3.67 (1.10)	0.76	0.47	
Clinical aspects of patient safety are well covered in the programme	3.52 (0.97)	3.82 (0.86)	4.15 (0.97)	5.52	0.01*	0.25
“System” aspects of patient safety are well covered in our programme	3.45 (1.04)	3.55 (0.85)	4.02 (0.84)	6.01	0.00*	0.26
Section Three: Comfort speaking up about patient safety						
In clinical settings, discussion around adverse events focuses mainly on system-related issues	3.52 (0.92)	3.49 (1.02)	3.23 (1.01)	1.42	0.24	
In clinical settings, reporting a patient safety problem will result in negative repercussions for me	3.54 (1.00)	3.24 (1.07)	3.30 (1.10)	1.06	0.35	
If I see someone engaging in unsafe care practice in the clinical setting, I feel safe to approach them	3.40 (1.27)	3.59 (0.98)	3.32 (1.24)	.95	0.39	

* Statistically significant at $p < 0.05$

Table 4.26: Percentage of respondents that agreed with each h-pepss section two and three per year of study

Item	Agree & Strongly Agree					
	2nd		3rd		4th	
	N	(%)	N	(%)	N	(%)
Section Two: Broader aspects of patient safety						
As a student, the scope of what was “safe” for me to do in the practice setting was very clear to me	26	61.9%	51	62.2%	40	75.5%
There is consistency in how patient safety issues were dealt with by different preceptors in the clinical setting	18	42.9%	37	45.1%	27	50.9%
I have sufficient opportunity to learn and interact with members of interdisciplinary teams	16	38.1%	46	58.2%	27	52.9%
I have gained a solid understanding that reporting adverse events and close calls can lead to change	24	57.1%	57	70.4%	37	69.8%
Patient safety is well integrated into the overall programme	24	58.5%	41	50.6%	34	65.4%
Clinical aspects of patient safety are well covered in the programme	23	54.8%	55	67.1%	44	83.0%
“System” aspects of patient safety are well covered in our programme	24	57.1%	48	58.5%	43	81.1%
Section Three: Comfort speaking up about patient safety						
In clinical settings, discussion around adverse events focuses mainly on system-related issues	25	59.5%	45	54.9%	23	43.4%
In clinical settings, reporting a patient safety problem will result in negative repercussions for me	25	61.0%	40	48.8%	27	50.9%
If I see someone engaging in unsafe care practice in the clinical setting, I feel safe to approach them	23	54.8%	48	58.5%	29	54.7%

In three items of Section 2 of the H-PEPSS, a statistically significant difference was found in the reported mean scores for the three groups in three of the items, *Sufficient opportunity to learn and interact with members of interdisciplinary teams*, *Clinical aspects of patient safety are well covered in the programme* and *System aspects of patient safety are well covered in our programme* (Table 4.25). Despite reaching statistically significant difference in the items, the actual mean score difference for the three items between the three academic years showed only a small effect size, ranging from 0.20 to 0.26. The item *Sufficient opportunity to learn and interact with members of interdisciplinary teams* was scored significantly higher by the third years than the second years ($3.05 \pm SD 0.99$

and $3.57 \pm \text{SD } 0.93$ respectively) but the mean score did not differ significantly with the fourth years. For the item *Clinical aspects of patient safety are well covered in the programme* the fourth year students reported a significantly higher mean score than the second year students ($4.15 \pm \text{SD } 0.97$ and $3.52 \pm \text{SD } 0.97$ respectively) with 83% (N=44) of the fourth year agreeing that the clinical aspects were well covered in the programme (Table 4.26). The fourth year students reported a significantly higher mean score ($4.02 \pm \text{SD } 0.84$) for the item *System aspects of patient safety are well covered in our programme* than the third year ($3.45 \pm \text{SD } 1.04$) and second year ($3.55 \pm \text{SD } 0.85$) but there was no significant difference between the mean scores of the third year students and the second year students. In this section, nursing students' self-reported confidence on the broader aspects of patient safety across all the years of study was lower than what has been reported in other studies (Raymond et al 2017:56).

In Section 3 of the H-PEPSS on speaking up about patient safety in the clinical settings, there was no statistically significant difference in the mean scores of the items across the three academic years. However, on the item *Discussion around adverse events focuses mainly on system-related issues* the mean score dropped progressively from the second year ($3.52 \pm \text{SD } 0.92$) to the fourth year ($3.23 \pm \text{SD } 1.01$) with 59.5% of the second-year and 43.4% of the fourth-year students agreeing with the statement. A higher percentage of the second-year students (61%) agreed that reporting a patient safety problem would result in negative repercussions for them as compared to the fourth year students (50.9%). In regard to feeling safe to approach someone engaging in unsafe practice, there was no statistically significant difference in the mean scores for the three groups however the fourth year group reported the lowest mean score ($3.32 \pm \text{SD } 1.24$) and only 54.7% of the students agreed that they felt safe.

Lukewich et al (2015:930) conducted an annual cross-sectional study from 2010 to 2013 on nursing students to investigate their self-reported confidence on patient safety knowledge and confidence as they progressed through the different academic levels. They found that the students reported low confidence scores in regard to how broader patient safety issues were covered in the programme and comfort in speaking up about patient safety, almost similar to those reported in this study. They found that the nursing students were least confident about the *sufficient opportunity to learn and interact with members of interdisciplinary teams*, with mean scores of 3.1 in the second year, which stabilised in the third year at 3.4 but then dropped to 3.2 in the fourth year – a similar to

that seen in the current study. The students' confidence levels were also low in regard to comfort about speaking up about patient safety with similar trends as seen in the current study where the confidence levels were lowest for all items in the fourth year.

4.4 PHASE THREE: PERCEPTIONS OF HOSPITAL STAFF ON PATIENT SAFETY CULTURE AND PATIENT SAFETY EDUCATION

4.4.1 Overview

Learning about patient safety occurs through theory and practice and therefore to gain deeper understanding about patient safety education it is important that one looks at education both from the classroom setting and the clinical setting and understands how the clinical learning environment facilitates the development of patient safety competencies in nursing students. This phase of the study, therefore, provided comprehensive information regarding the patient safety culture that the students are exposed to in the clinical settings and the role it plays in the learning of the students about patient safety. It further provided information on the perceptions of the healthcare workers on how well the pre-registration curriculum prepares the nursing students in handling patient safety matters both from the theoretical and practical viewpoints, and the associated challenges.

This section, therefore, presents the main quantitative and qualitative findings of the third phase of the research study. This is based on the results of the patient safety survey conducted on the hospital staff in the clinical sites where the students undertake their clinical learning about patient safety. The findings are presented in tables and figures describing the data. It also includes the results of semi-structured interviews conducted on representatives from the nursing management, those linked to patient safety and the frontline nurses who are involved with student learning in the clinical areas. The findings are organised under subthemes and categories of themes that emerged from the interviews.

4.4.2 Patient culture survey

In the fourth objective the researcher assessed the patient safety culture in the hospitals where student nurses undertake clinical learning. This was carried out in two of the main hospitals that are utilised by the universities for clinical attachments for the student

nurses. The researcher utilised the SAQ – Short Form, which is a self-administered closed-ended questionnaire to achieve the objective.

The data collection tool comprised two sections. Section A collected the demographic characteristics of the sample which included gender, age, professional status, highest academic qualifications, work experience, current unit of assignment and length of time in the current unit, while section B was the SAQ – Short Form. The SAQ – Short Form is a 36-item questionnaire that measures patient safety culture on six dimensions and the items are grouped as follows:

1. Teamwork climate;
2. Safety climate;
3. Job satisfaction;
4. Stress recognition;
5. Perceptions of management: measured at unit and hospital level; and
6. Work conditions.

4.4.2.1 Response rate

Of the expected 277 questionnaires, a total of 241 (87%) were returned. Table 4.27 shows the response rate for each hospital. The response rate for Hospital A was 96.1% while that of Hospital B was 77.4%.

Table 4.27: Response rate by hospital

	Population	Sample size	Returned questionnaires	Response rate
Hospital A	403	153	147	96.1%
Hospital B	326	124	96	77.4%
Total	729	277	243	

The returned questionnaires were screened for missing content. Seven of the questionnaires had more than 70% of the responses missing, and therefore were not included in the final analysis, leaving 234 (84.5%) valid questionnaires.

4.4.2.2 Demographic characteristics

Key demographic data that was obtained from the respondents' included gender, age, professional status, highest academic qualifications, work experience, current unit of assignment and length of time in the current unit which is summarised in Table 4.28

Table 4.28: Summary of demographic data classified by professions

	Doctor		Nurse Manager		Staff Nurse		Clinical officer		Overall	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
	49	20.9	26	11.1	122	52.1	37	15.8	234	100
Gender										
Male	29	30.5	9	9.5	35	36.8	22	23.2	95	40.6
Female	20	14.4	17	12.2	87	62.6	15	10.8	139	59.4
Age										
18 - 24	13	23.2	1	1.8	28	50.0	14	25.0	56	23.9
25 - 34	28	26.4	10	9.4	53	50.0	15	14.2	106	45.3
35 - 44	5	16.7	6	20.0	16	53.3	3	10.0	30	12.8
45 -54	2	7.4	8	29.6	12	44.4	5	18.5	27	11.5
55 -64	1	6.7	1	6.7	13	86.7	0	0.0	15	6.4
Highest academic qualification										
Certificate	0	0.0	0	0.0	14	100.	0	0.0	14	6.0
Diploma	0	0.0	10	9.1	65	59.1	35	31.8	110	47.0
Degree	47	45.2	12	11.5	43	41.3	2	1.9	104	44.4
Master	1	20.0	4	80.0	0	0.0	0	0.0	5	2.1
PhD	1	100.0	0	0.0	0	0.0	0	0.0	1	.4
Years of experience										
≤1 yr	23	37.7	2	3.3	23	37.7	13	21.3	61	26.1
1 - 5yrs	18	19.4	6	6.5	53	57.0	16	17.2	93	39.7
6- 10yrs	8	20.5	6	15.4	20	51.3	5	12.8	39	16.7
≥ 11yrs	0	0.0	12	29.3	26	63.4	3	7.3	41	17.5
Current work unit										
Obs/Gyn	7	20.6	5	14.7	22	64.7	0	0.0	34	14.5
Medical	17	23.6	5	6.9	34	47.2	16	22.2	72	30.8
OPD	12	19.4	9	14.5	32	51.6	9	14.5	62	26.5
Paeds	6	22.2	2	7.4	13	48.1	6	22.2	27	11.5
Surgical	7	17.9	5	12.8	21	53.8	6	15.4	39	16.7
Length of time in the current work unit										
≤1 yr	35	36.1	1	1.0	45	46.4	16	16.5	97	41.5
1 - 5yrs	8	8.0	18	18.0	59	59.0	16	15.8	100	43.2
6 - 10yrs	6	20.7	5	17.2	15	51.7	3	10.3	29	12.4
≥11yrs	0	0.0	2	28.6	3	42.9	2	28.6	7	3.0

The majority of the healthcare workers who responded to the survey were staff nurses ($n = 122, 52.1\%$). The doctors accounted for 20.9% ($n = 49$) of the respondents, clinical

officers accounted for 15.8% (n = 37) while the nurse managers accounted for 11.1% (n = 26). More than half of the respondents were female at 59.4% (n = 139) with females dominating the nurse manager and staff nurse group (n = 104, 74.8%) and males dominating the doctors and clinical officers professions (n = 51, 53.7%). In terms of age, the bulk of the respondents were aged 34 years and younger (n = 162, 69.2%). Only 15 respondents were between the ages of 45 and 64 (n = 42, 17.9%) and most of those were in the nurse manager and staff nurse groups (n = 34, 80.9%). None of the respondents indicated that they were 65 years or above. The largest proportion of the respondents had less than five years of work experience with 61 (26.1%) having worked for one year or less with 93 having worked for one to five years since graduation (39.7%).

The work units were collapsed and categorised into the five main work areas for ease of analysis. The majority of the respondents were working in the medical units with n = 72 (30.8%) while the lowest number was found in the paediatric units with 27 (11.5%). The length of time the respondents had worked in the current work units corresponded with the years of experience with 84% (n = 197) reporting that they had worked in the work area for five years or less.

4.4.2.3 *Descriptive statistics of the SAQ*

All the items in the SAQ were answered following a five-level Likert scale which was coded as 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree except questions 2, 11 and 36 which were reverse scored. Strongly agree and agree were collapsed to represent a positive agreement with the item and these were reported as “agree” while disagree and strongly disagree indicated a negative response to the item and this were reported as “disagree”. Frequency counts and percentages of those who agreed, were neutral and disagreed were computed for each item in the dimensions including their means and standard deviations. In addition, to determine the respondents’ perception of the patient safety culture, scores were determined for the SAQ and respective dimensions by transforming the mean scores to a 100-point scale. The calculation of each mean of the dimension and the total SAQ mean was made based on the formula $(\text{Mean} - 1) \times 25$. A value above 75 was indicative of a strong positive agreement by the respondents regarding the dimension and positive patient safety culture.

4.4.2.3.1 Teamwork Climate

The first dimension of the SAQ measured the perceptions of the respondents on the quality of collaboration among themselves and contained six items. All the items except the second item were scored on a five-point strongly disagree – strongly agree Likert type scale and therefore this was reverse scored. The frequencies of the responses are tabulated in Table 4.29. With the mean and standard deviation of each item and the dimension was indicated.

Table 4.29: Teamwork climate scores

Item	Disagree n (%)	Neutral n (%)	Agree n (%)	Mean (SD)
Nurse input is well received in this clinical area.	10 (4.3)	29 (12.4)	195 (83.3)	4.00 (0.80)
In this clinical area, it is difficult to speak up if I perceive a problem with patient care.	123 (54.2)	23 (10.1)	81 (35.7)	3.20 (1.29)
Disagreements in this clinical area are resolved appropriately	26 (11.2)	43 (18.5)	164 (70.4)	3.80 (0.94)
I have the support I need from other personnel to care for patients.	21 (9.0)	41 (17.5)	172 (73.5)	3.88 (0.90)
It is easy for personnel here to ask questions when there is something that they do not understand.	21 (9.0)	29 (12.4)	184 (78.6)	3.94 (0.92)
The physicians and nurses here work together as a well-coordinated team.	18 (7.7)	35 (15.0)	181 (77.4)	3.92 (0.93)
Teamwork climate mean	69.85 (18.37)			

In this dimension, the respondents generally had positive responses, indicating a positive teamwork climate. The item with the highest positive response was item 1 whereby 83.3% (n =195) of the respondents agreed that the nurse input was well received in their clinical area. Item 2 was negatively worded and thus 54.2% (n = 123) disagreed that it was difficult to speak up if they perceived that there was problem with patient care. The overall teamwork climate mean was 69.85 (\pm SD 18.37), indicative of a positive perception of teamwork and collaboration by the respondents. This result was within the benchmark set by the authors of the tool which was 64.3 (\pm SD 16.6) for this dimension (Sexton et al 2006).

4.4.2.3.2 Safety Climate

This dimension assessed the respondents' perceptions of a strong and proactive organisational commitment to safety and this was measured on seven items. The fifth item in the dimension was negatively worded and therefore was reverse scored. The results are as depicted in Table 4.30.

Table 4.30: Safety climate scores

Item	Disagree n (%)	Neutral n (%)	Agree n (%)	Mean (SD)
I would feel safe being treated here as a patient.	39 (16.8)	59 (25.4)	134 (57.8)	3.52 (1.07)
Medical errors are handled appropriately in this clinical area.	20 (8.5)	60 (25.6)	154 (65.8)	3.69 (0.82)
I know the proper channels to direct questions regarding patient safety in this clinical area.	24 (10.3)	28 (12.0)	181 (77.7)	3.88 (0.90)
I receive appropriate feedback about my performance.	50 (21.5)	48 (20.6)	135 (57.9)	3.52 (1.09)
In this clinical area, it is difficult to discuss errors.	112 (48.5)	30 (13.0)	89 (38.5)	3.18 (1.25)
I am encouraged by my colleagues to report any patient safety concerns I may have.	31 (13.3)	50 (21.5)	152 (65.2)	3.68 (0.94)
The culture in this clinical area makes it easy to learn from the errors of others.	26 (11.3)	46 (20.0)	158 (68.7)	3.71 (0.89)
Safety climate mean score	64.96 (14.79)			

In the safety climate dimension, a large majority (n = 181, 77.7%) of the respondents reported that they knew the proper channels to direct questions regarding patient safety issues in their hospitals with 68.7% (n = 158) agreeing that the culture in their hospital made it easy to learn from errors. In addition, 65.8% (n = 154) agreed that medical errors were handled appropriately in their hospital and 65.2% (n = 152) felt encouraged by their colleagues to report patient safety concerns. However, 38.5% (n = 89) of them reported that it was difficult for them to discuss errors, which was a higher percentage compared to the benchmark study by Sexton et al (2006) in which only 20% of the participants agreed with the item, and a study in Albania, where only 20.1% of the participants agreed with the statement (Gabrani et al 2015:5). This was indicative that inasmuch as there were systems in the hospital for handling errors, there is a failure in the reporting of those errors.

The overall safety climate mean score was 64.96 (SD ± 14.79) which was indicative of a more positive perception of organisational commitment to patient safety with results comparable to studies in other settings (Buljac-Samardzic, van Wijngaarden & Dekker-van Doorn 2015:5; Poley et al 2011:310).

4.4.2.3.3 *Job Satisfaction*

The job satisfaction domain measured the respondents' positivity about the work experience and comprised five items. The descriptive results for this domain are tabulated in Table 4.31.

Table 4.31: Job satisfaction scores

Item	Disagree n (%)	Neutral n (%)	Agree n (%)	Mean (SD)
I like my job.	5 (2.2)	7 (3.0)	219 (94.8)	4.52 (0.72)
Working here is like being part of a large family.	7 (3.0)	23 (9.9)	203 (87.1)	4.24 (0.80)
This is a good place to work.	10 (4.3)	33 (14.2)	189 (81.5)	4.06 (0.84)
I am proud to work in this clinical area.	6 (2.6)	34 (14.8)	190 (82.6)	4.17 (0.82)
Morale in this clinical area is high.	31 (14.3)	43 (19.8)	143 (65.9)	3.64 (1.02)
Job satisfaction mean score	78.31 (16.08)			

In the job satisfaction dimension, 94.8% (n = 219) of the respondents stated that they liked their job, 87.1% (n = 203) stated that working in the hospital was like being part of a large family, 82.6 % (n = 190) were proud to work in the hospital and 81.5% (n= 189) stated that it was a good place to work. However, despite the high confidence depicted in the other item, a lower number 143 (65.6%) of the respondents reported that the morale in the clinical area was high. The overall dimension score was also high at 78.31 (SD ± 19.08), which was a reflection of the confidence that the respondents had in their own workplace. The positive perception of job satisfaction is comparable with other studies where job satisfaction was found to be high in the respondents (Brasaite et al 2016:5; Cauduro et al 2015:28; Saraiva & Almeida 2016:73)

4.4.2.3.4 *Stress Recognition*

The dimension measured the respondents' acknowledgement of how performance is influenced by stressors, for example excessive workload, fatigue, and tension or hostility

among the healthcare workers. Table 4.32 shows the distribution of the answers to the items in the dimension as well as the overall mean score of the dimension.

Table 4.32: Stress recognition scores

Item	Disagree n %	Neutral n %	Agree n %	Mean (SD)
When my workload becomes excessive, my performance is impaired.	79 (37.4)	28 (13.3)	104 (49.3)	3.29 (1.36)
I am less effective at work when fatigued.	80 (36.4)	27 (12.3)	113 (51.4)	3.30 (1.28)
I am more likely to make errors in tense or hostile situations.	91 (41.4)	31 (14.1)	98 (44.5)	3.14 (1.31)
Fatigue impairs my performance during emergency situations	104 (49.1)	21 (9.9)	87 (41.0)	2.98 (1.35)
Stress recognition mean score	53.81 (28.58)			

Only about half (51.4%, n = 113) of the respondents stated that they were less effective when fatigued and only 41% (n = 87) recognised that fatigue could impair their performance during an emergency. Less than half (49.3% n = 104) acknowledged that excessive workload impaired their performance while only 44.5% (n = 98) acknowledged that tense or hostile situations could cause them to make an error. An overall mean score of 53.81 (SD ± 28.58) demonstrated that the respondents were not greatly aware of how factors such as fatigue, excessive workload and tense or hostile situations can foster the occurrence of errors. The score was below the 74.4 (SD ± 20.2) benchmark that was suggested by Sexton et al (2006) as well as what has been reported in other studies (Elsous et al 2016:6; Maria et al 2016:73; Rigobello et al 2017). However, lower scores were reported by Schwendimann, Zimmermann, Küng, Ausserhofer and Sexton (2013:32) where the respondents in 14 hospital units in Switzerland reported a stress recognition mean of 31.4 (SD ± 13.8).

4.4.2.3.5 *Perceptions of Management*

The respondents' perceptions of management at unit and hospital level were also measured under the perceptions of management dimension. For the purpose of this presentation, the researcher will present this dimension as measured in the two level in Tables 4.33.

Table 4.33: Perceptions of management scores

	Disagree n (%)	Neutral n (%)	Agree n (%)	Mean (SD)
<i>Unit management perception</i>				
Management supports my daily efforts	23 (9.9)	43 (18.5)	166 (71.6)	3.75 (0.93)
Management does not knowingly compromise patient safety	56 (25.0)	48 (21.4)	120 (53.6)	3.32 (1.05)
Management is doing a good job	18 (7.8)	51 (22.0)	163 (70.3)	3.72 (0.80)
Problem personnel are dealt with constructively by our management	13 (5.7)	46 (20.2)	169 (74.1)	3.81 (0.76)
I get adequate, timely info about events that might affect my work	34 (14.8)	46 (20.1)	149 (65.1)	3.60 (0.89)
<i>Unit management perception mean score</i>			65.94 (14.31)	
<i>Hospital Management perception</i>				
Management supports my daily efforts	30 (13.3)	68 (30.2)	127 (56.4)	3.56 (0.94)
Management does not knowingly compromise patient safety	60 (26.7)	53 (23.6)	112 (49.8)	3.25 (1.02)
Management is doing a good job	15 (6.6)	61 (26.6)	153 (66.8)	3.70 (0.80)
Problem personnel are dealt with constructively by our	18 (8.1)	56 (25.1)	149 (66.8)	3.68 (0.81)
I get adequate, timely info about events that might affect my work	45 (19.8)	59 (26.0)	123 (54.2)	3.39 (0.96)
<i>Hospital management perception mean score</i>			62.91 (14.82)	
Overall perception of management mean score			64.43 (13.89)	

In this dimension, 71.6% (n = 166) agreed that the unit management supported their daily efforts while 56.4% (n = 127) agreed hospital management supported them. With regard to management not knowingly compromising patient safety, the distribution of those who agreed was comparable, with 53.6% (n =120) for unit management and 49.8% (n =112) for hospital management. Regarding receiving adequate and timely information about events that might affect their work, more respondents reported that their unit management (65.1%) was better at this than the hospital management (54.2%) which is expected because the unit management is in direct contact with the healthcare provider. In general, the respondents had a more positive perception of unit management (65.94, SD ± 14.31) as compared to the hospital management (62.91 SD ± 14.82) which is a trend that has been seen in other studies (Nguyen, Gambashidze, Ilyas, & Pascu 2015:6). The overall perception of management was 64.43 (SD± 13.89) which was higher than the benchmark data from Sexton et al (2006) of 38.3 (SD ± 18.7), as well as other

studies where they have reported lower mean scores of 47 (Rigobello et al 2017:4), 48 (Relihan et al 2009:433) and 54.55 (Maria et al 2016:73)

4.4.2.3.6 Working Conditions

The work conditions dimension measured the respondents' perceptions of the quality of the work environment and logistical support which included staffing levels, staff training, provision of necessary information for making diagnostic and therapeutic decisions as well as supervision for the trainees in the hospital. Table 4.34 shows the distribution and the mean score of the responses in the items and the overall mean score of the dimension.

Table 4.34: Work conditions scores

Item	Disagree n %	Neutral n %	Agree n %	Mean (SD)
The levels of staffing in this clinical area are sufficient to handle the number of patients.	135 (58.2)	31 (13.4)	66 (28.4)	2.59 (1.30)
This hospital does a good job of training new personnel.	34 (14.6)	47 (20.2)	152 (65.2)	3.57 (0.95)
All the necessary information for diagnostic and therapeutic decisions is routinely available to me.	46 (19.8)	60 (25.9)	126 (54.3)	3.41 (0.97)
Trainees in my discipline are adequately supervised.	35 (15.0)	48 (20.6)	150 (64.4)	3.64 (1.00)
Work conditions mean score			57.52 (18.57)	

A significant majority (58.2%) of the respondents disagreed that the level of staffing in their units was sufficient to handle the number of patients in their units with 13.4% remaining indifferent. 45.7% of the respondent also disagreed or remained indifferent regarding the hospitals provision of necessary information for making clinical decisions. Nevertheless, 65.2% (n = 152) agreed that the hospital did a good job of training new personnel and 64.4% (n = 150) agreed that the trainees were adequately supervised. The overall work conditions mean score on a 100-point scale was 57.52 (SD ± 18.57) which was greater than the benchmark used for reference (49.2) as well as what has been reported in other studies (Carvalho et al 2015:1041; Gabrani et al 2015:3; Nguyen et al 2015:6). However, Schwendimann et al (2013:5) reported higher scores ranging 60.7 to 66.0 in hospitals in the USA and Switzerland, while in Netherlands Buljac-Samardzic et al (2015:5) reported a mean comparable to this study with a score of 57.57.

4.4.2.3.7 Independent items

The authors of the instruments also included independent items that do not fall in any of the dimensions but were analysed independently (item 14 and 33 – 36). The distribution and the mean scores are presented in Table 4.35.

Table 4.35: Independent item scores

	Disagree n %	Neutral n %	Agree n %	Mean (SD)
My suggestions about safety would be acted upon if I expressed them to management.	32 (13.8)	71 (30.6)	129 (55.6)	3.57 (0.97)
I experience good collaboration with nurses in this clinical area.	8 (3.4)	24 (10.3)	200 (86.2)	4.05 (0.75)
I experience good collaboration with staff physicians in this clinical area.	12 (5.2)	32 (13.9)	186 (80.9)	3.93 (0.79)
I experience good collaboration with pharmacists in this clinical area.	14 (6.1)	35 (15.2)	181 (78.7)	3.88 (0.82)
Communication breakdowns that lead to delays in delivery of care are common	101 (43.5)	37 (15.9)	94 (40.5)	3.00 (1.21)

Regarding the suggestions about safety that they expressed to management, 55.6% (n = 129) agreed that management acted upon them. Majority of the respondents agreed that they experienced good collaboration with nurses (86.2%), with doctors (80.9%) and the pharmacists (78.7%) in their hospitals. A significant percentage of the respondents (40.5%) agreed that communication breakdowns that lead to delays in the delivery of care were common in their hospitals.

4.4.2.3.8 Overall patient safety culture perception

The overall mean SAQ score of the respondents was 65.76 (SD ± 9.90) which was indicative of a positive perception of patient safety culture. However, the perception of the patient safety culture among the respondents was below international recommendations, which are 75 for a good perception of safety culture. Nevertheless, the score was comparable with the benchmark data (60.00) as well as other studies (Brasaite, Kaunonen, Martinkenas & Suominen 2016:5; Cauduro et al 2015).

Figure 4.9 shows a comparison of the overall SAQ total with the mean scores of the six dimensions of the SAQ. As it depicted in the diagram, the dimension that had the highest positive attitude was *Job Satisfaction* with a mean score of 78.31 while the lowest was *Stress Recognition* with a mean score of 53.81.

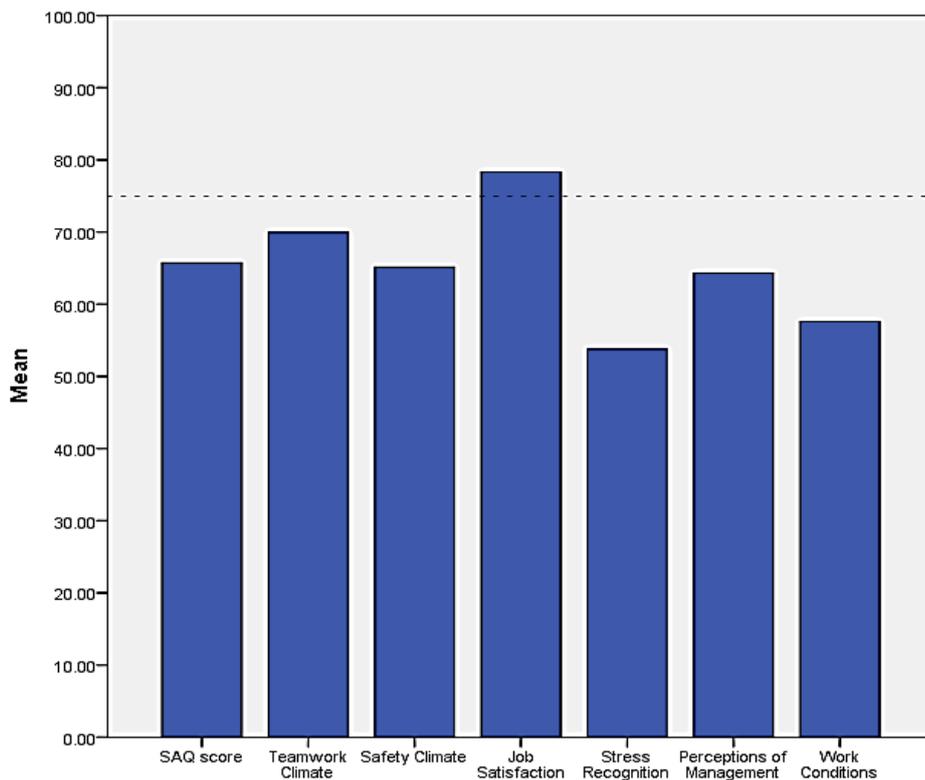


Figure 4.9: Comparison the SAQ dimensions mean score

4.4.2.4 Comparison of SAQ scores across demographic factors

Each dimension of the SAQ and the total SAQ was subjected to inferential analysis to explore the impact of the demographic factors on the scores. Independent t-tests were used to compare the mean scores for categories that had two independent categorical variables, that is, gender and hospital. One way ANOVA tests were done to compare the mean scores of independent variables with more than two categorical groups. Tukey HSD post hoc tests were conducted to identify the differences when the ANOVAs were significant. This included age, position held, highest qualification, number and type of unit work. Table 4.36 presents the comparison of the SAQ mean scores across the demographic factors.

Table 4.36: Comparison SAQ mean scores across demographic factors

Factor	TW	SC	JS	SR	PM	WC	Total SAQ
Gender							
Male	67.9±16.3	64.2±15.2	78.1±15.6	54.4±28.3	64.1±11.7	56.9±17.9	65.4±9.3
Female	71.2±14.6	65.5±14.6	78.5±16.5	53.4±28.9	64.7±15.3	57.9±19.1	66.0±10.3
<i>t</i>	-1.64	-0.62	-0.16	0.26	-0.29	-0.40	-0.50

Factor	TW	SC	JS	SR	PM	WC	Total SAQ
<i>p</i>	0.10	0.54	0.87	0.79	0.77	0.69	0.62
Hospital							
Hosp A	66.1±14.1	62.7±13.5	78.6±14.4	42.9±26.7	65.9±11.6	61.4±15.8	64.9±8.3
HospB	75.5±15.6	68.5±16.0	77.9±18.4	69.3±23.6	62.2±16.6	51.6±20.8	67.1±11.9
<i>t</i>	-4.75	-2.99	0.32	-7.66	1.97	4.07	-1.68
<i>p</i>	0.00*	0.003*	0.75	0.00*	0.05*	0.00*	0.10
Age in years							
18 - 24	70.0±12.7	66.8±12.2	80.4±13.0	55.7±27.6	64.8±13.5	60.6±17.9	67.2±7.9
25 - 34	68.6±16.6	62.2±15.1	77.1±16.1	50.3±28.8	64.4±13.2	57.2±17.4	64.4±9.8
35 - 44	68.5±15.7	66.7±16.2	77.8±15.1	61.9±31.1	62.8±12.7	57.3±19.2	66.2±10.2
45 -54	70.9±16.9	68.1±17.5	77.6±23.1	56.9±26.5	65.4±15.6	55.3±21.3	66.5±14.0
55 -64	78.6±9.3	68.8±11.2	81.6±14.2	48.8±27.9	65.0±19.7	52.9±23.1	67.8±8.0
<i>F</i>	1.49	1.85	0.57	1.24	0.15	0.72	0.97
<i>p</i>	0.21	0.12	0.69	0.29	0.96	0.58	0.43
Position held							
Doctor	68.8±11.8	65.3±14.3	80.6±11.3	45.3±26.5	67.6±8.7	60.7±13.9	66.6±7.5
Nurse Manager	73.4±13.4	70.0±12.9	79.9±13.3	59.0±32.1	65.7±13.8	61.3±23.5	68.3±9.8
Staff Nurse	72.0±15.0	65.7±15.2	77.7±17.5	56.9±27.9	63.5±16.3	55.9±19.7	65.9±10.7
Clinical officer	61.7±19.3	58.5±13.7	76.3±18.5	50.7±29.3	62.5±9.7	56.0±16.0	62.4±9.4
<i>F</i>	5.04	3.60	0.68	2.27	1.38	1.24	2.13
<i>p</i>	0.002*	0.01*	0.56	0.08	0.25	0.29	0.10
Highest Qualification							
Certificate	69.1±22.2	65.0±16.5	76.3±26.4	58.0±20.4	58.0±21.3	40.2±17.8	62.2±15.7
Diploma	69.9±17.0	64.2±14.5	77.7±15.7	59.1±28.6	63.2±14.5	56.4±18.7	65.6±9.5
Degree	70.5±12.6	66.1±14.9	78.9±15.1	48.7±28.2	66.7±11.5	61.1±16.6	66.6±9.4
Master	62.5±9.3	62.1±16.7	86.8±11.3	37.5±38.3	63.5±17.5	55.0±32.6	63.8±11.7
<i>F</i>	0.59	0.64	0.48	2.50	1.69	4.37	0.84
<i>p</i>	0.67	0.63	0.75	0.04*	0.15	0.00*	0.50
Years of experience							
< 1	65.9±11.4	62.0±11.7	77.2±11.7	51.5±29.6	64.1±11.5	58.5±15.9	64.3±7.3
1 – 5	68.9±17.0	64.3±15.7	78.6±15.3	50.3±28.4	65.3±13.7	60.3±19.4	65.8±9.9
6- 10	72.6±13.9	66.1±14.6	78.2±19.7	52.3±26.9	65.5±13.7	55.9±18.6	66.3±10.8

Factor	TW	SC	JS	SR	PM	WC	Total SAQ
11 ≥	75.4±16.5	69.8±16.2	79.3±19.7	66.0±26.9	61.9±17.4	51.4±19.5	67.4±12.2
F	3.84	2.46	0.16	3.18	0.67	2.33	0.84
P	0.01*	0.06	0.92	0.02*	0.57	0.07	0.47
Current work unit							
Obs/Gyn	71.5±17.5	67.5±15.6	76.7±20.4	51.0±27.1	68.8±14.8	55.5±19.1	66.6±12.6
Medical	65.4±17.0	63.3±15.3	78.8±13.2	49.1±28.1	64.2±11.3	60.0±18.0	64.7±8.9
OPD	73.1±13.4	65.5±14.9	77.2±15.9	59.2±29.3	64.8±14.5	54.9±16.2	66.5±9.8
Paeds	69.7±11.4	65.9±13.3	81.7±13.7	58.6±28.6	61.6±14.9	54.6±16.3	65.3±8.9
Surgical	71.6±14.4	64.3±14.2	78.1±18.9	52.9±29.3	62.4±15.2	61.1±23.4	66.1±10.2
F	2.49	0.55	0.46	1.26	1.37	1.24	0.36
p	0.04*	0.70	0.76	0.29	0.24	0.29	0.83
Number of years in the current work unit							
> 1	68.0±11.8	62.8±12.7	75.6±14.3	49.6±28.2	64.8±14.2	59.8±16.1	64.7±8.3
1 – 5	69.9±18.7	65.5±16.3	79.5±18.3	60.1±27.6	63.2±13.3	55.3±19.9	66.0±11.3
6 – 10	74.7±12.9	69.2±14.7	82.1±12.2	46.5±29.1	68.0±14.2	56.3±20.3	68.1±9.8
11 ≥	75.0±13.4	68.9±17.2	82.9±15.8	51.8±33.8	62.1±16.7	63.4±22.7	67.3±8.5
F	1.74	1.70	1.86	2.93	0.98	1.21	1.01
p	0.16	0.17	0.14	0.03*	0.40	0.31	0.39

* Significant at $p < 0.05$ (two-tailed)

Note: TW = Teamwork climate, SC = Safety Climate, JS= Job Satisfaction, SR = Stress Recognition, PM = Perceptions of Management, WC = Working Conditions

In the total SAQ mean score no significant difference was found across the groups, but there were significant differences in the mean scores of the dimensions, except *Job Satisfaction* in which no significant difference in the group means was identified.

In *Teamwork Climate*, there were significant differences between the hospitals ($t = 4.75$, $p = 0.00$), the position held ($F = 5.04$, $p = 0.002$), years of experience ($F = 3.84$, $p = 0.01$) and the unit worked ($F = 2.49$, $p = 0.04$). Higher mean scores were indicative of a more positive perception of teamwork and collaboration in that group. In Hospital B respondents had a significantly more positive perception of teamwork and collaboration than in Hospital A. Additionally, teamwork means were significantly higher for the nurses (both managers and staff) than the clinical officers, and respondents who had worked for 11 years or more had a significantly higher perception of teamwork than those who had

worked for less than one year, as well as those who worked in OPD rather than in medical units.

In the *Safety Climate* dimension, significant differences were found in the hospital means ($t = 2.99$, $p = 0.003$) with Hospital B having a significantly higher mean than Hospital A. There was a significant difference in the safety climate perceptions between the different positions held ($F = 3.60$, $p = 0.01$) with post hoc tests showing that the means of the nurse managers and the staff nurses were significantly higher than those of the clinical officers.

In *Stress Recognition*, there was a statistically significant difference between the means of the hospitals ($t = 7.66$, $p = 0.00$), highest qualification ($F = 2.50$, $p = 0.04$), years of experience ($F = 3.18$, $p = 0.02$) and years in the current unit ($F = 2.93$, $P = 0.03$). Higher means indicate that the respondents had a better acknowledgement of how stress can affect their performance at work. Hospital B had significantly higher means than hospital A. Those with work experience of 11 or more years had significantly higher means than those of those who had worked for one to five years.

In *Perception of Management*, the only significant difference was found in the mean scores of the hospitals ($t = 1.97$, $p = 0.05$), with Hospital A having a significantly more positive perception of the unit and hospital management than Hospital B.

In the *Work Conditions* dimension, significant differences were found in the hospital means ($t = 4.07$, $p = 0.00$) with Hospital A having a significantly more positive perception of the work conditions in their hospital. A significant difference was also identified between the means of the different qualifications ($F = 4.37$, $p = 0.00$) however, post hoc tests were not computed because one of the groups had only one case.

4.4.3 Perceptions of the hospital staff on pre-registration patient safety education

The second objective in this phase explored the perceptions of the hospital staff on the preparation of the pre-registration nursing students in patient safety by conducting key informant interviews on representatives from the nursing management, those linked to patient safety and the frontline nurses who are involved with student learning in the clinical areas. The purpose of carrying out this exploration was to be enable the researcher to gain an insight on:

- How the hospital undertakes patient safety on a day to day basis as this is what the students are exposed to;
- How the nursing students handle matters related to patient safety during their clinical rotations;
- How clinical settings facilitate the development of patient safety competencies in nursing students;
- How well the pre-registration curriculum prepares the nursing students in handling patient safety matters both from the theoretical and practical viewpoints;
- The challenges to patient safety education in the clinical settings; and
- Ways of improving patient safety education both in the classroom and the clinical settings.

4.4.3.1 Description of the research participants

To achieve the objective, the researcher utilised purposive sampling technique to select the key informants for the semi-structured interviews as described in chapter three. The key informants comprised representatives from the nursing management, those linked to patient safety and the frontline nurses who are involved with student learning in the clinical areas. A total of 14 staff were interviewed and anonymity they were coded as HS01 to HS14. Table 4.37 provides a description of the participants.

Table 4.37: Hospital interviews participant demographic data

Code	Gender	Position	Work station	Highest qualification
HS01	Female	Staff nurse	Medical	Diploma
HS02	Female	Nurse manager	Surgical	Diploma
HS03	Female	Staff nurse	Surgical	Diploma
HS04	Female	Staff nurse	Maternity	Diploma
HS05	Female	Nurse manager	Maternity	Diploma
HS06	Female	Staff nurse	Maternity	Degree
HS07	Male	Clinical instructor	Paediatrics	Degree
HS08	Female	Nurse manager	Outpatient	Diploma
HS09	Female	Clinical instructor	Outpatient	Diploma
HS10	Female	Nurse manager	Accident & emergency	Diploma
HS11	Female	Staff nurse	Surgical	Diploma

HS12	Female	Staff nurse	Medical	Diploma
HS13	Female	Nurse manager	Medical	Degree
HS14	Male	Staff nurse	Surgical	Degree

The majority (12) of the participants were female. Five of the participants held the position of nurse manager in their units while seven were staff nurses and two were clinical instructors. The highest qualification was a degree and only four of the participants reported that they had a degree in nursing. The participants were drawn from various work stations in the hospital – four from surgical ward, three from medical ward, three from the maternity ward, two from outpatient, one from paediatric wards and one from the accident and emergency units.

As noted from the interviews, this was a representation of the staff involved with the student learning in the hospital, as conveyed by the participants, who reported that the nurse managers were the designated mentors but the staff nurses also took up the role of clinical teaching. They reported:

And then we make sure we attach them to a qualified nurse because we do work in rooms so make sure that in every room there is a qualified and then we attach them to a qualified (HS08).

The ward in charge is the one who takes up the role of mentorship but because she is not there at night or the weekends, that person who shall be there over the weekend or at night with these students is the one who takes care of them, mentor at that time but otherwise they are under the in-charge (HS12).

We get MoU with the institution in question and the hospital and we have different mentors in different units - like every ward in-charge, like I am now in ward, I am the mentor for those students who are put under my supervision (HS13).

4.4.3.2 Presentation of the results

Through the interview process, the respondents provided their perceptions, opinions, feelings, views and experiences regarding patient safety education in the pre-registration nursing programme. From the thematic analysis of the interviews, five main overarching themes that emerged were:

- Learning about patient safety in the clinical settings;
- Patient safety culture of the clinical settings;
- Mentorship challenges;

- Curriculum issues; and
- Relationship between clinical sites and nursing schools.

From these themes and subthemes were identified which are illustrated in Figure 4.10. Through this chapter, each of the themes, subthemes and categories will be discussed using data extractions from the interview transcripts to illustrate the points made.

4.4.3.2.1 *Learning about patient safety in the clinical setting*

In this theme, the participants described the learning by the nursing students in the clinical settings in order to achieve the necessary patient safety competencies. They described the learning in terms of the role of the hospital in clinical learning, the role of the frontline nurse who works with the student during the rotation, and the student characteristics that influence the clinical learning about patient safety. These subthemes and categories are described below.

4.4.3.2.1.1 *Role of the clinical setting*

The participants recognised that clinical settings are supposed to be places that provide the nursing student with an opportunity to experience direct patient/client involvement and a conducive environment to enable them to translate the theoretical concepts into practice in a real-life setup. To achieve this, the clinical settings are required to provide the necessary elements which include the support from qualified personnel, resources and a safe environment to practise while protecting the both the patient and the student. This is illustrated in the quotes below from the participants:

The role of the hospital is that they are supposed to provide an environment which is conducive for the student to be able to learn the practical part because when they come here they have already done the theory bit and that theory needs to be translated to practice. So the role of the hospital is actually to give support for this students to be able to learn more on the practical part (HS10).

When they are here they come for mentorship so we help them apply their knowledge, to apply their skills after the knowledge they have gotten from the class in the various colleges (HS11).

By providing enough staff, also the drugs, and providing whatever the student needs (HS12).

Ok when they normally come here we normally give them roles to do with patients. Mostly when it comes to safety both to the patient and to ourselves (HS02).

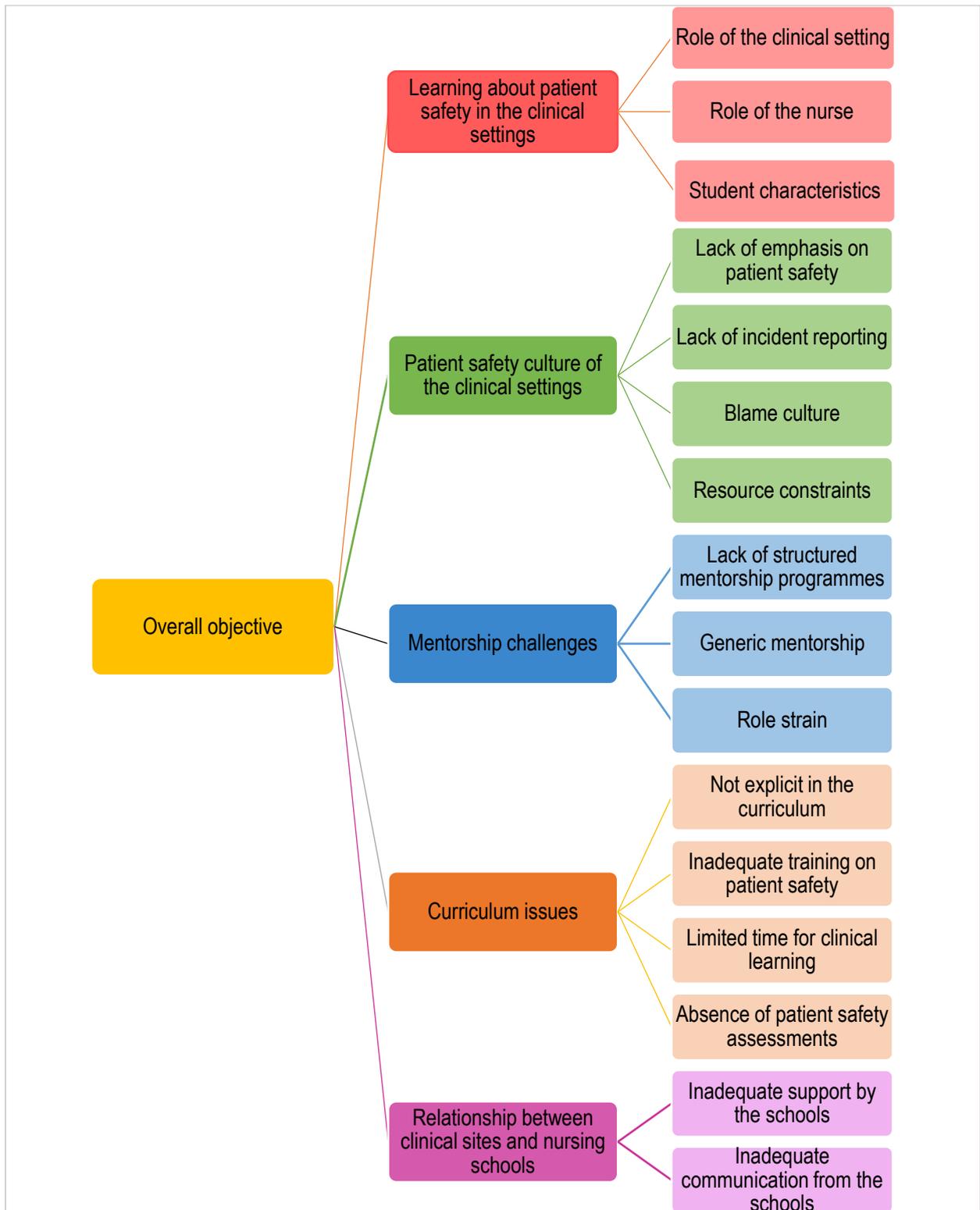


Figure 4.10: Hospital staff interviews themes and subthemes

4.4.3.2.1.2 Role of the nurse

The respondents acknowledged that they worked directly with the nursing students during the clinical rotations in their wards to facilitate clinical learning as well as the translation of theory into practice by taking up the role of a preceptor. They identified various roles that they take up which included supervision, teaching, assessment and the giving of continuous ongoing feedback. In the supervisory roles, participants reported that they ensured the student did the right thing and did not cause any harm to the patient. This is illustrated in the statements below:

I supervise them, whatever they do. If it is nursing care, medication, that is my role, to know if they are doing the right thing or not (HS01).

I think they are supposed to give them supportive supervision to the students. At least work with them hand to hand so that they can learn more about the management of the patient, the nursing care procedures as a whole. We work with them. They are not supposed to work alone but they work under our supervision (HS05).

One of the key roles also identified was to ensure that the student is able to achieve the clinical objectives that they had been given from their nursing schools. They reported that the students reported to the clinical settings with objectives that they were required to achieve and the nurse working with the student was required to acknowledge that they had indeed achieved these objectives.

So when they come here to the clinical they have their objectives, so our roles become to assist the student to achieve those objectives.... So we make sure they have gone through the objectives so that at least at the end of the day it's not just working but to also meet the objectives (HS06).

Participants viewed their role as instructive when they identified gaps. More specifically on patient safety, one participant pointed out that it was important that the nurses taught specific aspects of patient safety to the students so that they are aware of the harms the patient is likely to encounter when in the hospital.

We also ensure that we teach these students on so many things that we suspect that they may go about missing, we don't allow them to just handle any case (HS14).

... the role of the nurse is to take this students on the specific aspects that are likely to harm the patient, from infection and such – when the patient is in the hospital (HS07).

4.4.3.2.1.3 *Student characteristics that influence learning*

The participants appreciated that there were certain student characteristics that influenced the learning process. The two that were identified were the developmental stage of the learner and the attitude of the learner

Developmental stage of the learner

Some of the participants reported that the students reported to the clinical settings at different stages of the nursing programme and therefore they recognised that it was important that they assess the stage specific learning needs of the students according to their stage in the nursing programme and apply the appropriate teaching and supervisory methods.

You know students come in at different stages, so when they are coming in like for the first placement, you can't say they are fully prepared, they need to go through mentorship for them to even get used to the environment, even them to know how to organise, organise, to understand what procedures they are supposed to be performing (HS05).

They are depending on the level they are. Like when you have students at 1st years, 2nd years the level is different and they go maturing to 3rd years and interns the level is different. Yah. And they master the concepts. But when they come as 1st years, you practically have to guide them by the hand so as they progress they get the concepts (HS06).

Attitude of the learner

The participants expressed that the certain attitudes of the student were a hindrance to the learning of the student. Two participants pointed out that the degree nursing students tended to look down upon the nurses who were diploma holders and therefore did not feel that they were qualified enough to support their learning.

... there are some who have negative attitude especially if you are a diploma nurse or she or he is a degree nurse. Sometimes they see there is nothing you know (HS04).

You'll find like some of us, ok through promotion where we are, but we are diploma holder and somebody will have a negative attitude (HS09)

Another attitude that was identified that was likely to impede the acquisition of safety competences was the overall approach to nursing as a career choice by the student. The participants reported that the students were not passionate about nursing and were only

doing the course because their parents chose it for them. In addition, some of the students did not understand what nursing entailed before choosing it as a career.

My concern is that most of our children these days go for what the parents have told them to study. They don't go for nursing because it is a passion, it is what their parents have said, and they just got a chance to go to the university. So for the few who go there because they have liked it, they do very well and they are safe nurses (HS13).

Most of them sometimes when they are coming into the clinical area you find they are not actually ready, they don't see what they expect ... Most of them, I think by the time they choose the nursing profession, they do not actually know what they are going to do. What nursing entails (HS14).

4.4.3.2.2 Patient safety culture of the clinical settings

This theme related to the perceptions of the staff about the patient safety culture in the clinical settings which the students are exposed to and its influence on the clinical learning about patient safety. The issues that were evident in the participants' comments included the unsafe practices in the hospitals, the lack of incident reporting and monitoring systems, the blame culture inherent in the hospitals and the resource constraints that compromise patient safety practices.

4.4.3.2.2.1 Lack of patient safety emphasis

Most of the participants expressed concern that the hospital did not place enough emphasis on patient safety in the hospitals, which was established from the comments below:

Generally, this hospital in particular we've not had that strict check on patient safety. From my own point of view, having worked in the private sector, we are.... You know when you talk about patient safety, this is something that needs to be assessed from the time the patient is admitted. That's when you need to recognise what safety measures this patient requires. So you find that is not usually done in this hospital (HS07).

I think patient safety is a neglected aspect and it is a very important one – we have very many patients dying because of just safety negligence. We have people getting infections from hospitals which they could not have gotten (HS08).

Patient safety is an area that needs to be looked into and systems put in place because, although it is done, it is not so much. Yah, it is not so much. But it is something that needs to be strengthened (HS10).

Patient safety in our hospitals especially this hospital, I'd say is wanting to a certain extent (HS11).

This view was further supported by the participants' reports of lack of policies and procedures on patient safety as well as lack of training on patient safety in the hospitals.

I think they should also organise some seminars or workshops to teach us more about them, about patient safety. Because we only use the knowledge that we got from school but here we are not updated at all at all (HS03).

I'd say, I'm not sure of the policy, but I say we should really have a policy which can guide us [in] practice (HS06).

We need to identify what risks are there in the hospital, then once we identify the different risks according to the different areas, I believe we can have SOPs or protocols relating to PS in the hospital (HS10).

However, despite the lack of emphasis on patient safety, the opinions of the staff on patient safety and their views on the strategies in place in the hospitals to ensure patient safety indicated that the patient safety practices in the hospitals were mainly focused on clinical safety issues, for example infection control, medication safety and prevention of falls and not so much on the systemic issues of patient safety as illustrated in the views below:

One of them is to make sure that the nurse is always there, for example there are those patients who might fall down anytime like those with convulsions so they have to be there to protect them from falling because they can cause more injuries and bring more complications so we advise them to at least always be there by the patient's side (HS02).

We are having infection control. In fact we have a committee. Infection prevention. We have drugs ... most of the time we don't lack drugs (HS04).

Some of the strategies are like aahhh ... one of the risks that our patients face is like acquiring infections. So we make sure there is a bit of infection prevention during the service delivery. Then the other thing is we do orientation for the patient about waste, what they are supposed to put where, we have the bins which we have a lot of labelling (HS05).

We look at infection prevention practices because we get a lot of patients coming in with a lot of conditions so we observe infection prevention practices so that we don't transmit infection from one patient to another. Thereby, we have hand sanitisers – occasionally we have shortage of things like soap but water is always there flowing. Also on issues of waste segregation – although we have challenges here and there, we try as much as possible to ensure our waste is segregated. Yah, sharps are also taken care of also (HS10).

4.4.3.2.2 Lack of incident reporting

The views of the participants on patient safety culture also indicated that incident reporting systems were not well established in the hospitals and most of the staff in the hospital did not report incidences. Some of the participants reported that the incident reporting was done on incident books which was done as a formality with no follow up or action being taken up to mitigate or rectify the incident as well as learning from the incident.

We don't have an incident report book, but what I know is we encourage the staff to report ... Policy ... no (HS05).

There's a form we fill and then send it to the administration ... Then the administration will act on it especially when there is like an allergy that is from drug, the doctor is told then change the medication (HS01).

Incident reporting, I can say not formal but there is to an extent. Like in this department, if there is any incident, we report it – we put it in writing just using our normal books we write it and then it is also reported to the administration in case of any issues (HS10).

Yes, every in-charge has a book for incident reporting. Unfortunately, I have never ... as soon as we report, we just write in the book, like if it was a needle prick, you shall follow up your staff to make sure they got the PEP then after that the testing before, the testing after, they have gotten it and it actually ends there. So there is nowhere it is discussed. Coz I have been an in-charge for quite a long time and there is nowhere those incidences were ever discussed. So they are just lying there in the book. There is no follow up (HS11).

4.4.3.2.3 Blame culture

Further to a lack of incident reporting system, the participants attributed the lack of reporting about incidents and errors in the hospital once it happened to the blame culture of the hospital. They reported:

Maybe if ... like sometimes something can happens to a pt and I won't say because the minute I say I will be intimidated. So you get sometimes someone does something and they keep quiet (HS04).

We don't ... those cases are not quite captured well because it is erratic. Sometimes we do put those incident books so that those incidents can be captured. But we have a problem when it comes to that because many times something will happen but someone will not, you know, exactly write. People feel insecure to come out and maybe say what has actually happened or whatever wrong has happened. They think they'll be faultified ... victimised for that. So it's not quite ... (HS14).

One participant reported that this blame culture compromised student learning about patient safety as it made them afraid of reporting if they committed an error it would lead to negative repercussions for them.

Students become afraid because sometimes something goes wrong and you have students here and the students won't say. Because the student is afraid maybe the institution will be told and then maybe he'll be punished (HS04).

4.4.3.2.2.4 Resource constraints

Participants identified one of the factors that hinder patient safety culture in the hospital as the lack of resources. They highlighted the lack of water supply, waste segregation options, proper safety equipment and limited capacity of the hospitals as some of the things that compromised patient safety.

Thereby, we have hand sanitizers – occasionally we have shortage of things like soap but water is always there flowing. Also on issues of waste segregation – although we have challenges here and there, we try as much as possible to ensure our waste is segregated (HS10).

Also work on the resources – like in this department, I can say we don't have the beds with side rails, so in case a patient is very restless, then it becomes a problem we end up putting the patient on the floor. So we need to work on the resources (HS10).

Also the hospital needs to expand – the population is growing – like this ward has a capacity of 40 now we are admitting 60 the toilets remain the same and the beds remain the same so right now we have 3, 4 patients sharing the beds so that is worsening. Even with bedrails, this is worsening the safety of the patients' coz now here will be cross infection, we can't get rid of cross infections in the ward and then those falls will be there. And then now when it comes to the facilities, the toilet, water we have to improve such things, sometimes there is even no water in the taps for washing hands... yes such things (HS14).

In addition, participants also expressed that the shortage of staffing as well as the high workloads negatively impacted the patient safety culture as portrayed in the views below:

I would suggest – we have an infection prevention team but it is not active and it's not active because those people have multiple tasks. Like the in-charge of this ward happens to be the chairman and I don't know if he has ever called for a meeting since the year started (HS11).

So if we have enough staff and then we do that primary nursing, I think it can help in PS (HS12).

If it's in the nursing bit, specifically here – we need to improve the staffing bit of it. So that there is enough of everyone because right now it is like one to say 50 patients. Even if you want to be as super as anything it's not practical. Then in that we can step up in strengthening the policies by now strictly observing them. But not unless we have enough of everyone, we cannot actually, it is not practical (HS13).

Maybe whatever challenges, these shortage of staffs is what is what is hindering a lot (HS14).

4.4.3.2.3 *Mentorship challenges*

In the clinical learning about patient safety, the participants saw their role as that of mentorship so as to ensure they became safe practitioners as expressed by one of the participants who said:

So our main role is to mentor them (HS03).

However, they also expressed that that role was affected by challenges which did not allow them to effectively carry out this role. The challenges identified were the lack of a structured mentorship programme, generic mentorship roles, role strain and lack of training on patient safety.

4.4.3.2.3.1 *Lack of structured mentorship programmes*

Participants pointed out they took up the role of mentorship for the students when they reported to the clinical settings because they were obliged to do so as part of their professional requirements. However, they reported that there was no structured mentorship programme or any policies or procedures that guided the performance of this role.

Mentorship is not a defined role, because I don't think there's any policy (HS05).

Basically I can say there is no structured mentorship programme for the students (HS10).

For me the role of the clinical mentor is he or she is supposed to follow up the students, discuss with them about the safety measures, find out if they are actually practising, correct them, you know, give guidance but we never see that kind of thing. In fact, sincerely speaking I don't know if they have a mentor (HS11).

Yah, I think there is no clearly defined mentorship programme because there is nobody allocated in the ward to take care of these students because today this one is an in-charge, tomorrow is somebody else and there is no training done for specific people to mentor (HS12).

4.4.3.2.3.2 Generic mentorship

As a result of the lack of structured mentorship programme, the participants reported that the model of mentorship that was used in the clinical learning was a generic mentorship model, whereby any qualified nurse could take up the role of mentorship as long as they were working in that clinical setting.

... because like in the hospital, we have a team of mentors for the students who are actually not in the clinical areas. But as a registered nurse, when they come to you, it is your responsibility to take it up (HS05).

Basically, the nurses who work in an area are the ones who do the mentorship but in case of any issue or any problem then there is someone who coordinates the students' affairs (HS10).

No. it's just that every qualified nurse from diploma level and above, you are considered a mentor (HS11).

For the students, as much as we are always being told all diploma and above holders are mentors of these students, it would be much better if we had a unit mentor per unit (HS13).

One of the participants acknowledged that the generic model of mentorship had its consequences by pointing out that the lack of one particular mentor whose role is clearly defined meant that there was no one who was responsible for the mentorship and this compromised the student learning as well the safety of the patient.

So that when this patient, you know when this students come, sometimes these students come they are taken to the ward – nobody takes them through orientation on how to handle the pt. the general aspect like – we have come for paediatric expertise, you are taken round the paediatric ward, you are shown this is where we keep this, this is where you keep this – but nobody tells you in the paediatric ward we expect this kind of risk, you expect this, you know, this is how you should behave, this is how you should do, this is the rationale ... Like when students come to the hospital, take them though a good orientation ... Because actually a student is a risk factor to the patient from my opinion, the presence of the student is already a risk factor because these students can do anything in terms of dosage and, you know, you can't blame the student because you haven't oriented them yet (HS07).

4.4.3.2.3.3 Role strain

Coupled with the generic role of mentorship imposed on each qualified nurse in the hospital, staffing and workload constraints were reported to be putting a strain on their ability to properly mentor the students. Participants reported:

... as much as I would like to mentor them – like now I reported alone, I might have more than four students it's not easy. But if the mentor is actually following them, then I would say almost 90% yes (HS11).

These students are usually allocated whenever they come, we don't allow them to work alone, and they always work under qualified staff although in the hospitals we have challenges of shortage of staff. So you find one staff manages more than one student (HS14).

The participant further explained that this led to students feeling frustrated by the clinical experience because they felt they were not there to learn but rather to assist the nurses with patient care and ease the burden for them.

Because sometimes you find they are left alone or they have so many, we are overwhelmed by whatever they need from us. So you find they feel frustrated or they feel they have just come to clear, have come to assist us to clear the workload and then they are not able to actually get what they wanted with ease (HS14).

In addition, they reported that the number of students reporting to the clinical sites that they were required to mentor was also high and therefore they were not able to provide the mentorship that the students required and more often the students had minimal supervision during their placement, which may compromise safety.

So there is overcrowding because you find that the colleges around are so many and so one nurse has so many students to mentor. So they find themselves working alone after they have maybe gotten some competence in handling patient duties. We allow them to work alone but at least with some sort of supervision (HS14).

4.4.3.2.4 Curriculum issues

The fourth theme that emerged from the analysis was on the influence of the curriculum on the clinical learning about patient safety. The curriculum issues that were highlighted by the participants were the absence of explicit patient safety focus in the curriculum, inadequate student preparation on patient safety, limited time in the clinical areas and absence of assessments on patient safety.

4.4.3.2.4.1 Not explicit in the curriculum

The participants expressed the need to have explicit patient safety content in the curriculum in order to prepare the students fully on patient safety. Some of the comments to this effect are illustrated below:

I think this should be emphasised all the way from the school. Yes, the students should really be taught and they should understand that this safety is very important (HS03).

I think we should, I'm not sure if it's part of their curriculum, having gone through the BscN curriculum, there is a clause they learn about patient safety. So I really don't know if it is a by the way or it is part of the curriculum, but I say it should be included in the curriculum (HS06).

First of all we need to emphasise it in the curriculum because it is a very important aspect (HS07).

We have to emphasise safety in the hospitals and maybe we have to teach our staffs on safety, it has to be in the curriculum, nursing curriculum and all medical professions they have to have that element of safety of the patient (HS14).

4.4.3.2.4.2 Inadequate training on patient safety

The participants were of the opinion that there was a shortfall in the teaching of the practical aspects of patient safety from the universities as well as in the hospitals.

These students from University A are not well prepared. Most of them are not well prepared. When they come here they are just green, even those who are ... (HS01).

Not really, they are not well prepared. When they come, they don't know most of these things. I don't know if they know or don't from the theory part, but we try to teach them. Yes. We try to mentor them on the right thing to be done (HS03).

I think the best way to go about this is to include it in the practical aspects of our trainings because I think you are taking them through the theory but practically I have not seen it come out clearly about the patient safety. Apart for it coming through the topics that we share with them but practically I have not seen it coming out clearly. So if you can bring it out clearly during practical's then it will be very good (HS09).

In the clinical settings, they related the shortfall to the inadequate patient safety practices in the hospital which did not allow for the students to learn about patient safety as well staffing challenges that did not allow them to adequately mentor the students.

Patient safety education is something we need to look at, because it is something that is not practised. We need to have a systems where the students can be taught about their safety in the hospital (HS10).

Theoretically yes, but when it comes to practically, as much as I would like to mentor them – like now I reported alone, I might have more than four students it's not easy. But if the mentor is actually following them, then I would say almost ninety percent yes. But now ... so theoretical yes, but practically we have a gap (HS11).

In the classroom setting, one of the participants reported that the curriculum did not adequately contain the patient safety content and mainly focused on the clinical safety aspects of it. In addition, the students did not get adequate practical preparation in the classroom on patient safety

The BSc programme itself was a good programme as pertains to patient safety because having gone through the programme I remember we had, though it's usually OK ... depending on the syllabuses different universities have adopted but I believe it's the same syllabus because it was done by NCK. So you'll find there's usually a unit of infection control, patient safety although it doesn't come out well. It does not come out well because from my experience I came to encounter with several programmes during patient safety I think they didn't ... because if I can remember what comes out is more of infection control. Yah. But when it comes to things like falls, dealing with confused patients, risk of patient harming themselves – I think it doesn't bring out well or OK the aspect doesn't – OK the concept doesn't come out well although it's there. So I think the emphasis should be on the practical aspect. The practical aspect of the programme (HS07).

4.4.3.2.4.3 Limited time for clinical learning

Another aspect of the curriculum that was highlighted by the participants was the time allocated to clinical learning which they felt was inadequate to achieve the objectives. They commented:

I don't know if that is the curriculum but most of them come few, they have few time here. Their time is limited. So they can come once, twice, three times in a week. After two weeks again they come, they have forgotten what they did and they start afresh (HS01).

We could increase time. Time so that they can attach ... the period that the students are exposed to acquaint themselves to the patient and practices is not adequate. Give them more exposure to the clinical areas (HS13).

4.4.3.2.4.4 Absence of assessments on patient safety

Another issue of the curriculum that was highlighted by some of the participants was the absence of assessments on patient safety at the end of their clinical rotations. The participants expressed that the lack of these assessments demonstrated to the students that it was not an important aspect and therefore they did not put the necessary effort in learning about it.

In fact from my own opinion, it should be part of the assessment because I have not seen institutions or syllabuses that assess the student on the patient safety given that it is a very important perspective (HS07).

So we should have eehhh like have patient safety being one of the aspects where students are assessed – you assess the skills of this student.

4.4.3.2.5 *Relationship between clinical sites and nursing schools*

The final theme that emerged from the interviews was concerned with the relationship between the clinical sites and the nursing schools. Two subthemes emerged from this theme, which include the inadequate of support of the clinical teaching by the schools and inadequate communication from the schools.

4.4.3.2.5.1 *Inadequate support by the schools*

The participants expressed concern that the schools did not support the clinical learning of the student and left all the teaching to the staff at the clinical sites. They reported that lecturers rarely went to the clinical sites to monitor the student progress and only came for the assessments at the end of the rotation.

Surprisingly we don't meet the instructors – they have never been here. (I: they don't come?) Yes they don't come (HS03).

So I think what is happening is like institutions are, they throw the students to us, they leave all the clinical teaching to the hospital staff. From my opinion we need to be collaborative ... (HS07).

And when you compare an MTC (diploma) and a degree, you find there is a difference, but also what we say, they are not fully prepared because if you want to prepare somebody the way we used to be in training, is not the nurse who you will get on the ground who will teach you, your own clinical instructor should come in. So when it comes to clinical instruction on the university side, I see them struggling (HS09).

If we could have gotten some reinforcement from the universities in terms of clinical instructors to follow them up whenever they are on duty then it can be better (HS14).

One participant expressed that the lecturers from the schools were best placed to enhance students' learning by visiting them in the clinical sites, and also by ensuring that there were clinical instructors in the hospitals to carry out and support the clinical teaching and assessments.

Because when a student sees the lecturer, you know the student believes the lecturer is the primary instructor. So when student see the lecturer participate in whatever you are trying to train the student on the ground, the student tends to even put more emphasis on, and even take it as an important aspect as compared as to when we do it on our own just as hospital staff. (HS07).

4.4.3.2.5.2 *Inadequate communication from the schools*

Another issue that was highlighted by the participation was the communication between the schools and the clinical settings in relation to the students' learning. They reported that the university did not effectively communicate what was expected of the students to the clinical staff and therefore the staff send them back to the university to fulfil the objectives.

They bring their duty roster and that's when we know that they are coming. It's not known when they are coming, no, it's when they just come. Sometimes they come even without the duty roster. We ask them why have you come, where is the objective, so we send them back (HS01).

That is what we insist on. They come with objectives. But sometimes some do not come with them (HS05).

The university actually don't communicate. You will find that they have just come in the morning, unapata wamkuja wanatwambia "we are here" (HS09).

4.5 CONCLUSION

This chapter presented the results of the three phases of the research study. In the first phase a qualitative content analysis of the curriculum documents and practice assessment documents showed that explicit patient safety courses, themes, competences, or assessment were missing. Interviews with the nursing faculty were also carried out in this phase, and from the results the key themes that emerged were aspects of patient safety that are in the curriculum from the perspectives of the faculty, the formal and informal ways which patient safety is taught, challenges in teaching patient safety and strategies for improving patient safety education in the nursing curriculum.

The second phase assessed the perception of nursing students regarding their patient safety knowledge and competence measured based on what they learnt in the classroom setting versus the clinical setting. The results showed that the students were more confident about the clinical aspects of patient safety than they were about the sociocultural aspects. They also reported to be more confident about what they learnt about patient safety in the classroom setting than the clinical setting. In the broader aspects of patient safety and comfort in speaking up about patient safety they reported there were inconsistencies with how preceptors dealt with patient safety in the clinical areas. They did not have sufficient opportunity to learn and interact with members of the interdisciplinary teams, patient safety was not well integrated in the nursing programme

and they were not confident in speaking up about patient safety issues in the clinical areas.

The third phase focused on the clinical settings where the students underwent their clinical education about patient safety. The patient safety culture survey showed that the staff had a positive perception of the overall patient safety culture of the hospitals, but despite this, the perception mean score was below the recommended perception of good patient safety. The dimension with the highest positive attitude was job satisfaction. From the key informant interviews with the hospital staff involved in nursing clinical education, five key themes emerged.

In Chapter 5, the results are integrated and a discussion is presented of the key themes that emerged with support from the literature.

CHAPTER 5

DISCUSSION OF THE INTEGRATED FINDINGS

5.1 INTRODUCTION

The purpose of this study was to investigate the extent to which patient safety concepts are integrated in the pre-registration Bachelor of Science in nursing curriculum in Kenya and to understand the issues that influence teaching, learning and practising patient safety in the classroom and clinical settings. The aim was to develop strategies that will enhance the integration of the patient safety concepts in the nursing curriculum in Kenya so as to generate a patient safety competent workforce and subsequently ensure delivery of safe healthcare services to the public. The study was divided into three phases and the researcher utilised both quantitative and qualitative research methods to achieve overall purpose of the research. The specific objectives for each phase were as follows:

1. Phase one: Curriculum content analysis and faculty perspectives
 - Objective 1: Identify the explicit patient safety concepts in the formal pre-registration nursing curriculum.
 - Objective 2: Explore the perspectives of nursing faculty to patient safety education in the nursing curriculum.
2. Phase two: Nursing students' perceptions
 - Objective 3: Measure the patient safety knowledge and competencies as perceived by the nursing students.
3. Phase three: Organisation patient safety
 - Objective 4: Assess the patient safety culture that the nursing students are exposed to in the hospitals that nursing students receive clinical education.
 - Objective 5: Explore the hospital staff perceptions of the preparation of pre-registration nursing students in patient safety.

Objective 6 was the overarching objective which was to develop strategies for the integration of patient safety concepts in the preregistration nursing curriculum

This chapter therefore presents a discussion of the common themes that emerged from the results with the QSEN framework and the WHO Patient Safety Curriculum Guide as guiding frameworks.

5.2 EMERGENT THEMES AND DISCUSSION

5.2.1 Curriculum issues

The nursing curriculum is a framework for guiding teaching and learning and therefore to prepare a safety competent nurse it is the imperative that it provides clear roadmap for the development of the necessary competencies. This study showed that one of the issues in the patient safety education in the nursing schools were related to the curriculum itself. The curriculum issues that emerged are discussed below.

5.2.1.1 *Lack of explicit patient safety content in the curriculum*

The results of the document analysis revealed that the clinical aspects of patient safety which include infection prevention and control, medication safety, patient safety and invasive procedures were integrated to an extent in the nursing curriculum. Clinical aspects of patient safety are usually incorporated in the nursing curriculum as evidenced by the results in the first phase of this study as well as literature (Cresswell et al 2013:843). The curriculum documents content analysis as well as the key informant interviews in phase one indicated that the clinical aspects were explicitly integrated in the nursing education and were considered a key competence the preparation of a safe nurse. However, the sociocultural competences as documented by the WHO and QSEN were notably absent from both nursing schools. The absence of this themes and the presence of only the clinical aspects of patient safety were supported by the results of the nursing faculty and the hospital staff interviews who reported that patient safety was not a discrete and explicit topic but rather was implicit and integrated in the nursing curriculum. They further described patient safety as underpinning most of the nursing courses and most of the time they did teach the students on patient safety, albeit informally. To further support the evidence of lack of patient safety in the curriculum, the faculty had wide and varied definitions of patient safety, some being at a loss of words in describing it with more focus on the clinical safety.

Additionally the results of the survey on perceptions of the students regarding their competencies on patient safety showed that the students were more confident about the

clinical aspects of patient safety and less confident about the sociocultural aspects of patient safety, which are core competencies that a nurse should have to be a safe practitioner. Furthermore, only 56.9% of the students agreed that patient safety was well integrated in the programme with a mean confidence score of 3.53 (\pm SD 0.99). The clinical staff interviews participants also expressed the need for explicit patient safety content in the curriculum.

The WHO recognises that to have a curriculum that is committed to preparing safety conscious healthcare workers, it is important that certain patient safety themes are explicitly included (WHO 2011b:29). In the Patient Safety Curriculum Guide, the WHO recommends the integration of both the clinical safety themes as well as the core and broader sociocultural aspects of patient safety themes. These themes include

- Understanding of patient safety discipline and its relevance to health;
- Relationship between human beings and the systems with which they interact – human factor principles;
- Understanding systems and the effect of complexity on patient care;
- Being an effective team player;
- Learning from errors to prevent harm;
- Understanding and managing clinical risk;
- Using quality-improvement methods to improve care; and
- Engaging with patients and carers.

In addition, the QSEN framework, which is founded on the IOM's report for health professions education, outlines six competencies for the pre-registration nursing students, patient-centred care, teamwork and collaboration, EBP, quality improvement, safety and informatics

The absence of patient safety in nursing education has been demonstrated in other studies that looked at inclusion of these in the nursing curriculum as well as other healthcare programmes (Attree et al 2008; Cresswell et al 2013:843; Maeda et al 2011:3; Steven et al 2014:277). In addition, other studies that looked at the integration of patient safety in the healthcare curriculum from the faculty perspectives also reported the similar results (Mansour 2013:157; Tregunno et al 2013:257). The formal curriculum plays a key role in ensuring that the student is equipped with competencies that enables them to handle patient safety issues in the workplace. By not including patient safety as explicit

and clear content in the curriculum, it risks it not being given the emphasis that it requires and therefore it is not taught comprehensively. The WHO Patient Safety Curriculum Guide recommends that it is important that the nurse is able to have an understanding of what patient safety is and to be able to apply the principles of patient safety in health (WHO 2011b:93). Therefore to be able to teach the student satisfactorily about patient safety it is imperative that the faculty are well versed on concepts of patient safety.

5.2.1.2 *Rigid curriculum*

Another curriculum issue that emerged from this study was the rigidity of the nursing degree curriculum. The reports from the document analysis and the faculty interviews from both schools showed that they used a similar curriculum with similar structures and content which was prescribed by the NCK. They explained that this was the case across the country because most of the nursing schools developed their curriculum along the guidelines of the NCK. The rigidity of the curriculum thus meant that reforming the curriculum to a patient safety-focused curriculum therefore needed to start from the country's nursing regulatory body. In addition, the faculty proposed the adoption of the WHO Multi-professional Patient Safety Curriculum Guide and to also seek mentorship from other nursing schools that have successfully integrated patient safety in their curriculum.

5.2.1.3 *Formal and informal teaching patient safety*

Study results demonstrated that despite patient safety not being explicit in the curriculum, the faculty utilised both formal and informal ways in teaching the concepts. The formal methods utilised were demonstration and return demonstration, role plays, low fidelity simulation and use of reflective practice. The faculty also used informal methods where they used their experiences to show students examples of patient safety. The hospital staff also reported that they did also use informal ways of instructing the students whenever they identified gaps. Teaching students on patient safety requires that the student is kept active and engaged so as to acquire the necessary competencies and faculty need to use teaching and learning strategies that facilitate the development and demonstration of the competencies (Pijl-Zieber et al 2014:676). It is further argued that teaching patient safety requires more than just the use of didactic instructional methods and requires that the student is immersed in more realistic and authentic experiences so as to keep the learner engaged and interested as well as give them a feel of the real life

situation (WHO 2011b:51). The role of reflection in learning about patient safety has been established by Ambrose & Ker (2014:297) who found that when the student was involved in critical reflection they demonstrated future intentions when it came to matters of patient safety and also demonstrated knowledge of actions to take when faced by patient safety issues.

5.2.1.4 *Lack of assessments on patient safety*

Another emergent theme from the results was the lack of specific assessments on patient safety in the nursing curriculum. The analysis of the curriculum documents revealed that the patient safety aspects were not included in the assessments which was further supported by the nursing faculty and clinical staff who pointed out that one of the ways of reinforcing the importance of patient safety to the students was by ensuring that it was included in their assessments. The clinical staff even raised a concern that by not including it in the students' rotation assessments, then there was a risk of the students not considering it an important competence in their training. Assessment in any educational programme is an important aspect that strongly influences the study behaviour of the student and provides the student with the motivation to achieve the learning outcomes and also provides feedback on the learning process. It is therefore important that the patient safety concepts are also integrated in the assessments so that there is continued development of the students' knowledge and skills in patient safety. Since patient safety is highly predicated on skills and behaviour, it is recommended that the assessments are formative and drive learning, progressive, fair, motivating, acceptable to the student and faculty, and should be included in the examination of clinical competence at all stages of the course (WHO 2011b:63).

5.2.2 Faculty preparation in teaching patient safety

Almost all the faculty members reported that they had not had any formal training in patient safety concepts or instructional methods in teaching patient safety. The faculty also had wide and varied definitions of patient safety with more focus on the clinical safety while some had difficulty in describing it. The faculty also reported that the lack of training on patient safety was also a concern in the healthcare workers in the clinical sites whose role was to mentor students in matters related to patient safety. The newness of patient safety as a discipline can explain this finding. Most of the faculty members and the hospital staff were trained with a similar curriculum where patient safety was not an

explicit component and was not included in the formal nursing curriculum and most often was viewed as a less important area when compared with core clinical topics. This statement by one of the faculty is an indication that patient safety has not been a core item in the nursing student's curriculum. As one participant reported:

I can give a very simple example of one time when I was still in college, and I was taking care of this patient who had some wound in the back. Most likely the wound had gone into the spine, I didn't know but I was doing the cleaning. I was told the cleaning of that kind of wound must be done with hydrogen peroxide. I didn't know hydrogen peroxide works best when there is pus but not on a clean wound. But this was what I was doing and I was doing it very faithfully like any other student. So as I was doing the cleaning and I was talking with the patient, and then I put in the gauze, I dipped in hydrogen peroxide and then now I was pushing it through a bit of a long tunnel and all of a sudden the patient collapsed. I must have touched the nerves without me even knowing. Did I report it? The patient recovered and that was it. Now it's not me alone, it happens to many many students and many many nurses.

This results are supported by a study on faculty members from medical, nursing and pharmacy undergraduate programmes to get their perspectives on patient safety in their curriculum. One of the major challenges they identified was the inadequacy in the extent to which faculty members and clinical preceptors were prepared to teach and mentor in the area of patient safety (Tregunno et al 2013:257). This is a view that has also been demonstrated in other studies on the role of faculty in patient safety education (Chenot & Daniel 2010:559; Ginsburg, Dhingra-Kumar & Donaldson 2017:1; Myers et al 2014:5). The recognition that faculty preparation is lacking to be able to effectively teach patient safety, strategies have been proposed to bridge this gap. Some of these strategies include building the patient safety competencies of both faculty members and clinical faculty, interprofessional faculty development and closer and better partnership between the academic setting and clinical setting so that faculty are able to understand the current patient safety issues in the clinical sites (AAMC 2013:23; Wong et al 2012:115). In addition, Coleman et al (2017:52) proposes that patient safety should be made a priority in the academic departments, necessary resources should be provided that enable learning and teaching of patient safety and more trainings should be provided to the faculty. Moreover, faculty who are involved in patient safety work and research should be recognised while also encouraging them to expand their collaborative networks and research efforts

5.2.3 Student characteristics that influence safety competencies

Student characteristics were also identified as a factor that can influence the student learning of patient safety and these were the developmental stage of the student and the general attitude of the student to nursing. The participants in the clinical staff interviews reported that the students were in different stages of learning and therefore it is important that appropriate teaching and supervisory techniques are implemented for each level of study. The student survey also showed that the confidence of the students in learning about patient safety was different for the different years of study, with the students being more confident in the second year, stabilising in the third year but declining by the final year. This decline in the patient safety confidence by the final year was consistent with other reported studies (Colet et al 2015:418; Lukewich et al 2015:930). This presented an opportunity for further research to understand why the final year students were less confident while the expectation was that with the increased exposure and training they would be most confident. Nevertheless, Lukewich et al (2015:930) postulated that the decline was associated with inconsistencies between patient safety concepts taught in the classroom setting and the student experiences in the clinical setting related to factors like variations in the mentors' attitudes towards patient safety, different experiences in different areas of the clinical sites and the influence of the hidden curriculum.

Another characteristic that was noted by both the nursing faculty and the hospital staff was the attitude of the nursing student to nursing as a career choice. Both expressed concern that some of the students did not have the right attitude towards nursing and they therefore were not patient centred and most had not made the career choice themselves. In Kenya, admission into the degree nursing programme is based on the high school grades where the student, while in high school, chooses the course they would like to undertake at the university with nursing either as a first, second, third or fourth choice. Then based on the high school final examination grade the student is admitted to do nursing at the university. This can explain the attitude of the student who is accepted into a programme that was not a first choice and therefore they view nursing as a means to an end and not as a course of interest.

The attitude of nursing students towards nursing is an area of interest for the nursing educators as well as the healthcare systems because the high rates of attrition that have been seen in nursing schools as well as hospitals (Kovner, Brewer, Fatehi & Katigbak 2014:26; Merkley 2016:71). Research on the attitude of the nursing students show that

there is a rise of a negative attitude towards nursing profession due to factors like the low salary, poor perception of nursing by the public and other health professionals, and long working hours (Belete, Lamaro & Henok 2015:1; Tseng, Wang & Weng 2013:161). Another attitude of concern that was conveyed by the hospital staff was the way the degree nursing students regarded the clinical mentors with diplomas disparagingly and felt that they were not qualified enough to support their learning. This is an attitude that has been reported by a study in South Africa where the students were disrespectful towards the staff nurses, especially those who were of a cadre below that which they were training (Rikhotso, Williams & De Wet 2014:1). The loss of interest in the students in the nursing profession and the negative attitudes towards their clinical mentors greatly affects their learning and their attainment of the necessary patient safety competencies. Therefore it is important that faculty understand the nursing students' perceptions of nursing and the reasons for the negative attitude as these have an impact on their self-concept, self-esteem, recruitment, retention and performance.

5.2.4 Patient safety in the clinical sites

5.2.4.1 *Patient safety culture*

Patient safety culture, which is a component of the organisational culture, is the values, beliefs, attitudes and norms of the organisation that determine its commitment to patient safety. The results of the study showed that the patient safety culture of the clinical sites is a major influence in the training of the student in patient safety. The participants in the faculty interviews recognised that the culture of the clinical sites greatly affected the way the student learns about safety and noted that some of the clinical sites have a defensive, concealing and blaming culture that may intimidate the student. The students also stated that they felt that reporting a patient safety problem in the clinical site would result in negative repercussions for them and they did not feel safe approaching someone whom they observed engaging in unsafe care practice in the clinical setting. This was further supported by the participants in the hospital staff interviews who reported that the lack of an incident reporting mechanism in their hospitals was pegged on the blame culture of their hospitals, which compromised student learning about patient safety as it made them afraid of reporting if they committed an error. A patient safety culture survey of the clinical sites utilised by the schools for clinical practice was also conducted using the SAQ – Short Form. The overall patient safety culture score of the hospitals was below the international recommendations of a good perception of safety culture.

The patient safety culture of the clinical site is part of the hidden curriculum which influences the learning of the student. Therefore it is important that the faculty as well as the students recognise its manifestation in the nursing education and manage it accordingly, so that it has a positive influence to the student. The hidden curriculum is a set of influences that function at the level of organisational structure and culture and include customs, rituals, commonly held “understandings,” and the “taken-for-granted” aspects of a profession (Hundert 2014:441). When the setting has a good patient safety culture, it is valuable to the student as it informally shapes their behaviours, attitudes and practices positively and prepares them for real life situations. But if the culture that the students are exposed to is inconsistent with what they are taught in class this may impede the student’s learning process (Bradley et al 2011:143; Mahood 2011:983; Martinez et al 2014:482; Steven et al 2014:277). Faculty members need to examine their curriculum for the explicit and implicit influences both in the classroom as well as the clinical sites. More so, they need to discuss with the students about the elements of the hidden curriculum that they can encounter in the clinical sites and equip them with strategies on how to manage those influences. In addition, the faculty need to evaluate the clinical learning environment on a regular basis so as to ensure that it fosters learning and reflects the patient safety culture that is ideal for learning about safety (Hodges & Kuper 2015:41).

5.2.4.2 *Resource constraints*

Another theme that emerged from the results was the resource constraints in the clinical sites that compromise patient safety practices and therefore hinder student learning about patient safety. The nursing faculty reported that in some of the clinical settings there were no proper supplies and equipment and thus the staff reported improvisations that were not ideal and therefore conveying the wrong message to the students. This was further supported by the reports from the hospital staff who confirmed that they lacked resources that would ensure the safety of the patients. Additionally, they reported the shortage of staff coupled with high workloads impacted their ability to provide safe care as well as be involved in clinical mentorship. The survey on the patient safety culture also found that a majority of the hospital did not agree that the level of staffing was sufficient to handle the number of patients in their units. One of the foremost challenges to patient safety and patient safety education in the developing countries that has been identified in literature is the lack of resources that can facilitate the teaching and learning of patient safety at the universities and the clinical settings (Aveling, Kayonga, Nega, & Dixon-

Woods 2015:3; Leotsakos et al 2014:381). Overcoming this challenge is multifaceted and requires commitment to patient safety in the healthcare systems through policy changes. At the university level, it is essential that the schools ensure that the clinical sites that they utilise for clinical practice have a sound culture of safety and have the necessary resources. Where not possible, then the universities can use innovative methods of teaching patient safety as suggested in the WHO Patient Safety Curriculum Guide which includes immersive scenario-based simulation training, bedside or chairside tutorials, observing videos of expert performance, and practising with simulated patients and peers (WHO 2011b:49).

5.2.5 Clinical education issues

Clinical education is an integral and influential part of the nursing curriculum through which the student is able to apply the theoretical knowledge learnt in the classroom in the clinical real-life situations as well as to gain the skills and behaviours that are core to nursing. The clinical learning environment is a complex and dynamic milieu that has many factors that influence student learning, as shown by the results of this study. The analysis of the curriculum documents showed that the clinical practice accounted for about a third of the programme where the students went for rotations in different settings both in and out of the hospitals. The students were placed under the supervision of the mentors in the clinical areas whose role was to ensure that they were supervised, supported and guided in their clinical learning. But results from the interviews and the surveys showed that the clinical learning on patient safety was influenced by a variety of issues, discussed below

5.2.5.1 *Clinical learning about patient safety*

One of the main challenges that emerged in relation to patient safety education was the clinical learning of patient safety vis-à-vis the classroom learning. In the student survey on their perceptions about their patient safety competence, the results show that they felt more confident in the classroom learning than clinical learning. The nursing faculty also expressed concern about the translation of the formal curriculum by the clinical educators, reporting that it may be distorted and therefore the intentions of the curriculum may be lost. These results showed that there was an issue with the application of the theoretical aspects in the practical setting, therefore illuminating the theory-practice gap in patient safety education. The theory-practice gap in nursing education has been

reported in various studies where it has been reported that one of the challenges in nursing education is bridging the discrepancy between what is taught in the classroom and the actual realities in the clinical practice sites (Dadgaran, Parvizy, & Peyrovi 2012:1713; Grealish & Smale 2011:51; Maginnis & Croxon 2010:1313). This therefore means nursing schools need to recognise that the gap exists and they need to implement teaching strategies which engage with practice realities in preparing safety-conscious nurses. One of the strategies suggested by Pauly-O'Neill and Cooper (2013:65) is the use of a clinical skills laboratory where the students are provided with a controlled environment through simulation where the students can develop and practice skills that they would otherwise not have an opportunity to practice in the real-life clinical settings. During the simulations, patient safety competencies are infused to each experience and this allows for the development of multiple competencies, including the patient safety competencies.

5.2.5.2 *Lack of mentorship programmes*

Mentorship was also described as a challenge in clinical education. Student mentorship is an integral part of clinical education whereby experienced nurses orient and facilitate learning for the student nurses in clinical practice. Mentors serve various roles, including but not limited to, role models, guardians, advisors and counsellors for the student when they are in the clinical setting (Mijares, Baxley & Bond 2013:23). The relationship between the mentor and the student involves encouraging and nurturing the student as well as proper communication so as to facilitate the student's learning and strengthening their professionalism (Jokelainen et al 2011:2854). The mentor is also involved in the monitoring and evaluation of the students' progress during their clinical practice. Therefore the key competences of a good mentor is required to be competent in communication, assessment and evaluation (McClure & Black 2013:335). However, as reported in this study, mentorship was not clearly defined, the mentors were not clearly oriented to their role as mentors and they did not always carry out sufficient clinical teaching, especially in patient safety issues. This finding was consistent with the student survey results which showed that the preceptors were not consistent with how they dealt with patient safety issues. These study results support a previous study done in Kenyan universities to evaluate the quality of clinical education whereby a significant majority of the students reported that they were dissatisfied with the clinical supervision (Nyangena, Mutema & Karani 2011:22). Similar challenges and barriers to effective mentoring have

been reported in literature. These include ambiguity as to the requirements of the mentor's role, conflicting demands with their clinical roles, difficulties in assessing the students, lack of support by the organisation and lack of satisfaction with the role (Chang Chang, Lin, Chen, Kang & Chang 2015:220; Cloete & Jeggels 2014:4; Madhavanpraphakaran, Shukri & Balachandran 2014:28; Omansky 2010:697). To overcome these challenges and barriers, some of the strategies that have been proposed include establishment of close cooperation between the academic and clinical sites with clearly defined understanding of the partnerships, familiarisation of the mentors with the theoretical and practical components of the curriculum so that there is no mismatch of the two during mentorship. Furthermore, there needs to be a support of the mentors by recognising the role as well as continuing education and in-service education programmes for the mentors to enable them to stay current with the changes in healthcare practices (Ajani & Moez 2011:3927; Douglas, Garrity, Shepherd & Brown 2016:34; Jokelainen et al 2011:2854).

5.2.6 Interprofessional education

Students also reported that the opportunity to learn and interact with members of interdisciplinary teams was low, which was consistent with the low self-reported confidence in clinical learning on the subscale *Working in teams with other health professionals*. This was further supported by the low confidence mean score in regard to their opportunity to learn and interact with members of interdisciplinary teams (3.38 SD 1.03). To be a safe practitioner, the nursing student should be able to function effectively within nursing and interprofessional teams, fostering open communication, mutual respect, and shared decision making to achieve quality patient care. This can be achieved through interprofessional education and training. Interprofessional education (IPE) is described as education which involves faculty and students from two or more health professions who learn about, from and with each other with the aim of developing interprofessional collaboration and competence (WHO 2010:13). IPE provides an opportunity for the students to learn with other members of the healthcare team, thereby enhancing knowledge of patient safety, building teamwork and generating positive attitudes towards interprofessional collaboration in practice, leading to better patient outcomes (Reeves, Perrier, Goldman, Freeth, & Zwarenstein 2013:[15]).

5.2.7 Collaboration between the nursing schools and clinical settings

The collaboration between the nursing schools and clinical settings was also established as a factor that influences patient safety education. The hospital staff reported that there was poor communication between the nursing schools and the clinical sites, and faculty did not support the clinical learning or monitor the progress of the students in the clinical areas. There was limited involvement of the clinical settings in the curriculum design and implementation. This concern can be explained by the fact that historically in Kenya, nursing schools were operated by the hospitals under the same governance and structures, but over the years the two have separated, with nursing schools running independently from the hospitals (Hastings 1994:33). The nursing schools, as reported by both the nursing faculty and hospital staff, then enter into a memorandum of understanding with the hospitals which they utilise for clinical practice which outlines the role of each in the clinical education. The separation of the two entities has been beneficial in the advancement of nursing education in Kenya, but the separation has meant that now the nursing faculty do not carry out clinical work, and are not directly involved in the clinical settings; therefore they cannot control the quality of the clinical learning environment effectively. Academic–clinical partnerships and active participation are important in ensuring the quality of the educational programme. Research shows that when there is good collaboration between the two, the students have a better clinical learning experience which is supported by expertise from both the academic and clinical settings and therefore development of safer and more competent nurses (Elsborg, Kvigne, Wilde-Larsson & Athlin 2014:396; Lapeña-Moñux et al 2016:1). Furthermore, the academic–clinical partnerships provide opportunities for resource sharing, increased personnel for clinical education, a platform for capitalisation of each other’s expertise for improvement of healthcare quality and education, and capacity building for the players in both the academic and clinical settings (Bvumbwe 2016:314). Strategies that have been proposed to increase collaboration between the academic and the clinical settings include open and frequent communication between the academic and clinical settings

5.3 INTERPRETATION OF RESULTS WITHIN THE CONCEPTUAL FRAMEWORK

Patient safety core competencies for pre-registration healthcare professionals have been recommended through a variety of international and national frameworks as described in Chapter 2. For this chapter, the researcher utilised the QSEN framework developed by Cronenwett et al (2007:122) as a conceptual framework for this study. Furthermore, the

researcher incorporated the patient safety principles and recommendations made by the WHO in the “Patient Safety Curriculum Guide: Multi-professional Edition”. The choice of the QSEN framework was based on the standpoint that it is a framework with a foundation of the IOM core competencies, developed by nurses, which serves as a resource for nursing faculty to integrate contemporary quality and safety content into nursing education. The framework has also been adopted by most of the nursing governing bodies in various countries. The QSEN outlines six competencies for the pre-registration nursing students, which are patient-centred care, teamwork and collaboration, EBP, quality improvement, safety and informatics.

In this study the researcher conducted a qualitative content analysis of the curriculum documents from two nursing schools to identify and describe the explicit patient safety concepts in the pre-registration nursing curriculum as well as how they are taught and assessed. The content analysis was guided by a coding frame designed based on patient safety concepts drawn from the QSEN framework and the WHO “Patient Safety Curriculum Guide: Multi-professional Edition”. The results showed that the clinical aspects of patient safety were embedded in the nursing curriculum; however core competencies as documented by the QSEN were notably absent from both nursing schools. One of the requirements of the QSEN for the success of development of the core competences by the student nurse is the development of faculty expertise necessary for the nursing schools to integrate the competencies and to teach them. Therefore the researcher carried out semi-structured interviews of the nursing faculty to explore their attitudes towards patient safety education in the BSc. Nursing curriculum. The results showed that faculty were not well-equipped to teach the patient safety core competencies as they had not had any had any formal training in patient safety concepts or instructional methods in teaching patient safety. The QSEN framework also recommends the assessment of the students’ achievement of the six competencies and the use of the assessment findings to promote students’ learning. The analysis of the curriculum documents, the faculty interviews and the clinical staff interviews all showed that assessment of the patient safety competencies was not done.

The study also assessed the perceptions of the nursing students of patient safety knowledge and competencies in the second phase of the study. This was done based on the recommendation of the developers of the framework who pointed out that there was need for use of valid psychometric tools to measure the knowledge, skills and attitude achieved by the learners in each of the six competencies. The researcher utilised the H-

PEPSS, a tool that has shown good psychometric characteristics and whose validity has been demonstrated in various studies. The results showed that the nursing students had lower confidence in the patient safety knowledge and competence in comparison to other studies in literature. However, consistent with other studies, they reported that they were more confident in what they learnt in the classroom than in the clinical areas. Students were also more confident about the clinical aspects of patient safety and less confident about the sociocultural aspects of patient safety, which are core competencies that a nurse should have to be a safe practitioner. The QSEN framework also encompasses the practice environment where the nursing students receive their clinical instructions with a note that patient safety education must also account for the complexity of the environments in which practice and student learning occurs. Bristol (2016:23) points out that the QSEN framework is a strategy that can be used to develop learning activities for the clinical learning experiences. The third phase of the study was mainly carried out in the clinical settings where the students undergo their clinical practice. An assessment of the patient safety culture showed that the culture as perceived by the hospital staff was below the international standards. Furthermore, the nursing staff interviews showed that the ability of the standards to achieve the role of training the nursing students on patient safety was faced by challenges that included substandard patient safety practices in the hospitals, lack of the resources, lack of mentorship programmes and poor academic–clinical partnerships. This study therefore supports the evidence from studies that have shown that the QSEN framework can be used to integrate the patient safety competencies in the nursing curriculum.

5.4 CONCLUSION

In this chapter, the findings from the three phases have been integrated and discussed with literature support. This was to provide the reader an overall understanding of the extent to which patient safety concepts are integrated in the pre-registration Bachelor of Science in nursing curriculum in Kenya and to understand the issues that influence the teaching, and learning of patient safety. Based on the findings, the researcher also recommended strategies for the integration of patient safety concepts in nursing education in Chapter 6.

CHAPTER 6

STRATEGIES FOR INTEGRATION OF PATIENT SAFETY IN THE NURSING CURRICULUM

6.1 INTRODUCTION

The purpose of this research study was to investigate the extent to which patient safety concepts are integrated in the pre-registration BSc. Nursing curriculum in Kenya with an aim of developing strategies that will enhance the integration of patient safety concepts in the nursing curriculum which will serve as a guide for the nursing schools. The findings show that integration of patient safety into the curriculum involve an interplay of various factors and stakeholders that influence nursing education and the healthcare system in the country. Based on these the researcher recommends the following strategy components for the integration of patient safety in nursing education as conceptualised in Figure 6.1:

1. Leadership sensitisation on patient safety;
2. Policy changes;
3. Development of core competencies;
4. Faculty capacity building;
5. Curriculum changes;
6. Review and improvement;
7. Interprofessional education;
8. Mentorship;
9. Patient safety in the clinical sites; and
10. Academic practice partnerships.

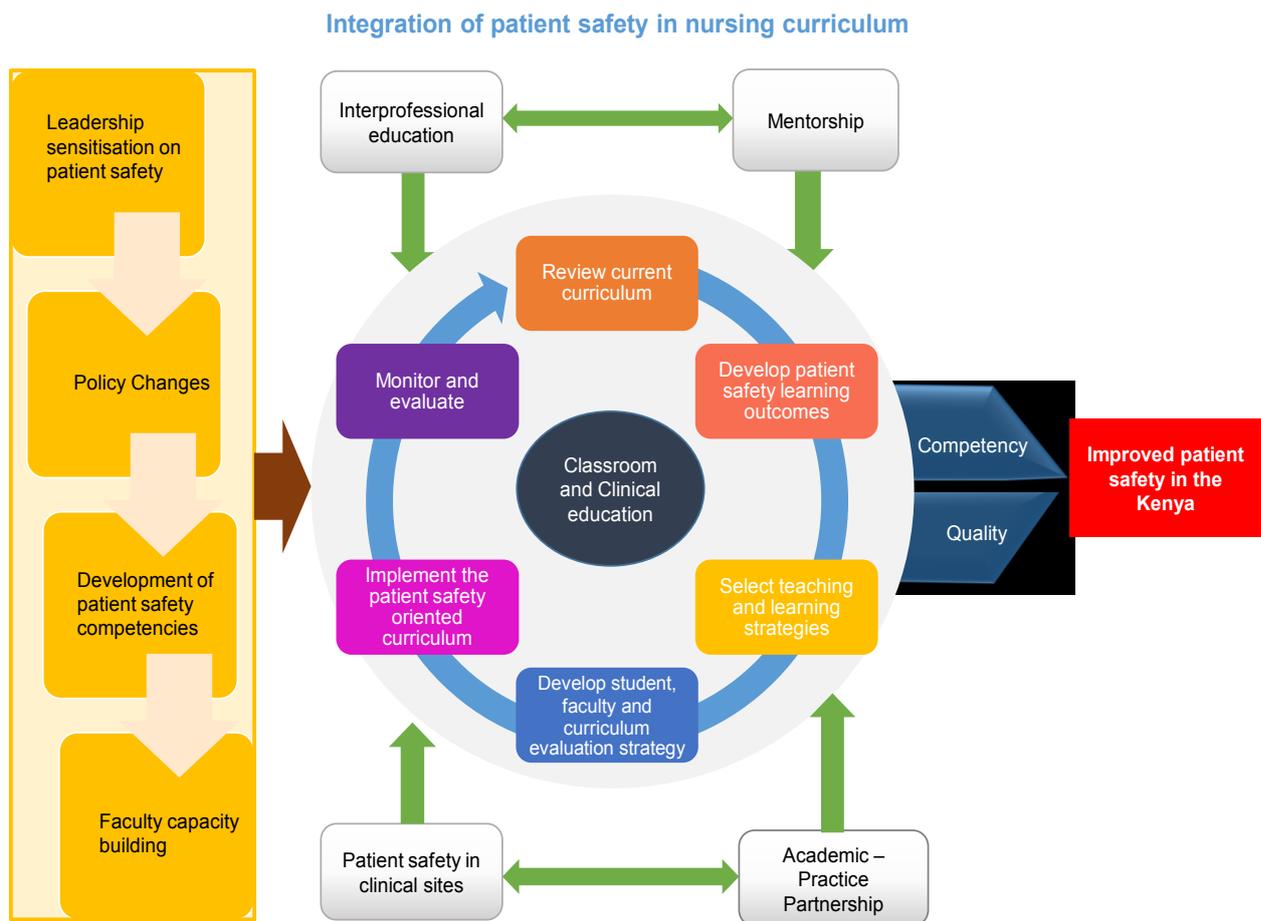


Figure 6.1: Strategic framework for the integration of patient safety in nursing education

6.2 LEADERSHIP SENSITISATION ON PATIENT SAFETY

As reported in the faculty and hospital staff interviews, patient safety is a neglected issue in the country with not enough emphasis being placed on its importance. The Kenyan healthcare system is still grappling with many problems, including political, financial and economic issues, and therefore the emphasis on patient safety is not deemed a priority. However, there has been an increased demand for safer and quality healthcare in the country based on the changes in the economic profile of the healthcare consumers, increased internet connectivity that has increased accessibility to the public about unsafe healthcare and their rights to safety. This means that the leaders of the health sector need to shift their focus to the safety of the care provided to the public. The key players here include the national and county government, the Ministry of Health, the healthcare professionals accrediting and licensing bodies, the leaders of the private sectors, leaders of educational institutions and other administrative leaders who have a role in policy

formulation in the country. According to Ginsburg et al (2017:6), sensitising the leadership is fundamental because this ensures that the graduates who have undergone training with a patient safety based curriculum do not encounter resistance once they join the workforce. The key actions in this strategy include leadership engagement on the need for improvement of patient safety, and patient safety education based on the results of a situation analysis of patient safety in the healthcare system. This can be done through stakeholders' forums, conferences and round-table discussions. Additionally it is important to conduct foundational training for leaders on patient safety to sensitise them on what patient safety is and what it entails.

6.3 POLICY CHANGES

The second strategy requires a change in the healthcare and education policies in the country. The healthcare system inadvertently harms the people it is meant to care for based on years of research from all over the world. It is therefore imperative that the government, using a bottom up approach for sustainability, establishes a patient safety agenda, which can be done by embedding patient safety in the national health policy and strategic framework. In so doing then this will create a stepping stone for reforms in the health sector towards attainment of a safe healthcare system. The government can utilise the WHO guide for developing national patient safety policy and strategic plan that was developed in 2014 in embedding patient safety in the national policy (WHO Regional Office for Africa 2014)

6.4 DEVELOPMENT OF PATIENT SAFETY CORE COMPETENCIES

The third strategy element that is recommended is the development or adaptation of core competencies for patient safety education in nursing education for different levels, that is, for pre-registration and graduate nursing education. This is important for ensuring that the institutions are able to qualitatively and quantitatively measure that learning has occurred. There are many patient safety core competencies from different countries but it is important that the core competences are cognisant of the Kenyan context. To ensure this, stakeholders must be drawn from the Ministry of Health, the accreditation and licensing bodies, the educational institutions and the healthcare systems. Once the core competencies are established then they should be incorporated in the accreditation and licensing requirements for the nurses and the also the nursing education programme requirements.

6.5 FACULTY CAPACITY BUILDING

The fourth strategy is aimed at building capacity of the faculty in nursing schools as well as in clinical practice to gain their commitment to the integration of patient safety in the nursing curriculum. As shown in the research findings, the faculty are not knowledgeable about patient safety science as it is a relatively new field. Building capacity can be achieved by conducting seminars and workshops for the faculty and creating awareness on patient safety issues in the country.

6.6 CURRICULUM CHANGES

Once the buy-in for the need to integrate patient safety in the curriculum and the commitment to integrating patient safety has been achieved, then the curriculum changes can be done. Changing the curriculum will require first reviewing the current nursing curriculum developed by the NCK to identify what is already there and to identify where patient safety can be incorporated without overloading the curriculum. Key activities include the development of patient safety learning outcomes, teaching and learning strategies and formative and assessment methods both for classroom and clinical learning. One of the proposed curriculum guides for integration that has been proposed is the WHO “Patient Safety Curriculum Guide: Multi-professional Edition”.

6.7 EVALUATION OF THE CURRICULUM

Once an agreement on integration is achieved and it is implemented in the nursing schools, then an evaluation plan is formulated and implemented to evaluate the policy, the programme, and the learning impact. According to the WHO (2011b:69), it is important that the evaluation plan clearly defines the stakeholders, the purpose of the evaluation, and the form of the evaluation to be undertaken. Once the evaluation is carried out, then the schools should disseminate the information and take the necessary action for improvement.

6.8 INTERPROFESSIONAL EDUCATION

A key issue that emerged from the findings was the need for interprofessional education. This provides an opportunity for the student to learn and work with other members of the healthcare profession thus enhancing teamwork and collaboration in practice leading to improvements in patient safety. Nursing schools can adopt IPE using the different

frameworks that have been proposed, for example, the WHO *Framework for action on interprofessional education & collaborative practice* (WHO 2010).

6.9 MENTORSHIP

Mentorship is an important aspect of any educational programme and therefore it is key that nursing schools develop structured mentorship programmes for the students both in the academic and clinical settings. Mentorship involves enabling the student to apply theory to practice, supporting the learning through assessment, evaluation and feedback and also facilitating reflection on practice, performance and experience. The structured mentorship programmes should have clearly defined:

1. Standards of practice for the mentorship;
2. Goals of the mentorship;
3. Mentors and mentees role and responsibilities;
4. Mentor qualifications;
5. Competences and outcomes of the mentors;
6. Continuing professional development for mentors; and
7. Allocation of time for mentor activity.

All the above should be geared to ensuring that the student is supported in their learning on patient safety by a mentor who has a positive attitude towards patient safety and is willing to teach it.

6.10 PATIENT SAFETY IN THE CLINICAL SITES

Ensuring that the students are able to translate patient safety theoretical knowledge into practice is highly reliant on the status of patient safety in the settings where they undergo clinical education. Therefore, when selecting the sites for clinical placements it is important that the nursing faculty select those with exemplary patient safety practices and culture. They should assess the staffing levels and the resources available in those sites, ensure that the patient safety culture allows for the student to learn from errors, staff have a positive attitude towards patient safety and clinical area has a dynamic patient population that ensures that the student is exposed to the complexity found in the real-life situation.

6.11 ACADEMIC PRACTICE PARTNERSHIPS

Academic practice partnerships are necessary for the success of patient safety education. These are intentional, collaborative, formal relationships based on mutual goals, respect and shared knowledge. For these relationships to work, there needs to be involvement and commitment by the leadership and it should be cascaded to the different levels in both areas. These partnerships lead to an increase in student and staff satisfaction, increased research output and provision of quality and safe healthcare (Everett 2016:170). Nursing schools and practice setting can choose from various modalities of partnership as outlined in the AACN academic practice partnership toolkit (AACN 2015).

6.12 CONCLUSION

In this chapter, based on the findings of the research study, the researcher developed strategies for the integration of the patient safety concepts into nursing education. These were presented in the form of a strategic framework, with a discussion of each strategy. In Chapter 7 the summary, conclusion, limitations of this research study will be discussed.

CHAPTER 7

SUMMARY, CONCLUSIONS AND LIMITATIONS

7.1 INTRODUCTION

This chapter presents a brief outline of the methodology utilised for this study, a summary of the research findings based on the objectives of the study, the conclusions that the researcher arrived at from the results, and the imitations of the study.

7.2 RESEARCH DESIGN AND METHODS

The research study was conducted using quantitative and qualitative approaches to achieve the overall purpose of the study, which was to investigate the extent to which patient safety concepts are integrated in the nursing degree curriculum in Kenya. The study was divided into three phases with specific objectives.

The first phase of the study had two specific objectives that were achieved using a qualitative approach. Content analysis of the nursing curriculum documents was performed to identify and describe aspects of patient safety that are covered in the pre-registration curriculum as well as how they are taught and assessed from two nursing schools. In this phase the research collected the curriculum documents and practice assessment documents which were analysed using a predesigned coding frame with concepts drawn from relevant literature, WHO “Patient Safety Curriculum Guide: Multi-professional Edition” and the QSEN concepts. The researcher further explored the perspectives of the nursing faculty towards patient safety education in the nursing degree curriculum by conducting semi-structured interviews on 13 faculty members to explore the extent to which the patient safety concepts are addressed in the nursing curriculum and the barriers and enablers to their integration in the curriculum of their institutions.

In the second phase, the researcher assessed the patient safety knowledge and competencies as perceived by the nursing students using a quantitative approach. The Health Professional Education in Patient Safety Survey (H-PEPSS) was administered to 178 nursing students in two nursing schools. The survey instrument measures the health professionals’ self-reported patient safety competency on six sociocultural dimensions of patient safety.

The third phase achieved two specific objectives and was mainly carried out in the hospitals where the nursing students undergo their clinical education specifically on

patient safety. A quantitative approach was utilised to assess the patient safety culture in the two main hospitals used by the schools for the clinical rotations. The SAQ – Short Form questionnaire was administered to the 234 healthcare professionals in the hospital. In the second objective in this phase, a qualitative approach was utilised to explore the perceptions of organisations staff on the preparation of the pre-registration nursing students in patient safety by conducting semi-structured interviews with 14 participants drawn from representatives of the nursing management, patient safety and the frontline nurses involved with student learning in the clinical areas.

7.3 SUMMARY OF FINDINGS

The findings are summarised below according to the phases.

7.3.1 Phase one

The results of the qualitative content analysis showed that patient safety is not an explicit and discrete content in the curriculum documents but rather was implicit within the curriculum document as a series of statements and inferences to patient safety. Both programmes had some common specific content areas as examples of patient safety issues.

The perspectives of the faculty were presented under the four main themes that emerged from the data analysis which were:

- Aspects of patient safety in nursing education;
- Teaching and learning patient safety;
- Challenges in patient safety education; and
- Strategies to improving patient safety education.

The research findings from the interviews indicated that the nursing faculty had a general understanding of patient safety; however the definitions ranged from simple to broad and most of them viewed patient safety as all-encompassing and were underpinned in all aspects of the nursing programme and not just a single topic that they could pinpoint. Almost all the faculty members reported that they had not had any formal training in patient safety concepts or instructional methods in teaching patient safety.

Teaching of the patient safety concepts was done using both formal methods like use of simulations, role plays, demonstration and return demonstration as well as reflective

practice. Informally, the faculty members used examples from their previous experiences to demonstrate to the students the complexities of healthcare and give them ideas of some of the situations that they might encounter in real life.

The lack of patient safety as a discrete and explicit topic in the nursing curriculum was one of the challenges that they identified in the preparation of a safety-competent nurse. They recognised that to train safe and competent nurses, there is a need to review the curriculum and integrate patient safety in it in an explicit manner. They further recommended that nursing schools could follow the recommendations of the WHO “Multi-professional Patient Safety Curriculum Guide” as a stepping stone in integrating patient safety in their curriculum.

The patient safety culture of the clinical sites was recognised as part of the hidden curriculum. Participants reported that the patient safety status of the clinical sites was below average and the clinical sites had a defensive, concealing and blaming culture that may influence learning negatively. The faculty recommended training of staff as well as patient engagement as strategies of improving patient safety in the clinical sites.

The theory-practice gap, issues surrounding mentorship and clinical assessments of patient safety were challenges identified under the influence of clinical education. The results show that the intended outcomes of the curriculum may not be well translated in the clinical sites. Mentorship was not well defined and those who were involved in mentoring the students were not well oriented to their role and during clinical teaching they did not explicitly link their teaching to patient safety

7.3.2 Phase two

The findings in this study showed that generally the students were more confident about learning about the clinical aspects of patient safety, which included hand hygiene, infection control and medication safety, and they were less confident about the sociocultural aspects of patient safety. In addition, the students reported low confidence in regard to the integration of patient safety in the overall programme. The nursing students also reported that they felt more confident in the classroom learning than clinical learning. This was further supported by the reported inconsistencies on how patient safety issues are dealt with by the different preceptors in the clinical areas. Students also reported that the opportunity to learn and interact with members of interdisciplinary teams was low, which was consistent with the low self-reported confidence in clinical learning

on the subscale *Working in teams with other health professionals*. The survey findings also found that the students also felt less confident in speaking up about patient safety issues in the clinical areas, with more than half of them feeling that reporting a patient safety problem would result in negative repercussions. Nearly half reported that they did not feel safe approaching someone whom they observed engaging in unsafe care practice. Further, they reported that discussion around adverse events was not system-related but focused on the individual. Students also reported that the system aspects of patient safety were not well covered in the nursing programme, indicative of the lack of integration of this aspect in the curriculum. The relationship between the academic year and the self-reported confidence on patient safety revealed that in many aspects of patient safety, the students were more confident in the second year. and confidence stabilised in the third year, but tended to decline by the final year. This provides an opportunity for further research to understand the factors that led to a decline in the confidence and the implication of this to practice.

7.3.3 Phase three

In the first objective of this phase, the researcher carried out a survey to assess the patient safety culture of the clinical sites where the students undergo clinical learning. The survey showed that the staff had a positive perception of the overall patient safety culture of the hospitals, but despite this, the perception mean score was below the recommended perception of good patient safety. The dimension with the highest positive attitude was *Job Satisfaction* where the participants indicated that they liked their jobs, were proud to be working in the respective hospitals and that the morale was very high in the work units. The lowest scored dimension was *Stress Recognition*, indicating that the participants were not greatly aware of how stress can foster the occurrence of errors. A comparison of the patient safety mean scores across the demographic factors showed that there was no significant difference across the different groups in the overall perception of patient safety culture.

For the second objective, where the perceptions of the hospital staff on the preparation of the degree nurses on patient safety was explored, five main themes emerged:

- Learning about patient safety in the clinical settings;
- Patient safety culture of the clinical settings;
- Mentorship challenges;

- Curriculum issues; and
- Relationship between clinical sites and nursing schools.

The participants described the learning in terms of the role of the hospital in clinical learning, the role of the frontline nurse who works with the student during the rotation, and the student characteristics that influence the clinical learning about patient safety by the nursing students in the clinical settings in order to achieve the necessary patient safety competencies. They further described their perceptions about the patient safety culture in their hospitals which the students are exposed to and its influence on the clinical learning about patient safety. The issues that came up were the unsafe practices in the hospitals, the lack of incident reporting and monitoring systems, the blame culture inherent in the hospitals and the resource constraints that compromise patient safety practices.

The participants also discussed their role as mentors and the challenges they faced that did not allow them to effectively carry out this role. The challenges identified were the lack of a structured mentorship programme, generic mentorship roles, role strain and lack of training on patient safety. Another theme that emerged was the influence of the curriculum on the clinical learning about patient safety. The curriculum issues that were highlighted by the participants were the absence of explicit patient safety focus in the curriculum, inadequate student preparation on patient safety, limited time in the clinical areas and absence of assessments on patient safety. Finally, the relationship between the nursing schools and the hospital was also identified as an influencer of student learning whereby the participants reported that they did not have adequate support of the clinical teaching by the schools, as well as the inadequacy of communication from the schools.

7.4 CONCLUSIONS

The following conclusions were drawn from this study:

Preparation of a safe nurse is the intention of the degree nursing programme in Kenya; nevertheless patient safety is not explicitly integrated in the nursing degree curriculum but instead was implicit within the programme as a series of statements and inferences to patient safety.

The students were more confident about their learning about patient safety in the classroom setting than in the clinical settings. This showed that there was an issue with the application of the theoretical aspects in the practical setting, illuminating the theory-practice gap in nursing education. In addition, the complexity of the clinical setting and the underlying factors that can hinder student learning cannot be ignored. Nursing faculty need to establish stronger and supportive links with the clinical sites so as to ensure both are clear on the expected outcomes of the curriculum and therefore bridge the gap between classroom and clinical learning.

Students were also more confident about the clinical aspects of patient safety and less confident about the sociocultural aspects of patient safety, which are core competencies that a nurse should have to be a safe practitioner. Faculty and clinical educators need to review the nursing programmes and integrate the sociocultural aspects of patient safety in the curriculum both in the classroom and the clinical settings. By teaching the students on this aspects, the student understands the proper patient safety culture and therefore understands that errors rarely occur in isolation but rather are multifaceted in nature and this therefore gives them the courage to speak up about safety issues.

Students also reported that the opportunity to learn and interact with members of interdisciplinary teams was insufficient. To be a safe practitioner, the nursing student should be able to function effectively within nursing and interprofessional teams, fostering open communication, mutual respect, and shared decision making to achieve quality patient care. The clinical areas are the best settings where the nursing students can be provided with opportunities to interact with members of other disciplines as well as learn about teamwork. Other strategies include providing interprofessional education and training. This provides an opportunity for the students to learn with other members of the healthcare team, thus enhancing knowledge of patient safety and fostering good working relationships, building team work and generating positive attitudes towards interprofessional collaboration in the training.

The research found that the students also felt less confident in speaking up about patient safety issues in the clinical areas, with more than half of them feeling that reporting a patient safety problem would result in negative repercussions and nearly half reporting that they did not feel safe approaching someone whom they observed engaging in unsafe care practice. Underreporting and failure of raising concern about errors is a common issue in many organisations both by the students as well as staff. Students need to be

empowered to be able to report errors that they may encounter during the clinical practice. At the classroom level, it is important that the elements of patient safety are well reinforced as well as providing assertiveness training by use of methods like role plays or simulations to give students a feeling of real-life situations. In the clinical settings, the students need to be exposed to a proper patient safety culture that allows them to learn and have the courage to speak up.

Nursing faculty had a general understanding of patient safety but they struggled in the definition and conceptualisation of patient safety. They were also not formally trained in patient safety concepts or instructional methods in teaching patient safety.

The developmental stage of the student and the general attitude of the student to nursing can influence the student learning of patient safety therefore it is important that appropriate teaching and supervisory techniques for the different type of students. Furthermore, it is important that the motivations of nursing profession as a career are understood at the early stages of the programme.

The defensive, concealing and blaming culture of the clinical settings is detrimental to the student learning about patient safety and the students did not feel confident to speak up about safety issues and they feel that this would lead to negative repercussions.

Mentorship is a challenge in the clinical settings due to lack of structured mentorship programmes.

There is need to foster the relationship between the nursing schools and the clinical settings so as enhance clinical education

7.5 LIMITATIONS OF THE STUDY

The research study had some limitations, which were acknowledged and taken into account. The convenience sampling of two nursing training institutions was a small sample size taking into account that there are 22 nursing schools in Kenya that carry out degree nursing training. In addition, the study was mainly focused on the public government-sponsored nursing schools, and therefore the results cannot be generalised to the private institutions.

During the content analysis in one of the schools, the researcher was only given the hard copy of the curriculum documents and was not allowed to leave the premises with the

documents. All the analysis was done in the building and therefore cross checking for clarification of any finding was hampered by the unavailability of the documents.

Despite these limitations, the validity, reliability and trustworthiness of the study was ensured throughout the entire research and therefore the study findings are reliable and valid

7.6 RECOMMENDATIONS

7.6.1 Recommendations for practice and education

Based on the research findings and supporting the literature, the following recommendations are presented.

There is need for the improvement of patient safety in the country. As described in the strategies, an interplay of actors is required but the first and most important action lies with the leadership and governance, whereby a national patient safety policy needs to be integrated in the national health policy of the country.

The nursing regulatory bodies and nursing education stakeholders need to develop or adapt patient safety core competences for the both undergraduate and graduate nurses that will ensure that patient safety is part of the learning and it is assessed at all stages.

It emerged that patient safety is not an explicit concept in the degree nursing programme, the faculty were ill equipped in the teaching of patient safety and the sociocultural aspects of patient safety were missing from the curriculum. The public are increasingly becoming aware of patient safety and their right to a safe public healthcare system. Therefore, the nursing schools also have to train a nurse who is adequately prepared to be able to provide safe and quality nursing care. This means that integration of patient safety in the nursing curriculum is urgent. The researcher outlined strategies that the nursing schools could implement to ensure that the integration is successful.

Training and capacity building for the nursing and clinical faculty should be carried out to ensure that they are equipped with the necessary knowledge and skills to be able to teach, mentor and assess the student on patient safety.

Closer links need to be established between the nursing schools and the clinical settings to ensure that both are working towards the same goal of having a safety-conscious nurse.

Clinical education and the issues surrounding it need to be investigated further and the challenges mitigated.

The nursing schools and the clinical settings should develop a structured mentorship programme and guidelines.

7.6.2 Recommendations for future research

This research study did not cover all the issues concerned with patient safety in the nursing education and therefore the following recommendations are made for future research.

1. A similar study with an expanded scope to other health professionals' education;
2. A study on the integration of patient safety in the private nursing schools, as well as schools offering the diploma in nursing, and exploring the integration of patient safety in their curriculum;
3. An observational study to evaluate how the classroom and clinical teaching is done so as to identify the informal and formal ways that patient safety is taught;
4. A qualitative study to get insight from nursing students on how they conceptualise patient safety;
5. An interventional study with pre- and post-tests to investigate if there are changes in the students' knowledge about patient safety if they undergo training on patient safety;
6. A study (quantitative and/or qualitative) of newly qualified nursing staff to assess their learning of patient safety;
7. A study on the clinical education and its issues in Kenya; and
8. A situational analysis of patient safety in Kenya.

7.7 CONTRIBUTIONS OF THE STUDY

One of the key contributions of this study is the generation of new knowledge about patient safety in nursing education from a local perspective. As far as the researcher knows, and from extensive research in different databases, this is the first research of its kind in Kenya. The kind of study has been carried out in many developed countries, which has led to remarkable changes in the training of nurses in patient safety. The researcher envisions that this will serve as a stepping stone not only in the integrating of patient

safety in nursing education but also as an incentive for reforms in all health professionals' education in Kenya.

Another contribution of this study was the insight it provided on the issues of clinical education in hospitals. It is hoped that through this study, more emphasis will be placed on strengthening clinical education and providing the student with a safe and supporting clinical learning environment and experiences.

Additionally, the study brought to light the state of patient safety in the country with reports indicating that patient safety is a neglected aspect of healthcare in public hospitals. Through this study, issues that affect patient safety were highlighted. These issues include the lack of patient safety policies, resources, commitment to patient safety by leadership, patient safety training, incident reporting mechanisms as well as an organisational culture that does not take errors as an opportunity to make systemic improvements.

7.8 CONCLUDING REMARKS

The magnitude of errors in healthcare has been highlighted in literature over the last 20 years. It is acknowledged that the foundation of patient safety is in the way the healthcare professionals are trained and educated to be able to deliver safe and quality care. This has led to international policy groups calling for an integration of patient safety in health professionals' education. Through this research study, the researcher, who has a background in healthcare quality improvement and patient safety, and is also a nurse educator, was able to highlight the issues of patient safety in nursing education as well as patient safety in the country.

It is envisioned that this study will lead to reforms in how we educate the nurses and other healthcare professionals on patient safety because ...

“We can't hope to make lasting changes in the ability of healthcare systems to improve without changes in the ways we develop future health professionals.

***Those changes require faculty and schools to change.” – Paul Batalden,
Dartmouth College, QSEN Advisory Board.***

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Annexure A: Ethical clearance certificate from the University of South Africa



**UNIVERSITY OF SOUTH AFRICA
Health Studies Higher Degrees Committee
College of Human Sciences
ETHICAL CLEARANCE CERTIFICATE**

REC-012714-039

HS HDC/386/2014

Date: 10 December 2014 Student No: [REDACTED]
Project Title: Integrating patient safety in nursing education: An analysis of pre-registration nursing curricula in Kenya.
Researcher: Nickcy Nyarua Mbuthia
Degree: D Litt et Phil Code: DPCHS04
Supervisor: Prof MM Moleki
Qualification: D Litt et Phil
Joint Supervisor: -

DECISION OF COMMITTEE

Approved

Conditionally Approved

[REDACTED]
Prof M Roets

CHAIRPERSON: HEALTH STUDIES HIGHER DEGREES COMMITTEE

[REDACTED]
Prof MM Moleki

ACADEMIC CHAIRPERSON: DEPARTMENT OF HEALTH STUDIES

PLEASE QUOTE THE PROJECT NUMBER IN ALL ENQUIRES

NACOSTI ACCREDITED



ERC/PhD/008/2016

NACOSTI ACCREDITED



ERC/PhD/008/2016

ETHICS REVIEW COMMITTEE

ACCREDITED BY THE NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY
AND INNOVATION (NACOSTI, KENYA)

CERTIFICATE OF ETHICAL APPROVAL

THIS IS TO CERTIFY THAT THE PROPOSAL SUBMITTED BY:

NICKCY MBUTHIA

REFERENCE NO:
ERC/PhD/008/2016

ENTITLED:
**Integrating patient safety in Nursing Education: An analysis of
preregistration Nursing curricula in Kenya**

TO BE UNDERTAKEN AT:
KENYA

FOR THE PROPOSED PERIOD OF RESEARCH

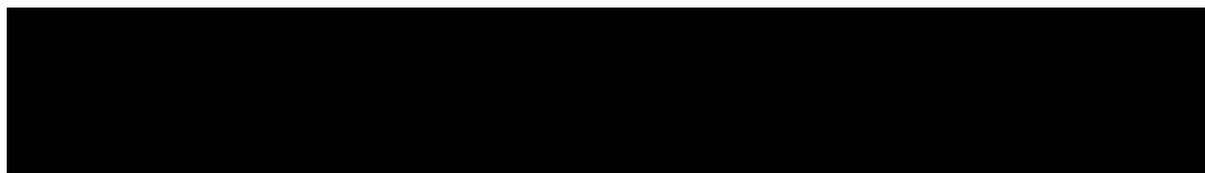
HAS BEEN **APPROVED** BY THE ETHICS REVIEW COMMITTEE
AT ITS SITTING HELD AT PWANI UNIVERSITY,
KENYA ON THE **5th DAY OF DECEMBER**
2016

CHAPTER 8

CHAIRMAN

SECRETARY

LAY MEMBER



PTO

*Ethics Review Committee,
Pwani University, www.pu.ac.ke, email: r.thomas@pwaniuniversity.ac.ke, tell: 0719
182218. The ERC, Giving Integrity to Research for Sustainable
Development*

NACOSTI ACCREDITED



ERC/PhD/008/2016

NOTICE:

This decision is subject to the information available at the time of APPROVAL. The Committee may on its own motion and/or by application by a Party, review its decision on the grounds of discovery of new and important information which was not reasonably within its knowledge at the time of decision or on account of mistake or error apparent on the face of the record, or for any other sufficient reason, provided the researcher shall be given prior opportunity to be heard.



*Ethics Review Committee, Pwani University, www.pu.ac.ke,
email: r.thomas@pwaniuniversity.ac.ke,
tell: 0719 182218.
The ERC, Giving Integrity to Research for Sustainable Development*

Annexure C: Letter seeking permission from University A

Nickcy Mbutia
Lecturer, Pwani University

P. [REDACTED]

Tel. No: [REDACTED]

[REDACTED]

12th January, 2017

Prof. Muniru Tsanuo
Deputy Vice Chancellor (Research and Extension)
Pwani University
Kilifi

Dear Sir

PERMISSION TO CONDUCT RESEARCH STUDY

I am a PhD student enrolled at the University of South Africa Health Studies program, and am in the process of writing my PhD thesis. I am writing to request permission to conduct a research study at your institution entitled *Integrating Patient Safety in Nursing Education: An Analysis of PreRegistration Nursing Curricula in Kenya*.

The study which shall be conducted in the School of Nursing entails:

- A content analysis of the nursing curriculum documents for the pre-registration program to identify aspects of patient safety ingrained in the curriculum
- Assessment of the perceptions of nursing students to patient safety knowledge and competencies from each level of the nursing program using a self-administered questionnaire
- Interviews of nursing faculty to understand barriers and enablers to the integration of patient safety concepts in the curriculum

Furthermore, the study shall also assess the patient safety culture in the hospitals that are used for the clinical practice so as to understand role of the hidden curriculum that influences the safety behaviours of nursing students.

If permission is granted, none of the curriculum documents shall be removed from your premises and all information collected shall be kept private and confidential and shall strictly be used for the purpose of this study only. The final findings of the study shall be shared with you at the end of the study.

To assist you in reaching a decision, I have attached to this letter a copy of an ethical clearance certificate issued by the University of South Africa as well as the Pwani University Ethical Review Committee and a copy the research instruments which I intend to use in my research. If you require any further information, please do not hesitate to contact me. Thank you for considering this request and for supporting my research.

Yours sincerely,

[REDACTED]

Nickcy Mbutia

Annexure D: Letter of approval from University A



Office of the Deputy Vice Chancellor (Research and Extension)

Our Ref: PU/DVCRE/RSCH/VOL.1

Your Ref:

Website:



DATE: 9th January, 2017

Ms Nicky Mbuthia,
Pwani University,
School of Health and Human Sciences,
Department of Nursing Sciences.

RE: REQUEST FOR PERMISSION TO CONDUCT RESEARCH STUDY AT PWANI UNIVERSITY

Reference is made to your letter dated 9th January, 2017, which you requested for permission to conduct research study title "*Integrating Patient Safety in Nursing Education: An Analysis of Pre-Registration Nursing Curricula in Kenya*".

Permission is hereby granted to conduct research study as per the Ethics Review Committee approved tools.

Thank you.



PROF. MUNIRU K. TSANUO
DEPUTY VICE CHANCELLOR (RESEARCH AND EXTENSION)

Copy: The Vice Chancellor, Pwani University
Deputy Vice Chancellor, Administration, Finance & Planning
Deputy Vice Chancellor, Academic and Student Affairs

Annexure E: Letter seeking permission from University B

Nickcy Mbuthia Mukolwe
Lecturer, Pwani University P.O.

12th January, 2017

Prof. Egara Kabaji
Deputy Vice Chancellor (Planning Extension and Research)
Masinde Muliro University of Science and Technology
Kakamega

Dear Sir

PERMISSION TO CONDUCT RESEARCH STUDY

I am a PhD student enrolled at the University of South Africa Health Studies program, and am in the process of writing my PhD thesis. I am writing to request permission to conduct a research study at your institution entitled *Integrating Patient Safety in Nursing Education: An Analysis of PreRegistration Nursing Curricula in Kenya*.

The study which shall be conducted in the School of Nursing entails:

- A content analysis of the nursing curriculum documents for the pre-registration program to identify aspects of patient safety ingrained in the curriculum
- Assessment of the perceptions of nursing students to patient safety knowledge and competencies from each level of the nursing program using a self-administered questionnaire
- Interviews of nursing faculty to understand barriers and enablers to the integration of patient safety concepts in the curriculum

Furthermore, the study shall also assess the patient safety culture in the hospitals that are used for the clinical practice so as to understand role of the hidden curriculum that influences the safety behaviours of nursing students.

If permission is granted, none of the curriculum documents shall be removed from your premises and all information collected shall be kept private and confidential and shall strictly be used for the purpose of this study only. The final findings of the study shall be shared with you at the end of the study.

To assist you in reaching a decision, I have attached to this letter a copy of an ethical clearance certificate issued by the University of South Africa as well as the Pwani University Ethical Review Committee and a copy the research instruments which I intend to use in my research. If you require any further information, please do not hesitate to contact me. Thank you for considering this request and for supporting my research.

Yours sincerely,

Nickcy Mbuthia

Annexure F: Letter of approval from University B



MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

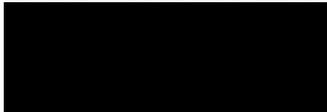


Directorate of Research & Extension

REF: MMU/COR: 403037 (1)

26th January, 2017

Nicky Mbuthia Mukolwe
Lecturer, Pwani University



Dear Mukolwe,

RE: RESEARCH AUTHORISATION

You have been authorized to collect data on your research on *Integrating Patient Safety in Nursing Education: An Analysis of Pre-Registration Nursing Curricula in Kenya*, The researcher is asked to observe ethical issues in the process of data collection. The respondents are therefore requested to cooperate so as to facilitate the research process to proceed smoothly.

Masinde Muliro University of Science and Technology requests you (researcher) for a copy of the findings of the research once it is completed.

Thank you.



Prof. Achoka, JSK
DIRECTOR, RESEARCH AND EXTENSION

Copy to:

- Deputy Vice Chancellor, Planning, Research & Innovation, MMUST

Annexure G: Letter seeking permission from Hospital A

Nickcy Mbuthia
Pwani University

[REDACTED]
[REDACTED]
[REDACTED]

12th January, 2017

Chief Administrator
Coast Provincial General Hospital
Mombasa
Dear Sir/Madam

RE: PERMISSION TO CARRY OUT PhD RESEARCH STUDY

I am a PhD student enrolled at the University of South Africa health studies program, and in the process of writing my PhD thesis. I am writing to request permission to conduct a research study at your hospital entitled ***Integrating Patient Safety in Nursing Education: An Analysis of PreRegistration Nursing Curricula in Kenya***. The study aims to determine the integration of specific patient safety concepts in the formal pre-registration nursing curriculum and also the perceptions of the hospitals on how the curriculum shapes the safety behaviour of the nurses in dealing with patient safety in their practice.

The study is primarily being carried out in the universities where the nursing students are taught and by extension the hospitals where the students get their clinical education. Therefore, the study in your hospital shall entail:

- The assessment of the patient safety culture in your hospital through a self-administered questionnaire by the staff nurses and doctors (the patient safety culture of the hospital plays a major role in the shaping of the health care students behaviours - it is part of the hidden curriculum);
- Interviews shall be carried out on key informants in nursing management to explore the perceptions of hospitals regarding the extent to which the pre-registration curriculum prepares the nursing student on issues of patient safety.

If permission is granted, all information collected shall be kept private and confidential and shall strictly only be used for the purpose of this study. The final findings of the study shall be shared with you at the end of the study.

To assist you in reaching a decision, I have attached to this letter a copy of an ethical clearance certificate issued by the University of South Africa as well as the Pwani University Ethical Review Committee (NACOSTI accredited). In addition I have attached copies of the research instruments which I intend to use in my research. If you require any further information, please do not hesitate to contact me. Thank you for considering this request and for supporting my research.

Yours sincerely,

[REDACTED]

uthia

Annexure H: Letter of approval Hospital A

MINISTRY OF HEALTH

Telegrams: "MEDICAL", Mombasa
Phone: Mombasa 2314202/5, 2222148, 2225845
Fax: 2220161 E-mail: chiefadmin@cpgh.co.ke
Address all correspondence to the Chief Admin.
When replying, please quote Ref. No. & date.



COAST PROVINCE GENERAL HOSPITAL
P.O. BOX 90231
MOMBASA

Ref. No. MED.4/II/VOL.I/49

Date: 15TH MAY 2016

Nicky N. Mbuthia



**RE: RESEARCH PROPOSAL: INTEGRATING PATIENT SAFETY IN NURSING
EDUCATION: AN ANALYSIS OF PRE REGISTRATION NURSING CURRICULA
IN KENYA**

This is to inform you that the CPGH Ethics & Research Committee has reviewed and approved your above proposal starting on 15/5/17 for a period of 2 months.

This approval is subject to compliance with the following requirements:

- a) Only approved documents (informed consents, study instruments, advertising materials etc) will be used.
- b) All changes (amendments, deviations, violations etc) are submitted for review and approval by CPGH-ERC before implementation.
- c) Death and life threatening problems and severe adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the CPGH-ERC within 72 hours of notification.
- d) Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to CPGH-ERC within 72 hours.
- e) Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period (attach a comprehensive progress report to support the renewal).
- f) Clearance for export of biological specimens must be obtained from CPGH-ERC for each batch of shipment.
- g) Submission of an executive summary report within 90 days upon completion of the study. This information will form part of the data base that will be consulted in future when processing related research studies so as to minimize chances of study duplication and/or plagiarism.


DR. M. OCHOLA
SECRETARY, CPGH-ERC



- C.C** - Chairman – ERC
- Chief Administrator – CPGH
 - Director of Nursing
 - Pwani University – Ethics Review Committee
 - Director of Support Services.

Annexure I: Letter seeking permission from hospital B

Nickcy Mbutia
Pwani University

[REDACTED]
[REDACTED]
[REDACTED]

12th January, 2017

Chief Administrator
Kakamega County Hospital
Kakamega
Kenya
Dear Sir/Madam

RE: PERMISSION TO CARRY OUT PhD RESEARCH STUDY

I am a PhD student enrolled at the University of South Africa health studies program, and in the process of writing my PhD thesis. I am writing to request permission to conduct a research study at your hospital entitled *Integrating Patient Safety in Nursing Education: An Analysis of PreRegistration Nursing Curricula in Kenya*. The study aims to determine the integration of specific patient safety concepts in the formal pre-registration nursing curriculum and also the perceptions of the hospitals on how the curriculum shapes the safety behaviour of the nurses in dealing with patient safety in their practice.

The study is primarily being carried out in the universities where the nursing students are taught and by extension the hospitals where the students get their clinical education. Therefore, the study in your hospital shall entail:

- The assessment of the patient safety culture in your hospital through a self-administered questionnaire by the staff nurses and doctors (the patient safety culture of the hospital plays a major role in the shaping of the health care students behaviours - it is part of the hidden curriculum);
- Interviews shall be carried out on key informants in nursing management to explore the perceptions of hospitals regarding the extent to which the pre-registration curriculum prepares the nursing student on issues of patient safety.

If permission is granted, all information collected shall be kept private and confidential and shall strictly only be used for the purpose of this study. The final findings of the study shall be shared with you at the end of the study.

To assist you in reaching a decision, I have attached to this letter a copy of an ethical clearance certificate issued by the University of South Africa as well as the Pwani University Ethical Review Committee (NACOSTI accredited). In addition I have attached copies of the research instruments which I intend to use in my research. If you require any further information, please do not hesitate to contact me. Thank you for considering this request and for supporting my research.

Yours sincerely,

[REDACTED]

Nickcy Mbutia

Annexure J: Letter of approval Hospital B

Telegram: "PROVMED", Kakamega
Telephone: Kakamega 056-30050/1/2
When replying, please quote:

ERC REF: cgh/kak/gen/30/(63)



COUNTY GENERAL HOSPITAL
P. O. Box 15 - 50100
KAKAMEGA

29TH MARCH 2017^{1*}

COUNTY GENERAL HOSPITAL, KAKAMEGA ETHICS AND RESEARCH COMMITTEE

MR..NICKY MBUTHIA

Box ,

NAIROBI

Dear Sir/Madam,

REF: RESEARCH PROPOSAL APPROVAL (02/03/2017)

This is to inform you that the Ethics and Research Committee has reviewed and approved your work titled "INTEGRATING PATIENT SAFETY IN NURSING EDUCATION: AN ANALYSIS OF PRE-REGISTRATION NURSING CURRICULA IN KENYA, CGH KAKAMEGA."

The approval is valid for 1 year from the above date and any continuation thereafter will necessitate a request for renewal.

Note that this approval is only for the work that you have submitted to us. The committee must be notified of any changes or amendments and serious or unexpected outcomes related to the study. You will be expected to submit a final report at the end of the study and may be requested to do a presentation of the same to the hospital.

This information will form part of the database that will be consulted in future when processing related research studies so as to minimize chances of study duplication.

Thank you for your interest in research in our institution.

Yours Faithfully,

[Redacted Signature]

P.WECHULI

Ag. CHAIRMAN

ETHICS AND RESEARCH COMMITTEE

CC. Medical Superintendent

CGH KAKAMEGA

Medical Superintendent
PROVINCIAL GENERAL HOSPITAL
KAKAMEGA

Annexure K: Coding frame

CODING FRAME

Category	subcategory	Key words/codes
Patient safety	Patient safety	Safe Patient safety definition Safe practice History of patient safety Blame culture Model of patient safety Application of patient safety thinking Importance of patient safety culture of safety
	Medical errors/Adverse events	Medical errors Types of errors Health-care errors Harm caused by health-care errors and system failures Adverse events prevalence Types of adverse events Economic and human costs associated with adverse events Sentinel events Near misses Factors associated with adverse events Reason's Swiss cheese model
	Learning from errors to prevent harm	Error reporting systems Incident monitoring Incident reporting Root cause analysis Failure mode and effect analysis (FEMA) Strategies to reduce errors Reflective practice
Human factors important for patient safety	Human factors in health care	Human factors principles Relationship between human factors and patient safety Stress and performance Fatigue and patient safety

Systems and the effect of complexity on patient care	Health care as a complex system	Health care system Components of the system Nature of healthcare system Work environment Organisation and management
	Accountability	Ethical and legal responsibilities

		Negligence Professional misconduct Mistakes
	Systems approach	Systems approach to errors Systems failures and its causes Patient and provider factors Task factors Technology and tool factors Team factors Role of environmental factors Workflow, workload, ergonomics, resources Organisational factors
	High reliability organization (HRO).	Definition of HRO Characteristics of HRO Lessons learned from HROs to health care
Teamwork and Collaboration	health-care teams	Nature of health care teams Multidisciplinary teams Team values, assumptions, roles and responsibilities, Use of teams improves to patient care Impact of team functioning on safety Stages of team development Characteristics of successful teams Interprofessional education
	Effective team work	Effective team functioning Characteristics of effective teamwork Measures of effective teamwork Benefits of teamwork Challenges to effective teamwork
	Communication techniques for health-care teams	TeamSTEPPS ISBAR Call-out Check-back Hand-over or hand-off “I pass the baton”

	Resolving disagreement and conflict	Psychological safety Two-challenge rule CUS DESC script
Understanding and managing clinical risk	Risk management	Hazard and risk identification Assess the frequency and severity of the risk; Risk characterization Reduce or eliminate the risk;

		Cost of risks
	understand and manage clinical risks	Reporting known risks or hazards Accurate and complete health-care records Complaints and responding to complaints
Quality improvement methods	The science of improvement	Quality improvement, Improvement principles PDSA cycle, Change concepts, variation, quality-improvement methods, improvement tools, flowcharts, cause and effect diagrams (Ishikawa/fishbone diagrams)
	Quality measures	Quality indicators Benchmarking Pareto charts, histograms, run charts. Strategies for sustaining improvements
Patient centred care	Multiple dimensions of patient centred care	Patient/family/community preferences, values Coordination and integration of care Information, communication, and education Physical comfort and emotional support Involvement of family and friends transition and continuity

	Patient involvement and safety, quality and cost effectiveness of health care	open disclosure, apology, communication, complaints, cultural norms, informed decisions, informed consent patient and family involvement, patient-centred, patient empowerment, patient engagement, patient rights
Specific patient safety issues	Infection prevention and control	Infection prevention and control, hand hygiene, transmission, cross-infection, health care associated infection (HCAI), antimicrobial resistance (AMR),
		multidrug-resistant organisms, MRSA (methicillin-resistant Staphylococcus aureus) aseptic technique, standard precautions.
	Patient safety and invasive procedures	Surgical and procedural site infections, surgical/procedural errors, Guidelines, protocols and Checklists WHO: Surgical Safety Checklist communication failures, verification processes, operating room techniques that reduce risks and errors mortality and morbidity meetings
	Medication safety.	Side-effect, adverse reaction, adverse drug event, medication error, prescribing, administration and monitoring Medication safety drug calculations 5 Rights High alert medication safety-enhancing technologies

Annexure L: Nursing faculty consent form and interview guide

NURSING FACULTY INTERVIEW

INTERVIEW CONSENT FORM

Name (*optional*).....

Hospital:.....

Job title:.....

Date of interview:.....

Transcript code (confidential to interviewer):.....

INTERVIEW CONSENT FORM Introduction and Purpose

My name is Nickcy Mbuthia. I am a PhD student at the University of South Africa. I would like to invite you to take part in my research study, which concerns Patient safety education in the undergraduate nursing curriculum. Your inclusion in this study is based on your role as a nursing faculty.

If you agree to participate in my research, I will conduct an interview with you which will involve questions about your views on patient safety in the country as well your perceptions on how the preregistration BSc Nursing curriculum prepares the student nurse to handle matters related to patient safety. With your permission, I will audiotape and take notes during the interview. The recording is to accurately record the information you provide, and will be used for transcription purposes only.

I highly appreciate you giving me the time and opportunity to interview you. However please feel free to get in touch with the researcher Nickcy Mbuthia on Tel: [REDACTED] anytime for any questions or clarifications. Thank you very much.

Participant's Understanding:

- I agree to participate in this study that I understand will be submitted in partial fulfilment of the requirements for the degree of Doctor of Literature and Philosophy in Health Studies at university of South Africa
- I understand that my participation is voluntary.
- I understand that all data collected will be limited to this use or other research-related usage as authorized by University of South Africa.
- I understand that I will not be identified by name in the final product.
- I am aware that all records will be kept confidential in the secure possession of the researcher.
- I acknowledge that the contact information of the researcher and his advisor have been made available to me
- I understand that the data I will provide are not be used to evaluate my performance as a faculty member in any way.
- I understand that I may withdraw from the study at any time with no adverse repercussions. If you wish to participate in this study, please sign and date below.

Participant's Signature

Date

A. Introduction

- Thanks for agreeing to interview - Recording of interview to be agreed beforehand
- Confirmation that they have read and are happy with information about the study: if not answer questions/provide information.
- Confirmation that they have signed consent form
- Thanks for any documentation and/or information already provided during the content analysis □ Reiterate that the purpose of this interview is to:
 - Gather or clarify information about their undergraduate nursing curriculum
 - Gain an understanding of patient safety from their personal view/perspective
 - Identify where they think the topics/issues pertinent to patient safety lie within the curriculum
 - Obtain descriptions of experiences with patient safety education
 - Know the ways they teach patient safety and
 - Get their opinion on ways in which patient safety education can be improved in Kenya.

B. Interview Structure

- Confirm/clarify that you have a shared understanding about the structure and organisation of the curriculum in general.
(Depending on previous information collected) We've looked at the nursing curriculum for your institution and we thank you for giving us the opportunity to do so. In your own words, can you summarise how your course is structured?
- Are there any other particular features of the general course structure or recent developments you wish to draw to our attention?
- Understanding of Patient safety: (Here we want to develop an understanding of their conceptualisation of patient safety)
As you know the focus of our study is education about patient safety. However, we are not interested in the views of the WHO or any other formal version of PS but would like to know about your views. In a sentence or two can you tell me /describe/define what you believe patient safety to be (be about / entail / cover/ include: their definition of PS)
- Can you clarify which parts of the course (skills / topics/ subject areas) you feel relate most to patient safety? *(use probes e.g. which parts are most pertinent to PS and why – get concrete examples)*
- How do you feel patient safety education is developing within your curriculum?
- What are some of the ways you teach patient safety?
- Is there anything else that you would like to add about PS education in your curriculum?
- Have you had any form of formal training in Patient safety? In teaching patient safety concepts?
- What do you believe the influences are on PS education? (people, policy, publicity)
- How best can we improve patient safety in nursing education in Kenya
- Thinking back to the interview is there anything in retrospect that you would like to change or that you would prefer not to be transcribed?
- Would it be OK to contact you again if we need more detail on any of this? I highly appreciate you giving me the time and opportunity to interview you.

Annexure M: Hospital staff consent form and interview guide

HOSPITAL MANAGEMENT INTERVIEW

Name:.....

Hospital:.....

Job title:.....

Date of interview:.....

Transcript code (confidential to interviewer):.....

INTERVIEW CONSENT FORM Introduction and Purpose

My name is Nickcy Mbuthia. I am a PhD student at the University of South Africa. I would like to invite you to take part in my research study, which concerns Patient safety education in the undergraduate nursing curriculum. Your inclusion in this study is based on your leadership and management role as well as the clinical education in nursing and patient safety matters in the hospital. If you agree to participate in my research, I will conduct an interview with you which will involve questions about your views on patient safety in the country as well your perceptions on how the student nurse handles matters related to patient safety and how well the pre-registration curriculum prepares them to handle patient safety. With your permission, I will audiotape and take notes during the interview. The recording is to accurately record the information you provide, and will be used for transcription purposes only.

I highly appreciate you giving me the time and opportunity to interview you. However please feel free to get in touch with the researcher Nickcy Mbuthia on Tel: [REDACTED] anytime for any questions or clarifications. Thank you very much.

Participant's Understanding:

- I agree to participate in this study that I understand will be submitted in partial fulfilment of the requirements for the degree of Doctor of literature and Philosophy in Health Studies at university of South Africa I understand that my participation is voluntary.
- I understand that all data collected will be limited to this use or other research-related usage as authorized by University of South Africa.
- I understand that I will not be identified by name in the final product.
- I am aware that all records will be kept confidential in the secure possession of the researcher.
- I acknowledge that the contact information of the researcher have been made available to me
- I understand that the data I will provide are not be used to evaluate my performance as a manager in any way.
- I understand that I may withdraw from the study at any time with no adverse repercussions. If you wish to participate in this study, please sign and date below.

Participant's Signature

Date

A. Introduction

- Thanks for agreeing to interview - Recording of interview to be agreed beforehand
- Confirmation that they have read and are happy with information about the study: if not answer questions/provide information.
- Confirmation that they have signed consent form
- Reiterate that the purpose of this interview is to get their views on patient safety in the country as well as their perceptions on how the student nurses handle matters related to patient safety and how well the pre-registration curriculum prepares them to handle patient safety.
- Reiterate also that the interview pertains to the nursing degree program.

B. Interview Structure

- Let's start off by looking back at the experiences you have had so far of being involved with the students' learning – could you just describe your experiences for us?
Prompts – where have they met students? for how long? how often? have they helped with writing the curriculum, teaching, lecturing, meeting the students alone or in groups, talking to students, being examined by them? how involved with student learning have they been?
- How many institutions use your hospital as a teaching hospital for the degree nurses?
(Let them list the universities and the number of students they receive at any particular time [probe them to give number of students per rotation])
- What is the role of the hospital in the degree nursing curriculum and how do they achieve it?
- What does PS mean to you?
Prompts – key words – error, mistakes, harm, risk, other 5 areas – risk assessment, communication, infection control, patient handling, drugs/prescribing. Other?
- Could you give me an overview of how your hospital approaches patient safety?
(May need to give some prompts such as: strategies for patient safety – are these documented? who takes the lead on PS and what level are they?)
- What developments in patient safety have occurred at the hospital in the past year or two? *(May need to prompt – could be new policies, new systems; which initiative and activities? may relate to specific problems at the hospital)*
- In what ways do the students learn about specific patient safety topics when they are on placement with you?
- What is your understanding of the role of clinical educators/tutors/supervisors in relation to students learning about patient safety?

Prompts: Experience/anecdote/role model/time for reflection/discussion/autonomy /opportunities to have “real” practice (as opposed to just observation), learning from mistakes

- Do you feel that the student nurse undertaking a Bsc Nursing degree is sufficiently prepared by the curriculum to handle patient safety matters in the hospital both in theory and practice?
- How do you think patient safety education could be improved or strengthened in order for nurses to become safer practitioners
- Thinking back to the interview is there anything in retrospect that you would like to change or that you would prefer not to be transcribed?
- Would it be OK to contact you again if we need more detail on any of this?

Annexure N: Health professional education in patient safety survey tool

HEALTH PROFESSIONAL EDUCATION IN PATIENT SAFETY SURVEY (H-PEPSS)

Questionnaire Instructions:

1. This survey takes approximately 20 minutes to complete
2. This survey seeks the perspectives of students in the health professions on the ways in which patient safety is addressed in health professional education.
3. The survey asks about clinical safety issues (e.g. hand hygiene, transferring patients, medication safety) but also system issues that affect safety (e.g. aspects of the organization, management, or the work environment including policies, resources, communication and other processes)
4. The survey is seeking your perceptions and opinions only. There are no right or wrong answers. Indicate the extent to which you agree or disagree with each question statements. If you are unsure whether you agree or disagree, mark “neutral”.
5. This survey is completely anonymous. No one will know whether you have chosen to participate or what your individual answers are. Completion of the survey is entirely voluntary, though we do hope you will take this opportunity to help provide the student perspective on this important issue.

If you have any questions or concerns about this study or if any problems arise, please contact Nickcy Mbuthia (the researcher) at [REDACTED]. If you have any questions or concerns about your rights as a research participant, please contact the Pwani University Ethics Review Committee [REDACTED]

I have read this consent form and have been given the opportunity to ask questions. I give my consent to participate in this study.

Participant's signature _____ Date: _____

PART A: DEMOGRAPHIC DATA

Serial No:.....(for interviewer only)		
University:.....		
Age:	Gender <input type="radio"/> Male <input type="radio"/> Female	Year of study <input type="radio"/> 2 nd Year <input type="radio"/> 3 rd Year <input type="radio"/> 4 th Year

PART B: HEALTH PROFESSIONAL EDUCATION IN PATIENT SAFETY SURVEY (H-PEPSS)

Patient Safety: The pursuit of reduction and mitigation of unsafe acts within the health care system, as well as the use of best practices shown to lead to optimal patient care outcomes.

SECTION 1: Learning about specific patient safety content areas

Here we ask about 7 areas that have to do with keeping patients safe. We would like to know about the extent to which you feel confident about what you learned in each of these areas. We ask you to think about both your classroom and clinical practice setting experiences—and evaluate them separately. Tick the circle that applies.

Strongly disagree Strongly disagree
 Neutr/unsure Strongly Agree Neutr/unsure Strongly Agree
 Disagree Agree Disagree Agree

		...in the classroom					in clinical settings				
Culture of safety: "I feel confident in what I learned about..."												
5.	the ways in which health care is complex and has many vulnerabilities (e.g. workplace design, staffing, technology, human limitations)	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
6.	the importance of having a questioning attitude and speaking up when you see things that may be unsafe	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
7.	the importance of a supportive environment that encourages patients and providers to speak up when they have safety concerns	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
8.	the nature of systems (e.g. aspects of the organization, management, or the work environment including policies, resources, communication and other processes) and system failures and their role in adverse events	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
Working In Teams with Other Health Professionals: "I feel confident in what I learned about..."												
9.	team dynamics and authority/power differences	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
10.	managing inter-professional conflict	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
11.	debriefing and supporting team members after an adverse event or close call	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
12.	engaging patients as a central participant in the health care team	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
13.	sharing authority, leadership, and decision-making	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
14.	encouraging team members to speak up, question, challenge, advocate and be accountable as appropriate to address safety issues	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
Communicating Effectively: "I feel confident in what I learned about..."												
15.	enhancing patient safety through clear and consistent communication with patients	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
16.	enhancing patient safety through effective communication with other health care providers	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
17.	effective verbal and nonverbal communication abilities to prevent adverse events	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
Managing Safety Risks: "I feel confident in what I learned about..."												
18.	recognizing routine situations and settings in which safety problems may arise	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
19.	identifying and implementing safety solutions	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
20.	anticipating and managing high risk situations	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
Understanding Human and Environmental Factors: "I feel confident in what I learned about..."												
21.	the role of human factors such as fatigue, competence that effect patient safety	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
22.	safe application of health technology	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
23.	the role of environmental factors such as work flow, ergonomics*, resources, that effect patient safety	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				

Recognize, Respond to and Disclose Adverse Events and Close Calls: "I feel confident in what I learned about..."

24.	recognizing an adverse event or close call	<input type="radio"/>									
25.	reducing harm by addressing immediate risks for patients and others involved	<input type="radio"/>									
26.	disclosing the adverse event to the patient	<input type="radio"/>									
27.	participating in timely event analysis, reflective practice and planning in order to prevent recurrence	<input type="radio"/>									

SECTION 2: How broader patient safety issues are addressed in health professional education

		Strongly disagree	Disagree	Neutral/unsure	Agree	Strongly Agree
28.	As a student, the scope of what was "safe" for me to do in the practice setting was very clear to me	<input type="radio"/>				
29.	There is consistency in how patient safety issues were dealt with by different preceptors in the clinical setting	<input type="radio"/>				
30.	I had sufficient opportunity to learn and interact with members of interdisciplinary teams	<input type="radio"/>				
31.	I gained a solid understanding that reporting adverse events and close calls can lead to change and can reduce reoccurrence of events	<input type="radio"/>				
32.	Patient safety was well integrated into the overall program	<input type="radio"/>				
33.	Clinical aspects of patient safety (e.g. hand hygiene, transferring patients, medication safety) were well covered in our program	<input type="radio"/>				
34.	"System" aspects of patient safety were well covered in our program (e.g. aspects of the organization, management, or the work environment including policies, resources, communication and other processes)	<input type="radio"/>				

SECTION 3: Comfort speaking up about patient safety

		Strongly disagree	Disagree	Neutral/unsure	Agree	Strongly Agree
35.	In clinical settings, discussion around adverse events focuses mainly on systemrelated issues, rather than focusing on the individual(s) most responsible for the event	<input type="radio"/>				
36.	In clinical settings, reporting a patient safety problem will result in negative repercussions for the person reporting it	<input type="radio"/>				
37.	If I see someone engaging in unsafe care practice in the clinical setting, I feel safe to approach them	<input type="radio"/>				

*Ergonomics - relating to or designed for efficiency and comfort in the working environment

Thank you for your participation

Annexure O: Safety attitudes questionnaire

SAFETY ATTITUDES QUESTIONNAIRE SURVEY CONSENT FORM

Introduction and Purpose

My name is Nickcy Mbuthia. I am a PhD student at the University of South Africa. I would like to invite you to take part in a survey of the Patient Safety Culture in your work station. The survey forms part of a larger study which concerns Patient safety education in the undergraduate nursing curriculum.

Participant's Understanding:

- I agree to participate in this study that I understand will be submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy in Health Studies at university of South Africa I understand that my participation is voluntary.
- I understand that all data collected will be limited to this use or other research-related usage as authorized by University of South Africa.
- I understand that I will not be identified by name in the final product.
- I am aware that all records will be kept confidential in the secure possession of the researcher.
- I acknowledge that the contact information of the researcher (see below) have been made available to me I understand that the data I will provide are not be used to evaluate my performance in any way.
- I understand that I may withdraw from the study at any time with no adverse repercussions.

If you have any questions or concerns about this study or if any problems arise, please contact Nickcy Mbuthia (the researcher) at [REDACTED]. If you have any questions or concerns about your rights as a research participant, please contact the Pwani University Ethics Review Committee [REDACTED].

I have read this consent form and have been given the opportunity to ask questions. I give my consent to participate in this study.

Participant's signature _____

Date: _____

Section A: Demographic Data

Please tick the option that best applies to you

a.	Serial No:	(for interviewer only)	
b.	Gender:	<input type="checkbox"/> Male	<input type="checkbox"/> Female
c.	Age:	<input type="checkbox"/> 18 – 24yrs	<input type="checkbox"/> 45-54yrs

		<input type="checkbox"/> 25-34yrs	<input type="checkbox"/> 55-64yrs
		<input type="checkbox"/> 35-44yrs	<input type="checkbox"/> 65+yrs
d.	Position	<input type="checkbox"/> Medical Officer	<input type="checkbox"/> Intern - Doctor
		<input type="checkbox"/> Nurse - Manager	<input type="checkbox"/> Intern - Nurse
		<input type="checkbox"/> Nurse - Staff	<input type="checkbox"/> Clinical Officer
e.	Highest qualification:	<input type="checkbox"/> Certificate	<input type="checkbox"/> Masters
		<input type="checkbox"/> Diploma	<input type="checkbox"/> PhD
		<input type="checkbox"/> Degree	<input type="checkbox"/> Others (Please Specify)
f.	Number of years in clinical experience since graduation	<input type="checkbox"/> Less than 1 year	<input type="checkbox"/> 5 – 10 years
		<input type="checkbox"/> 1 – 5 years	<input type="checkbox"/> 10 years or more
g.	Which unit are you currently working in?	
h.	How long have you worked in that unit?	<input type="checkbox"/> Less than 1 year	<input type="checkbox"/> 5 – 10 years
		<input type="checkbox"/> 1 – 5 years	<input type="checkbox"/> 10 years or more

Section B: Safety Attitudes: Frontline Perspectives from Patient Care Area Please answer the following items with respect to your specific unit or clinical area. For each statement below please tick on the box that applies.

	Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Not Applicable
1.	Nurse input is well received in this clinical area.	<input type="checkbox"/>					
2.	In this clinical area, it is difficult to speak up if I perceive a problem with patient care.	<input type="checkbox"/>					
3.	Disagreements in this clinical area are resolved appropriately (i.e., not <i>who</i> is right, but <i>what</i> is best for the patient).	<input type="checkbox"/>					
4.	I have the support I need from other personnel to care for patients.	<input type="checkbox"/>					
5.	It is easy for personnel here to ask questions when there is something that they do not understand.	<input type="checkbox"/>					
6.	The physicians and nurses here work together as a wellcoordinated team.	<input type="checkbox"/>					
7.	I would feel safe being treated here as a patient.	<input type="checkbox"/>					
8.	Medical errors are handled appropriately in this clinical area.	<input type="checkbox"/>					
9.	I know the proper channels to direct questions regarding patient safety in this clinical area.	<input type="checkbox"/>					
10.	I receive appropriate feedback about my performance.	<input type="checkbox"/>					
11.	In this clinical area, it is difficult to discuss errors.	<input type="checkbox"/>					
12.	I am encouraged by my colleagues to report any patient safety concerns I may have.	<input type="checkbox"/>					

13.	The culture in this clinical area makes it easy to learn from the errors of others.	<input type="checkbox"/>					
14.	My suggestions about safety would be acted upon if I expressed them to management.	<input type="checkbox"/>					
15.	I like my job.	<input type="checkbox"/>					
16.	Working here is like being part of a large family.	<input type="checkbox"/>					
17.	This is a good place to work.	<input type="checkbox"/>					
18.	I am proud to work in this clinical area.	<input type="checkbox"/>					
19.	Morale in this clinical area is high.	<input type="checkbox"/>					
20.	When my workload becomes excessive, my performance is impaired.	<input type="checkbox"/>					
21.	I am less effective at work when fatigued.	<input type="checkbox"/>					
22.	I am more likely to make errors in tense or hostile situations.	<input type="checkbox"/>					
23.	Fatigue impairs my performance during emergency situations (e.g. emergency resuscitation, seizure).	<input type="checkbox"/>					
24.	Management supports my daily efforts:		<input type="checkbox"/>				
	<i>Unit Management</i>	<input type="checkbox"/>					
	<i>Hospital Management</i>	<input type="checkbox"/>					
25.	Management doesn't knowingly compromise patient safety:						
	<i>Unit Management</i>	<input type="checkbox"/>					
	<i>Hospital Management</i>	<input type="checkbox"/>					
26.	Management is doing a good job:						
	<i>Unit Management</i>	<input type="checkbox"/>					
	<i>Hospital Management</i>	<input type="checkbox"/>					
27.	Problem personnel are dealt with constructively by our:						
	<i>Unit Management</i>	<input type="checkbox"/>					
	<i>Hospital Management</i>	<input type="checkbox"/>					
28.	I get adequate, timely info about events that might affect my work, from:						
	<i>Unit Management</i>	<input type="checkbox"/>					
	<i>Hospital Management</i>	<input type="checkbox"/>					
29.	The levels of staffing in this clinical area are sufficient to handle the number of patients.	<input type="checkbox"/>					
	Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Not Applicable
30.	This hospital does a good job of training new personnel.	<input type="checkbox"/>					

31.	All the necessary information for diagnostic and therapeutic decisions is routinely available to me.	<input type="checkbox"/>					
32.	Trainees in my discipline are adequately supervised.	<input type="checkbox"/>					
33.	I experience good collaboration with nurses in this clinical area.	<input type="checkbox"/>					
34.	I experience good collaboration with staff physicians in this clinical area.	<input type="checkbox"/>					
35.	I experience good collaboration with pharmacists in this clinical area.	<input type="checkbox"/>					
36.	Communication breakdowns that lead to delays in delivery of care are common	<input type="checkbox"/>					

Thank you completing this questionnaire - your time and participation are greatly appreciated

Annexure P: SAQ approval



Medical School
University of Texas at Houston-Memorial Hermann
Center for Healthcare Quality and Safety

October 22, 2015

Dear Nickcy Mbutia,

You have our permission to use any of the following Safety Attitudes Questionnaires and the corresponding scoring keys:

- Safety Attitudes Questionnaire – Short Form
- Safety Attitudes Questionnaire – Teamwork and Safety Climate
- Safety Attitudes Questionnaire – Ambulatory Version
- Safety Attitudes Questionnaire – ICU Version
- Safety Attitudes Questionnaire – Labor and Delivery Version
- Safety Attitudes Questionnaire – Operating Room Version
- Safety Attitudes Questionnaire – Pharmacy Version
- Safety Climate Survey

Please note, we do not have editable versions for any of the SAQ surveys but feel free to modify the surveys to meet your research endeavors.

Respectfully,

University of Texas at Houston-Memorial Hermann
Center for Healthcare Quality and Safety Team

6410 Fannin Street
UTPH Suite 1100
Houston, TX 77030
<https://med.utuh.edu/chqs/>

Annexure Q: Sample of transcribed interview

REC019 – Lecture, nursing, female

I. How are you? I am Nickcy Mbutia from Pwani university and I am collecting data for my PhD and what its all about its looking at patient safety education within our nursing curriculum - how well do we teach our students about patient safety aspects. So the whole purpose of this interview is to get more information about your undergraduate nursing program particularly the degree program, understand your views about what patient safety is all about and also to identify where in the curriculum you think patient safety aspects are taught and also experiences you've heard with teaching patient safety and of course how you assess it.

So in your words, you can summarise how your course is structured?

R: the, the basic course which is BscN is a clinical based model whereby its 50...100% clinical, 100% theory. So studens go to the class and the clinicals, so they all go to the clincals. Trimester on eand tw are full time class but we do orientation one day to the clinical. Third trimester is full time clinical no classes... ya

I: Ok. Thank you very much. Ah Which... do you have any features....Is there anything that has come up or any new developments in the curriculum in the last few years?

R: yes, we may...we have been doing reviews of our curriculum... yah....um.. one of the things t think.... One of the things that came up as an addition is the forensic nursing, we emphasised on it... it's the one that came up, but mostly we have just been doing reviews of hours, reviews of the content and all that.

I: ok, so now I want to take you now in your understanding of what patient safety is. You as nurse what is your understanding or definition of what patient is?

R: patient safety, as a nurse I understand it as ah, as ah..... in the course of giving my service to this patient, uuum, how..... I do't want to repeat the word safe, how secure is this patient, um....i'm l.... Is my.... Is my therapeutic service harmful to him or not. So if it not harmful, that is patient safety. Im trying to avoid that word safety (laughs)

I: I know (Laughter)...Ok. Which part of your course or curriculum do you feel are ost related to patient safety?

R: Heeee right from the basic nursing therapeutic, we do a lot, we do a lot! And then from there we go and do the advance nursing therapeutic that has a lot of relations, coz that's where they learn all the basic procedures and we tell them what to do in each thing so that the patient is safe. If I am giving an injection, what am I supposed to do. If you are going to, to, lets say dress a wound, if I am going to manage this patient with a certain condition, what are ou supposed to do, what you are supposed to do....and that's where they learn the nursing process and how to take care, whole care of this patient so that there is no gap missed out ah throughout the care and that one I think gurantees safety for that patient.

I. Ok. Aaah how do you feel within, aah I think you have explained this aspect of how you feel patient safety education is developing in your curriculum. I believe you said you have the basic aspects and advance aspecst. Within the advanced aspects, whih areas of patient safety do you..., are there any aspects explicit or specific patient safety aspects that you look at?

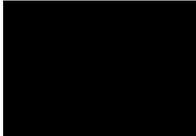
Annexure R: Declaration of professional editing and proofreading

iEdit

Professional academic editing and proofreading
Business editing and writing

iEdit

24 October 2017



DECLARATION OF PROFESSIONAL EDIT

Integrating Patient Safety in Nursing Education: An Analysis of Pre-Registration Nursing Curricula in Kenya

by

Nicky Nyaruai Mbuthia

I declare that I have edited and proofread this thesis. My involvement was restricted to language usage and spelling, completeness and consistency, referencing style, and formatting of headings, captions and tables of contents. I did no structural re-writing of the content and did not influence the academic content in any way.

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