THE LIVED EXPERIENCES OF UNDERGRADUATE NURSING STUDENTS LEARNING DRUG DOSAGE CALCULATION

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Disclosure

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Objectives
• To recognize the problem identified for investigation in this study in relation to its purpose.

• To discuss the implications identified in this study for nursing practice and nursing research.

• To identify the methods that were utilized in this study to arrive at the results obtained.
Background of the Study

- Aptitude in dosage calculation is one of the critical aspects of nurse competency that has serious impacts on safe medication administration.
- Medication dosage calculation by nurses has been recorded as one of the common risks to patient safety (McMullan et al., 2010).
- Safe medication administration is an ongoing problem in health care that is of great importance because it concerns patient safety (Kohtz & Gowda, 2010).
- As many as 7,000 individuals die each year due to medication errors.
- Detrimental to patients, providers, as well as the health care industry.
The Institute of Medicine (IOM, 2006) noted that medication errors can occur during any of the phases of the medication process, but the administration phase is one of the two phases most susceptible to errors.

Preventable drug dosage errors do happen too many times in health care facilities.
Statement of the Problem

- Difficulties with the understanding of dosage calculation
- Many students have shown inability to comprehend
- Repeat the course several times before they can pass
- Passing the course does not necessarily mean competency
- Graduate with a deficiency, which is carried into practice
- Potentially detrimental to patient outcomes
The purpose of this qualitative phenomenological study was to gain more insight about undergraduate nursing students' lived experiences in learning medication dosage calculation during their undergraduate nursing studies.
What are the lived experiences of nursing students learning drug dosage calculation?
Philosophical Underpinnings

This qualitative inquiry was guided by van Manen’s human science approach, which is based on the combination of phenomenology and hermeneutics.
The literature review revealed:

• Significant correlation between lack of mathematical proficiency and incompetent dosage calculation

• Emphasis is also noted on effectiveness of teaching strategies

• Inconsistency in nursing curricula for content acquisition

• The lived experiences of nursing students in the context of learning medication dosage calculation have not been explored for interpretation
Methods Chosen to Investigate the Inquiry

Qualitative Design
Interpretive and Descriptive Approach of Max van Manen
Max van Manen’s Research Activities

- Identify themes in participant’s narrative
  Line by line reading of transcript

- Identifying Phenomenon of interest
  Clarifying bias

- Interviewing with open-ended questions to explore participants’ lived experiences

- Embracing and reconciling all aspects of the inquiry to maintain equality in its identity

- Rewriting and rewriting for deep meaning

- Maintain connectedness to the pedagogical aspect of the phenomenon

Identify

Phenomenon

of interest

Clarifying bias

Identify themes in participant’s narrative
Line by line reading of transcript

Interviewing with open-ended questions to explore participants’ lived experiences

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Access and Recruitment of Participants

- Inclusion Criteria
- Exclusion criteria
- Schools/Colleges of Nursing
- Purposive sampling
Ethical Considerations

• Approval of Barry University IRB prior to recruiting participants and data collection

• Choice of pseudonym

• Consent form to sign

• Participants' data are kept confidential

• Informed consent are kept in a locked cabinet separate from the locked cabinet where interview data are kept

• The data will be kept for at least five years after which time they will be destroyed
Data Collection

• Informed consent obtained in person
• Face to face interview by the principal investigator
• Self-identifying pseudonym chosen by participant
• Semi-structured interview
• Interviews were recorded
• Label audiotapes, transcribe and construct field notes
• Member checks in follow-up interviews
• Interviews conducted until saturation
• Demographic data were collected using a tool developed by the researcher
Interview Questions

Semi-structured

Open-ended

Elicit deep meanings

Phenomenon
Data Analysis

- Read the text thoroughly as a whole
- Capture sentences that stand out
- Immersed self into the data by reading and re-reading it
- Identify thematic sentences
- Read and re-read each sentence and group of sentences line-by-line to identify themes of the lived experiences of the participants
Rigor/Trustworthiness

Credibility
Through Member checking

Dependability
through Audit trail of detailed writing

Conformability
Reflective journaling of experiences, thoughts, feelings, and opinions

Transferability
findings facilitate others to relate to their own experiences
Sample Description

- Purposive sample of 11 nursing students
- They have taken drug dosage calculation for the past year
- They have enrolled in a drug dosage calculation course
- They met inclusion criteria
Demographic

Gender of the Participants

- Females: 82%
- Males: 18%
Interpretive Analysis of the Findings

• Assuring Safety
  • The overarching theme
  • All expressed being concerned about administering incorrect dosage
  • Construct a mentality
  • Develop good habits that can lead to safe patient care
Interpretive Analysis of the Findings Cont.

- Signifying
  - Important subject
  - Integral part of their nursing program
  - Major facets of the nursing care
  - Active learning mentality
- Repeating
  - Constant practicing for content retention
Interpretive Analysis of the Findings Cont.

• Analyzing
  • Examine the problem carefully
  • Read the problem carefully
  • Grasp the meaning of the question asked

• Maintaining Consistency
  • Understanding of a method or another to solve drug dosage problems
  • Embracing either one of these methods
  • Emphasis is on being consistent
Interpretive Analysis of the Findings Cont.

- Verifying
  - Constant examination
  - Identify and correct mistakes
  - Dosage errors are possible and preventable
Connection to a Theory

• Lived experiences revealed through the emergent themes
• Themes connected to Albert Bandura’s (1977, 1986, 1993) social cognitive theory
• Has three interrelated constructs:
  • Personal factors
  • Behavioral factors
  • Environmental factors
• Produce behavior
Connection to a Theory Cont.

Triadic Reciprocal Determinism of Albert Bandura
Significance of the Study

Implications for Nursing Education

• Provision of empirical knowledge
• Development of specific strategies for content understanding and retention
• Development of curricula that support consistency in the methods utilized for content teaching
• Curricula designed to engrain importance
• Consensus on teaching methodology to achieve competency in the subject.
Implications for Nursing Practice

• Access and opportunities for clinical applications conducive to learning are quite challenging
• Guidance from clinical instructors
• Address gaps seen between education and practice
• Encourage students to verbalize their concerns with the dynamics seen in the clinical area
• Reinforce safe medication practice learned in the classroom
• Find opportunities in the clinical settings for adequate knowledge application.
Significance of the Study Cont.

Implications for Nursing Research

• Empirical studies conducted did not investigate the phenomenon in the same contexts as this hermeneutic phenomenological study did

• Contributed to the reduction of the paucity identified in current literature for this genre of research

• Knowledge that can lead to other studies to further develop nursing as a science and an art

• Education of nursing students learning drug dosage calculation skills needs to be further explored to determine other possible factors influencing learning outcomes.
Significance of the Study Cont.

**Implications for Health/Public Policy**

- Need for policies to address competency in drug dosage calculation for students as well as nurses in clinical practices.
- Mandatory routine evaluations of student competence in drug dosage calculation all throughout the nursing program.
- Competency in drug dosage calculation must be made part of continuing education requirements.
- Regular in-service on safe dosage calculation to help nurses maintain their skills.
- Certification in drug dosage calculation as a criterion for license renewal nationwide.
- Nationwide policies to regulate and reinforce the recommendations made by the IOM report on medication errors should be tied to reimbursement of care provided by facilities contracted by the federal government insurances as well as private insurance companies.
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<thead>
<tr>
<th>Strengths</th>
<th>Limitations</th>
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<tr>
<td>• Hermeneutic phenomenological study</td>
<td>• Individualized characteristic</td>
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<tr>
<td>• Purposively selected</td>
<td>• Difficult for transferability</td>
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<td>• Three different universities located in South Florida</td>
<td>• Novice Researcher</td>
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<td>• Immersion in the study</td>
<td>• Subjectivity of data</td>
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<td>• Contribution to gap</td>
<td>• Honesty of participants</td>
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<td>• Voluminous data</td>
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Recommendations for Future Study

• A mixed methods study to determine the correlation between viewing drug dosage calculation as significant and self motivation to learning dosage calculation proficiently, and their perspectives on patient safety

• The effect of constant practice and understanding of drug dosage calculation

• A prospective study to compare the performance on drug dosage calculation of students with advanced college level math with the performance of students who only had high school or intermediate college level math.

• The lived experiences of student nurses who are mandated to learning dosage calculation with one teaching method.
Conclusions

• Through narrative accounts
• Researcher was immersed in the lived experiences participants
• Eleven purposively selected
• Five significant and one overarching themes
• Connected to the social cognitive theory
• Has three constructs:
  • Personal factors
  • Behavioral factors
  • Environmental factors
• Produce behavior
Thank you

Any Question?