

# Knowledge, perceptions and practices of members of the healthcare team involved in stem cell transplantations in the Western Cape, South Africa

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# ORDER OF PRESENTATION

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# INTRODUCTION

- ▶ Hematology refers to the study of blood and blood disorders (Bunn & Aster, 2011).
- ▶ Stem cell transplantations are procedures where the hemopoietic stem cells are used to engraft in bone marrow in order to treat patients with blood disorders (Trounson & DeWitt, 2016).

# CONTINUE

- ▶ All anatomical areas of the human body can be affected by the hematology system, hence caring for patients with disorders of this system can be challenging.
- ▶ These patients have distinct problems specific to their disease, with intermittent symptoms..
- ▶ Nurses concerned, must be knowledgeable about blood cells and the anatomy and physiology of the bone marrow (Smeltzer & Bare, 2012: 728).

# BACKGROUND

- ▶ Thomas, Till and McCulloch (1954) stated that stem cell transplantation (HSCT) began in 1950. The procedure for stem cell transplantation was first tested on animals.
- ▶ Swift, Taketa and Bond (1954) working at the Naval Radiological Defence Laboratory in San Francisco, did an experimental study on mice.
- ▶ They exposing the mice to whole-body radiation. The results of the tests showed that multi-potent stem cells exist. The transplantation of unfractionated bone marrow cells saved the animals from bone marrow failure.
- ▶ Further studies that confirm the process benefit the immune system of some cancer-diagnosed patients (Bunn & Aster, 2011:314).

# PROBLEM STATEMENT

- ▶ Stem cell transplantation is a very sensitive choice for patients, as a stem cell transplant can help some patients and it can cure some of them, but it is not an easy decision to make to undergo a stem cell transplantation.
- ▶ The patient is the person to make the final choice whether to have a stem cell transplant or not
- ▶ Stem cell transplantation cured thousands of people
- ▶ risks and complications involve which can be life-threatening.
- ▶ Risks and benefits must be discussed with the multidisciplinary team, who will take into consideration the stage of the cancer, the patient's age, time from diagnosis to transplant, donor type and the patient's health and nutritional status (Campbell, 2011: 18)
- ▶

# CONTINUE

- ▶ Members in the health care team have different roles in the transplant units and should have the necessary *knowledge*, to advice patients on the implications, treatment and care of their condition.
- ▶ They should have a positive *perception* on recovery of the patients, while providing adequate *practices* that requires adequate *knowledge* (de Azevedo et al., 2016: 2016 Vol. 9 NO 28:1755).
- ▶ However, little is known around the *knowledge*, *perceptions and practices* of health care team members involved with stem cell transplanted patients.

# CONTINUE

- ▶ Stem cell transplantation is specialized and complicated and the multidisciplinary team practicing in Hemapoietic Stem Cell Transplantation, should have expert knowledge to meet the patient's health needs in this difficult time.
- ▶ The health care team members in the service of stem cell transplantation should constantly learn interventions and share knowledge to provide high quality care for these patients (de Azevedo et al., 2016 Vol. 9 NO 28:755): 1755).

# RESEARCH QUESTIONS

- ▶ What knowledge do the members of the health care team have in terms of the processes that need to be followed when stem cells are transplanted?
- ▶ What are the perceptions of the members of the health care team pertaining to how other health care professionals react towards patients undergoing stem cell transplantation and the death of these patients?
- ▶ How do members of the health care team involved in stem cell transplantation practice and how do the different members plan the care of these patients?

# OBJECTIVES

- ▶ The knowledge of the members of the healthcare team in terms of the processes that need to be followed when stem cells are transplanted.
- ▶ The perceptions of the members of the healthcare team pertaining to how other healthcare professionals react towards patients undergoing stem cell transplantation and the death of these patients.
- ▶ The roles of the members of the healthcare team involved in practicing in stem cell transplantations and how do the different members plan the care of these patients?

# PURPOSE OF THE STUDY

- ▶ The purpose of this study is to gain insight into the knowledge, perceptions and practices of the health care team members regarding stem cell transplantation.

# THEORETICAL FRAMEWORK

- ▶ The nursing theory of Virginia Henderson (1997), as cited in (George 2014; 104) was used.
- ▶ The framework is appropriate to this study, as it brings out the concept of the stem cell transplanted patient as a whole, or in a holistic manner.
- ▶ The main assumptions in Henderson's theory emphasized the following four major concepts: the individual, the environment, health and nursing. These concepts are all relevant to the health challenges of a stem cell transplanted patient (George 2014; 104).

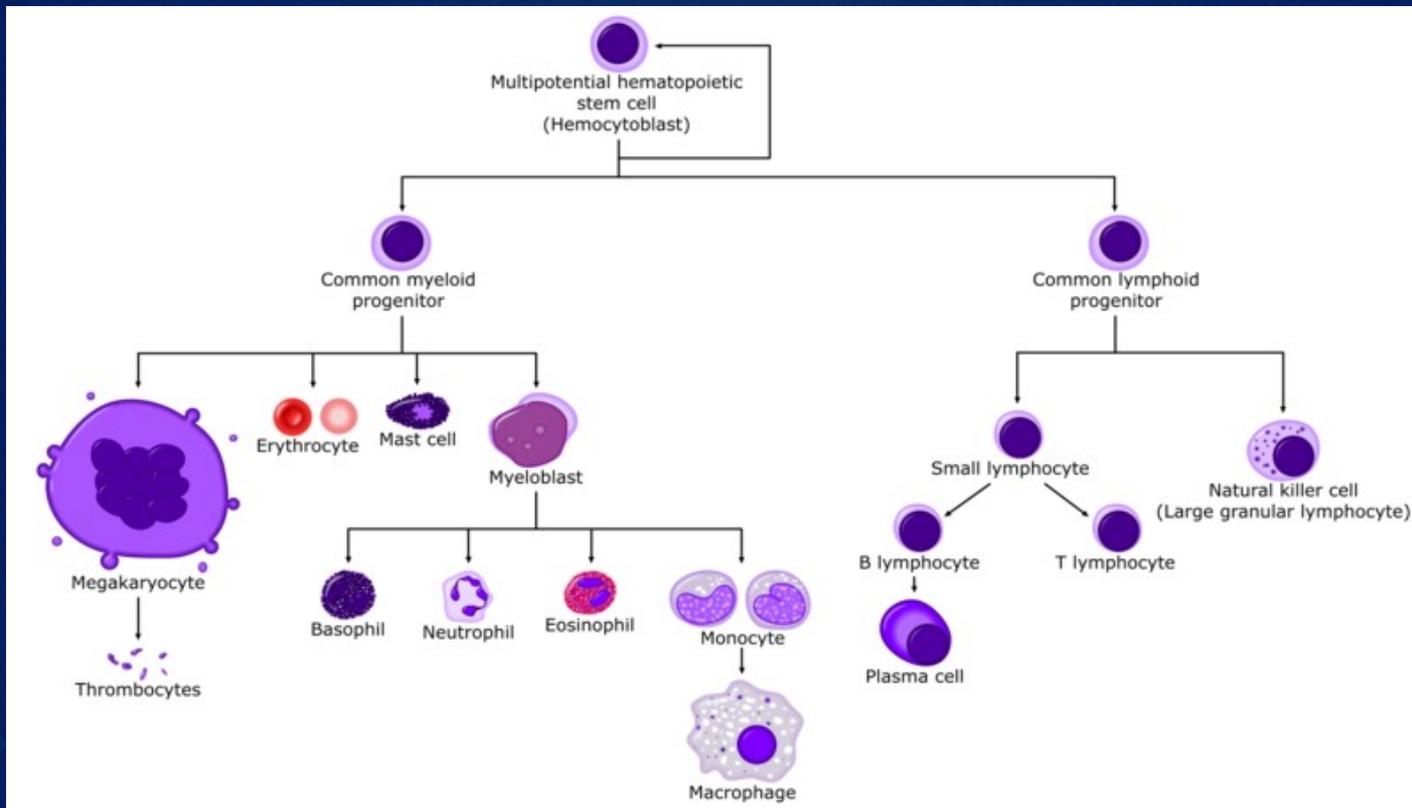
# LITERATURE

- ▶ Hematopoiesis
- ▶ It is the process where the blood cells are produced to exercise their function as described in an earlier text.
- ▶ Haematopoiesis occurs in the bone marrow of adults, but can occur in the liver, lymph nodes and spleen.
- ▶ Mature blood cells have their origin in the bone marrow, where the stem cells, which give rise to the blood cells, are found. The major sites for haematopoiesis in adults are the sternum and the iliac crest.

# CONTINUE

- ▶ Other sites include the skull, vertebrae and the ribs. This is called intramedullary haematopoiesis. Haematopoiesis can occur outside the bone marrow as in some diseases such as haemoglobinopathy, myelofibrosis and severe haemolytic anaemia.
- ▶ The process of haematopoiesis is regulated and balanced by cytokines, growth factors and environmental factors such as oxygen.

# CONTINUE



# CONTINUE

- ▶ A stem cell is an immature cell in the bone marrow, which can develop into different blood cell types such as white blood cell, red blood cell and platelets (National Cancer Institute Dictionary of Cancer Terms, 2015).
- ▶ Stem cell transplantation is a life-saving treatment for patients with leukaemia, lymphoma, and other blood disorders. The patient's own bone marrow is destroyed with cytotoxic chemotherapy and radiation.

# WORLDWIDE

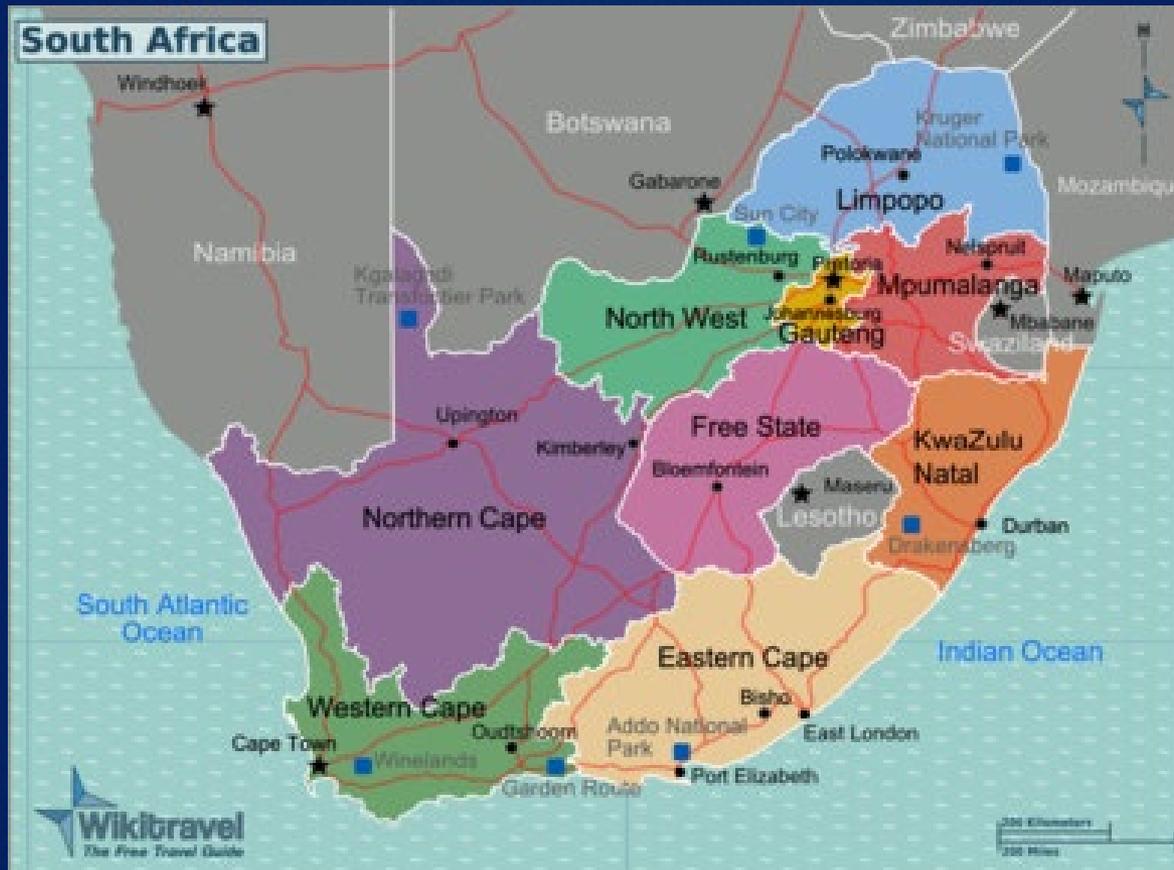


# CONTINUE

More than 50,000 patients are stem cell transplanted worldwide and the amount is still increasing.

Of this amount, 53 percent are autologous and 47 percent are allogeneic, 50 percent occur in Europe 28 percent occur in America and 19 percent occur in the Asia Pacific Region. Three percent occur in the East Mediterranean Region

# SOUTH AFRICA: WESTERN CAPE



# STEM CELL STATISTICS

	1957-70	1971-85	1986-91	1992-95	1996-2005	2006-12	Total
Pan-American total	..	2422	14 975	33 734	126 212	119 140	296 754 (31%)*
Allogeneic	..	2375 (98%)†	7242 (48%)†	12 092 (36%)†	51 347 (41%)†	54 437 (46%)†	127 764
Autologous	..	47	7733	21 642	74 865	64 703	168 990
South East Asian and Western Pacific total	..	505	3349	9120	53763	73 342	140 079 (15%)†
Allogeneic	..	450 (89%)†	2508 (75%)†	5061 (55%)†	30 340 (56%)†	44 607 (61%)†	82 966
Autologous	..	55	841	4059	23 423	28 735	57 113
Eastern Mediterranean and African total	..	33	300	441	5104	9625	15 503 (2%)*
Allogeneic	..	32 (97%)†	239 (80%)†	357 (81%)†	3821 (75%)†	5968 (62%)†	10 417
Autologous	..	1	61	84	1283	3657	5086
European total	..	6088	21 152	35 660	222 470	215 941	501 315 (53%)*
Allogeneic	..	4165 (68%)†	10 570 (50%)†	12 869 (36%)†	68 970 (31%)†	82 576 (38%)	179 154
Autologous	..	1923	10 582	22 791	153 500	133 365	322 161
<b>Total</b>							
Allogeneic	275 (100%)†	7022 (78%)†	20 559 (52%)†	30 379 (38%)†	154 478 (28%)†	187 588 (45%)†	400 301 (42%)*
Autologous	0	2026	19 217	48 576	253 071	230 460	553 350
<b>Total HSCT</b>	275	9048	39 776	78 955	407 549	418 048	953 651 (100%)*
Cumulative numbers of unrelated donors	..	0	741 994	199 8172	10 777 966	22 346 551	..
Cumulative numbers of cord blood products	..	0	0	2345	275 669	645 646	..

Data are total HSCT by main donor type (allogeneic or autologous HSCT), during the respective timeframe, by WHO region, and the development of cumulative numbers of registered unrelated donors and cord blood products during the same time. All regions are WHO-defined regions. Retrospective allocation of transplants to the respective WHO region is not possible in details. Most procedures were done in the USA and in Europe. HSCT=haemopoietic stem-cell transplantation. \*Represents column percentages of total HSCT per WHO region. †Represents proportion of allogeneic HSCT during the respective timeframe in the respective WHO region.

**Table 1: Milestones in the development of HSCT, 1957-2012**

# CONCEPTS

- ▶ Different types of stem cell transplantations
- ▶ Stem cell transplant process
- ▶ The care of the transplanted patient
- ▶ Side effects

# CONCEPTS

- Knowledge
- Perceptions
- Practice

# METHODOLOGY & ANALYSIS

## RESEARCH SETTING

- ▶ According to Polit and Beck (2010:2130), the research setting is the physical location in which data collection takes place.
- ▶ The location where the researcher collected data was two hospitals where stems cells are being transplanted in the two hematology units in these hospitals.
- ▶ One is a hematology unit in a public hospital and the second one is a hematology unit in a private hospital.

# RESEARCH DESIGN

- ▶ Brink, van der Walt and van Rensburg (2015:121) define qualitative research as where various designs and methods are utilized to study a phenomenon which we do not understand.
- ▶ These designs and methods focus on discovering new knowledge.
- ▶ A qualitative exploratory contextual design was used, which allowed the researcher to investigate human experiences and allowed close contact with participants in the collection of data (Moule & Goodman, 2009:171).

# POPULATION

- ▶ According to Brink (2013:132), a “population” is the group of people that the researcher wants to study. In this study one private and one public facility offering stem cell transplantation services in the Western Cape were included.
- ▶ This health care team included doctors, dieticians, physiotherapists, social workers and nurses of all ranks (professional nurses, enrolled nurses, enrolled auxiliary nurses), as well as a caregiver who were also part of the team.

# SAMPLING

- ▶ Brink (2013:133) defines a sample as a part of the population that the researcher chooses for her research. Non-probability purposive sampling technique was used, which is also called 'judgmental sampling' (Burns & Grove 2013:313).
- ▶ The researcher used her judgment of who she can use in her study, to best shed light on the phenomenon (Brink, Van der Walt & van Rensburg, 2015:141). Eligibility criteria were used to select the participants

# PARTICIPANTS

## BIOGRAPHICAL DATA

- ▶ The years of experiences of the professional nurses working in the two hematology units varied between (two) 2 years and (thirty) 30 years.
- ▶ One of the professional nurses had been practicing in the bone marrow transplant unit for thirty (30) years and was also the unit manager of the public hospital, while another professional nurse had twenty-five (25) years of service.
- ▶ One professional nurse had been practicing there for two (2) years and three (3) of the professional nurses for three years.

# CONTINUE

- ▶ Four enrolled nurses participated in the study. One enrolled nurse had been working in the unit for fifteen (15) years.
- ▶ She had more experience with stem cell transplanted patients than most of the professional nurses with higher qualifications than hers.
- ▶ The physiotherapist's ten years of experience working with stem cell transplanted patients made her knowledgeable in this regard.
- ▶ She was the only designated physiotherapist for the stem cell transplanted patients and her experience of practicing with such patients, emerged in the interviews.

# CONTINUE

- ▶ The radiographer had three (3) years and the doctor had four (4) years of experience in the field of stem cell transplanted patients, whereas the social worker had fifteen (15) years of experience.
- ▶ The dietician had been practicing for two (2) years attending to the nutritional needs of the stem cell transplanted patients.

# CONTINUE

- ▶ Of the sixteen (16) health care professionals, four (4) were formally trained to manage stem cell transplanted patients.
- ▶ There is a postgraduate oncology course at one of the universities in the Western Cape for professional nurses, but there is no formal course in hematology or oncology available for enrolled nurses, care givers, social workers, dieticians and physiotherapists in South Africa.

# ETHICAL CONSIDERATIONS

- ▶ The Health and Wellness Faculty ethics committee at CPUT in Bellville granted the researcher permission to complete the study.
- ▶ Permission number given was CPUT/HW-REC 2014/H13 .
- ▶ Ethical principles such as respect, beneficence and justice were applied in this study

# DATA COLLECTION

- ▶ Qualitative data was collected by means of face-to-face semi-structured individual interviews. The data collection was conducted using an interview guide.
- ▶ According to Polit and Beck (2010: 341), this method of data collection involves the interviewer asking verbal questions and the interviewee responding verbally.
- ▶ The interviews took place in an office of one of the managers. Each interview took 45- 60 minutes. Interviews were recorded with a digital recorder that was in working order. Field notes was taken by the moderator, who accompanied the researcher to the interviews.

# DATA ANALYSIS

- ▶ A private, independent transcriber was employed to do the transcriptions of the data.
- ▶ All data was transcribed into a Microsoft Word document.
- ▶ Thereafter, coding of the transcriptions was done and thematic content analysis was applied.
- ▶ An independent coder was used to analyse the data in order to reach consensus with the researcher regarding the formation of themes, categories and subcategories (Holloway & Wheeler, 2010:235).

# RESULTS

Themes	Subthemes
1. Knowledge of health care team members	<ul style="list-style-type: none"><li>• Knowledgeable about different types of transplants methods and processes</li><li>• Knowledgeable about decision-making and information</li></ul>
2. Perceptions of Health care team members	<ul style="list-style-type: none"><li>• Various perceptions of caring for different stem cell transplanted patient</li><li>• Positive thinking about the treatment option, stem cell transplantation, and stem cell transplantation for children</li><li>• Sadness about death in stem cell transplantation and in children being sick during stem cell transplantation</li></ul>
3. Practice	<ul style="list-style-type: none"><li>• Participation in the team</li><li>• Differentiation of roles of team members</li><li>• Holistic delivery of care</li></ul>

# KNOWLEDGE

- ▶ *“ well, I think, don't think in that case they really choose whether they want. I want my own cells. It depends on the condition and what type of Leukaemia or type of cancer. Lets make an example. Mostly multiple myelomas, they are going for auto transplant, and AML, they cannot choose. They are only getting allogenic. So it is not a matter of choosing. It's a matter of what is the condition, does it lead you to get auto or allo.”*

Professional nurses mentioned the differences between donating own stem cells and using those of a donor:

- ▶ *“So it's usually patients, they use their own stem cells, it's their own that they harvest from when they are in remission. The other stem cell transplant, it's when the patient is getting stem cells from a donor. Usually it's a sister or someone that it is a match”.*

# PERCEPTIONS

- ▶ The participants had all different feelings regarding the stem cell transplanted patient and the effect of the transplant.

A professional nurse thought about the type of patients they nurse:

- ▶ *“I think the most of them, they understand what kind of patients we have. It’s a 50/50 chance that they might, you cannot cure, but there is a 50% chance that after the transplant or chemotherapy, they can still, we don’t prolong it, but just- I don’t know the word to say”*

Another agreed with that statement

- ▶ *“but the general attitude here, because people have been working here for years, it’s not one year, two years, it’s years, so I think they are quite happy with stem cell transplant and things like that*

# PRACTICE

Some participants, such as the social worker, were aware of the role of the other team members:

- ▶ *nurses as well, who see to the patient, that they get their medication on time (P15)*

The care worker was also aware of her participation in the team:

- ▶ *this is now the observations, the weight and height and the observations and anything that is normal, then I will report it to the sister (P2)*

One of the professional nurses felt except caring for the patient, that the whole family is involve:

- ▶ *it's a lot more supportive and caring, and involving the whole family (P4)*

The part of the doctor seems to be more challenging:

- ▶ *to mobilize the stem cells and the harvesting of the cells (P16)*

# CONCLUSION

Participants were knowledgeable: -

- ▶ that there are different types of transplant processes
- ▶ of the treatment available for the patients before stem cell transplantation.
- ▶ about the difficult decisions which the patients sometimes have to make and the information they have to provide the patients with, in order for them to make informed decisions.

# CONCLUSION cont.

The healthcare team members displayed:

- ▶ positive thinking towards transplantation as a treatment option for hematological diseases and for children for the same type of diseases.
- ▶ sadness at the death of a patient who died during the recovery process after stem cell transplantation
- ▶ participation in the team
- ▶ differentiation in the different roles that they play/perform within the team.
- ▶ holistic delivery of care and they understood the different roles of every team member

# LIMITATIONS TO THE STUDY

- ▶ One of the limitations of the study was the fact that one study focussing on the topic, cannot give thorough understanding of the phenomena explored.
- ▶ The other limitation of the study was the translation of the interviews from Afrikaans to English.

# RECOMMENDATIONS

- ▶ Compilation of Standard operating procedures
- ▶ Implementation of Continuous education and training programs
- ▶ Implementation of Continuous awareness and health promotion programs in the communities
- ▶ Offer educational programs in the field of haematology, transplant patients and procedures
- ▶ Information sheets and leaflets on hematology and transplantations
- ▶ Promote health education
- ▶ Offering of a course in haematology
- ▶ Employ strategies for Integration of theory and practice specifically in haematology
- ▶ Offer more training

# AREAS FOR FURTHER RESEARCH

- ▶ Stem cell transplantation awareness in rural areas.
- ▶ Health promotion and education on stem cell transplantation by oncology/hematology specialists who constantly engages in research activities.
- ▶ Stem cell transplantation in young children: implications of early detection.
- ▶ The importance of debriefing for health care professionals with the death of a stem cell transplanted patient.

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**Thank you for listening**

