

**DEVELOPING A BROCHURE TO BE USED BY REGISTERED NURSES WORKING
IN THE ONCOLOGY SETTINGS TO EDUCATE PATIENTS UNDERGOING
CHEMOTHERAPY IN PUBLIC AND PRIVATE ONCOLOGY SETTINGS IN
KWAZULU-NATAL, SOUTH AFRICA: A MIXED METHOD STUDY**

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BY

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DECLARATION

I, Bonisiwe Mdletshe, hereby declare that this research is my own work. It is being submitted for the fulfilment of my master's degree in nursing at the University of KwaZulu Natal. It has not been submitted before for any degree at this or any other university.

Signature:



Date:

01 MAY 2024

DEDICATION

I dedicate this work to God Almighty, my Alpha and Omega and Helper. All things are possible with Him and Him alone.

To my mother, thank you so much for your support, “One day my child all will work out.” Your love and encouraging words kept me going despite....

To my children who stood by me and encouraged me throughout this journey, you will forever be my living testimony and I hope I have made you proud.

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ABSTRACT

Background

The delivery of cancer care is facing unprecedented challenges, new technologies, shortage of human and other resources, increased number of patients with cancer and educational challenges. Registered nurses have to administer chemotherapy, function as guides to patients and their families as they make sense of their cancer experiences. Lack of knowledge hinders patients' capacity to engage in effective interactions with care providers and can also lead to adverse medical outcomes, malpractice lawsuits, missed appointments and medication errors.

Purpose

The purpose of the study was to develop a brochure for registered nurses working in oncology settings to educate patients undergoing chemotherapy in public and private oncology settings in KwaZulu-Natal.

Methodology

The study employed a mixed methods approach embracing the sequential designs and pragmatic paradigm. The study was conducted in three oncology settings, one being a private outpatient and two public in/out-patient settings. A sample size of 85 participants was obtained through the use of Stata V15 sample size calculator with the assistance of a statistician and 64 gave consent to participate. Non-probability purposive sampling was used and all recruited participants were informed about the multi-staging processes in data collection (stages). All participants who volunteered to take part in the study gave their consent signed and their ethical issues/rights were explained in detail before the actual commencement of data collection. Mixed methods were employed to ensure that the quantitative aspect of the data was used to probe further or enrich the dialogue in the qualitative phase until data convergence. Using manifest content analysis, themes were identified which together with quantitative data guided the development of the brochure. The brochure was subsequently verified by experts.

Findings

Based on literature review and the findings of the study a brochure was developed, aimed at enhancing nurses' support to their patients. The highlight was that nurses tend to focus more on managing patients' physical side effects and neglect the emotional stages that patients go

through chemotherapy. Patients need to know that registered nurses are available to support and guide them through the chemotherapy process.

Conclusion

When patients first receive the news that they have cancer, most of them feel scared and anxious and this can make them particularly vulnerable. Patients worry about their coping skills during this period and they need support from the healthcare providers. The current study described the knowledge, attitudes and competence of nurses working in oncology settings. Emanating from the quantitative and qualitative data obtained, a brochure was then developed and evaluated by experts. Registered nurses play an important role in educating patients. It is hoped that nurses working in oncology settings will use this brochure to empower patients as they provide valuable emotional support to patients undergoing chemotherapy. In turn, it is hoped that patients will feel emotionally resilient by being able to be aware of the various emotions that could be encountered as well as the knowledge to access support, whilst receiving chemotherapy

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CHAPTER ONE

1.1. INTRODUCTION AND BACKGROUND

Cancer has been one of the leading causes of ill health and fatality worldwide. Africa alone, there were over one million new cancer diagnoses and more than 700,000 deaths related to cancer reported in 2020, which translates to nearly 2,000 lives lost to cancer every day (Omotoso, Teibo, Atiba, Oladimeji, Paimo, Ataya, Gaber Batiha and Alexiou, 2023). The number of cancer cases is anticipated to increase by 2030 due to population growth and people getting older (Omotoso, *et al.*2023). The National Cancer Registry data indicates that in South Africa about one in eight people will experience some form of cancer during their lifetime (Yamani and Taleghani, 2018). Cancer care is one of the most crucial issues in the healthcare system; the Global Action Plan for the Prevention and Control of Non-communicable diseases 2013-2020 is continuously urging countries to bolster health systems at local and national levels to deliver quality care for cancer patients (Yamani and Taleghani, 2018).

Care in oncology requires both technical and psychosocial skills by registered nurses, so continuous learning and education is necessary (Solera-Gómez, Benedito-Monleón LLinares-Insa, Sancho-Cantus, Navarro-Illana, 2022). For registered nurses, adequate education is one of the most effective measures to improve self-efficacy and work performance (Solera-Gómez, Benedito-Monleón, LLinares-Insa, Sancho-Cantus, Navarro-Illana, 2022). Generally, patients receive treatment on an outpatient basis, but can undergo repeated admissions to hospital wards during the illness trajectory. A multi-professional team is responsible for their treatment and care. Most nurses forming part of this team are registered general nurses (Maree, Van Rensburg and Hadebe, 2024) Cancer patients usually express a need for information to prepare themselves for treatment, specifically around issues of self-care during their cancer journey (Solera-Gómez, Benedito-Monleón, LLinares-Insa, Sancho-Cantus, Navarro-Illana, 2022).

Lewandowska, Rudzki, Lewandowski and Rudzki (2021) affirm that patients diagnosed with cancer have a high level of unmet needs, especially in terms of psychological support and medical information. Their caregivers also experience needs and concerns regarding the disease. Coping with the arising demand imposed by the cancer journey can be overwhelming for patients and their families, emotional distress, psychological disturbances, psychiatric

disorders and existential suffering can be considered expected responses to illness (Miniotti, Botto, Soro, Olivero and Leombruni, 2024).

In Africa, diagnosing cancer has many challenges which may include multiple visits to healthcare providers before receiving a definitive diagnosis, leading to delays in early diagnosis and presentation of cancer at advanced stages (Lewandowska, Rudzki Lewandowski, Rudzki, 2020) The issue is compounded by the fact that in low resource settings, such as sub-Saharan Africa, where the healthcare sector is already burdened with addressing infectious diseases such as malaria, acute respiratory infections, tuberculosis and Human immune virus; resulting in limited attention that is given to non-communicable diseases like cancer (Lewandowska, Rudzki Lewandowski, Rudzki, 2020) In South Africa, patients can wait months especially those who cannot afford medical insurance before they consult with the oncologist, which creates a massive backlog and lack of access to cancer care (Ramutumbu, Ramathuba, Maputle, 2023).

Chitha, Swartbooi, Jafta, Funani, Maake, Hongoro, Godlimpi, Mnyaka, Williams, Buti, Kuseni, Zungu, Sibulawa, Mavimbela, Giwu, Mabunda and Essel (2022) agree that South Africa's cancer care services are currently limited by poorly developed care pathways which include late presentation, inequitable distribution of care, shortages of specialised workforce, old, poorly functioning, non-serviced equipment, lack of standardised budgets within and between provinces; cancer registries lack resources and poor implementation of existing skills and programmes.

The healthcare sector is confronted with a myriad of challenges and rising expectations from patients, patients have become increasingly well-informed about expected standards of quality and the delivery of services (Choon Hee and Kamaludin, 2016). It is imperative for registered nurses to take cognizance of these expectations and strive to meet and exceed them. The increased cancer burden is associated with lifestyle adoption and economic development such as smoking, reduced physical activities and unhealthy diets, (Cheatley, Aldea, Lerouge, Devaux, Vuik, and Cecchini, 2021). Health education plays a major role in any health-care institution. It improves patients' ability to self-manage the disease and improves compliance to treatment and provides knowledge of the disease itself (Jahan, Al-Saigul. Alharbi and Abdelgadir, 2014).

Health education is provided by registered nurses, usually verbally, when patients come for first treatment. However, the information is easily forgotten by patients. The amount of

information presented is sometimes not correctly recalled by patients (Laws, Lee, Taubin, Rogers and Wilson (2018). Major reasons contributing to patients forgetting basic information are factors related to health professionals, how the information is provided such as use of difficult medical terminology; factors related to the patient, such as educational levels or specific expectations (Laws, Lee, Taubin, Rogers and Wilson (2018). In order to increase the effectiveness of health education, information that is provided to patients verbally at their first consultation should be supplemented and strengthened with written materials in order assist patients' recall of information (Owen, Kohne, Douglas, Hewitson and Baldwin, 2009 cited by Jahan, Al-Saigul, Alharbi and Abdelgadir 2014). The written materials can be used to underpin the information obtained verbally from health-care providers. Moreover, research has demonstrated that the majority of patients appreciate written materials because it gives them the ability to share information with their caregivers and family, and the message in written form is consistent and always readily available (Paul and Hice, 2014).

In order to influence patients' health behaviours, it is essential to ensure that health education materials are appropriate for their intended recipients (Gill, Kamath and Whisnant, 2012). According to Al Hayek, Robert, Zamzani, Sam and Alzaid (2013), the effective health education materials require formative research as well as evaluation, which systematically obtain information to be used to improve these materials. In some countries including South Africa, written education materials in the form of posters and brochures are common (Jahan, Al-Saigu, Alharbi and Abdelgadir, 2014). Brochures are utilised as important tools of intervention when providing education to patients and when dealing with any health education programs (Jahan, Al-Saigu, Alharbi and Abdelgadir, 2014).

The need to provide patients with information is crucial during their cancer journey. Some studies demonstrated that well-informed patients can manage their care and use preventative services compared to uninformed patients (Rasu, Bawa, Suminski, Snella and Warady, 2015). Other studies have indicated that the majority of patients want to be informed about their diagnosis, prognosis, treatment and the disease (Browall, Carlsson and Morrison, Henderson and Zinovieff, 2012). The information need that is commonly expressed relates to cancer treatment and the type of malignancy, (Finney-Rutten, Agunwamba, Beckjord, Hesse, Mose and. Arora (2015).

A study conducted by Coolbrandt, Wildiers, Aertgeets, Dierckx de Casterle, van Achterberg and Millisen (2018) highlighted that there are distressing side effects associated with chemotherapy. The quality of life is negatively impacted by these widely recognized side effects (Deshields, Potter and Olsen, 2014 cited by Coolbrandt *et al*, 2018). The study highlighted that most side effects are typically experienced at home and in the absence of healthcare provider. Chemotherapy treatment that is given in an outpatient setting necessitates patients to self-manage their symptoms actively at home. Aranda, Jefford and Yates *et al*, 2012 as cited by Coolbrandt *et al* 2018) affirm that patients' strategies regarding symptom management is generally poor and suboptimal. Regarding self-care support, patients report lack of knowledge and experience which is listed as one of the high levels of unmet needs. Strong evidence indicates that greater symptom burden is associated with sub-standard self-care (Given, Skorski *et al*, 2010, cited by Coolbrandt *et al*, 2018).

Although chemotherapy increases survivorship and quality of life, it has a number of side effects: physiological effects such as fatigue, insomnia, nausea, and vomiting and psychological effects such as fear stemming from uncertainty regarding treatment results and disease recurrence, anxiety, depression and sadness (Wagland, Richardson and Ewings, 2016). The rate of psychiatric and psychosocial distress becomes generally high when patients experience these side effects and this is a great concern and Wagland, Richardson and Ewings, (2016), affirm that patients need to be provided with comprehensive information, be equipped to self-manage and cope with complicated treatment-related side effects pre-chemotherapy.

The high incidence of patients not coping and need for self-care management information clearly indicates that current pre-chemotherapy preparation is not up to an expected standard and few studies have been conducted around this area (Wagland *et al* 2016). Most studies have traditionally focused on addressing specific side effects of chemotherapy, such as nausea, pain, mucositis, and fatigue. However, this approach provides limited information to patients about preparing for chemotherapy (El Kheir and Ibrahim, 2019)

According to Romeiro, Peuker, Biachini and de Castro (2016), communication between the patient and the healthcare provider is one of the main aspects in the cancer context and this involves the provision of practical and precise information (i.e. discussing results of investigations and pre-chemotherapy procedures, discussing seriousness of the disease and the treatment intent). The fundamental reasons for nurse-patient communication are to create

a two-way relationship, exchange and share information with the patient and to include them in the decision-making process (Ha and Longnecker, 2010 cited by Romeoro et al, 2016). The content of the information should be supportive, positive, informative and constructive.

Nurses in general constitute the majority of healthcare professionals in most countries, registered nurses connect closely with communities and patients; they work shifts within all sectors of health care (Nwagbo, Ilesanmi, Ohaeri and Oluwatosin, 2017). Nurses' knowledge and experience within the health sector gives them a wide understanding on how environmental factors affect the health outcomes of patients and how they respond to different approaches offered to them (Shariff, 2015). One of the primary functions of registered nurses in oncology settings is to administer chemotherapy drugs which can be complex. Oncology is a sensitive domain where negligence or errors may result in unnecessary adverse events, exposure of personnel to hazardous chemicals, and fatality, (Nwagbo, Ilesanmi, Ohaeri and Oluwatosin, 2017)

Chemotherapy is known to decrease the amount of white blood cells, a condition known as neutropenia which can lead to potentially life-threatening infections. Increased bleeding with clotting impairment is experienced by some patients due to thrombocytopenia, which requires immediate attention by the health care provider as it is potentially fatal, (American Cancer Association, 2016d). Due to a number of side effect profile and complications that are chemotherapy-related, patients must acquire self-management and know when to seek medical attention in case of any life-threatening emergency. Patients need to be adequately equipped with knowledge and skills during treatment which play a key role in helping them manage side effects at home (Valenti, 2014).

Medication errors are unfortunately common in chemotherapy treatment due to a lack of expertise and inadequate staff training in oncology, this can lead to potentially fatal mistakes such as inaccurate drug calculations, incorrect transfusions, prescriptions, preparations, and administration (Nwagbo, Ilesanmi, Ohaeri and Oluwatosin, 2017). As a result, studies have been conducted to evaluate the knowledge and attitudes of nurses in various specialties. These studies have concluded that educational programs can effectively complement nurses' existing knowledge, helping to reduce the incidence of medication errors (Nwagbo, Ilesanmi, Ohaeri and Oluwatosin, 2017).

Patients should receive information about their disease, potential benefits and side effects of the proposed therapy, and give their consent before treatment commences. Relevant and

understandable information is a prerequisite for patients to acquire enough knowledge to enable them to be actively involved in shared decision making. Furthermore, well informed patients are more satisfied with care, have a better sense of control of their total situation, and report a better quality of life (Berger, Grønberg, Loge, Kaasa and Sand 2018).

In order to ensure patients' safety and safety of their own jobs, registered nurses are required to have specialised knowledge when caring for patients receiving chemotherapy (Berger *et al* 2018). Chemotherapy nurses need to continuously update their clinical knowledge and skills including calculation of body surface area (BSA), appropriate dilutions and identification of antidotes in cases of adverse reaction to chemotherapy drugs (Berger *et al* 2018). Registered nurses require continuous in-service training to stay up-to-date with the evolving management of adverse events, including extravasation. This training equips nurses with the knowledge and skills required to provide patients with support and advocacy, leading to improved patient outcomes (Mohammed, Azer and Khallaf, 2023).

Registered nurses have to show a high level of positive attitude along with technical expertise in order to assist patients with psychological problems caused by chemotherapy, adverse effects experienced by patients undergoing chemotherapy can imply a major impact on the quality of life, alter metabolic balance, decrease mental performance, degenerate self-care and functional capacity (Prieto-Callejero, Rivera, Fagundo-Rivera, Romero, Romero-Martín, Gómez-Salgado, Ruiz-Frutos 2020). The holistic application of day nursing care implies a greater knowledge of these adverse reactions ((Prieto-Callejero, Rivera, Fagundo-Rivera, Romero, Romero-Martín, Gómez-Salgado, Ruiz-Frutos 2020).

Khan, Khowaja, Zulfiqar and Ali, (2012) describe attitude as the basic way we think, feel, act, and react to our world surroundings. Attitude includes manner and the mind set in which one approaches care; it encompasses interpersonal communication, respect for humanity, individual uniqueness and the essence of caring (Khan, Zulfiqar, Khowaja and Ali, 2012). Nurses have to manage chemotherapy side effects that patients experience throughout their chemotherapy cycles. Some chemotherapy drugs are prepared and administered within the unit and therefore, nurses take responsibility for completing the entire process of chemotherapy. There is a need to assess nurses' knowledge, attitude and competency to ensure that chemotherapy administration is safe for cancer patients and healthcare providers (Khan et al, 2012).

Generally, most nurses care for a major proportion of treatment related care, disease monitoring and health education. The researcher incorporated the Knowledge, Attitude and Practice Model in this study as the framework and developed a brochure to educate registered nurses who in turn guide patients with the knowledge needed whilst undergoing chemotherapy.

The knowledge, attitude and practices (KAP) model is one of the most commonly used models in the health professional discipline. According to Launiala (2009), this model was first used to assess family planning and population research during the nineteenth century. The KAP model advocates that any practices (behaviours) are determined by the attitude and knowledge of a person towards the behaviours. “K” stands for knowledge of the problem or disease, “A” for attitude towards the disease or problem, and “P” for practice and preventative behaviour to protect against the problem or disease (Launiala, 2009). Based on the available evidence and principles for self-care strategies and side-effects management, the aim of the study is to develop a brochure that will be used by registered nurses to educate patients undergoing chemotherapy in public and private oncology settings.

1.2. PROBLEM STATEMENT

The delivery of cancer care in South Africa is facing unprecedented challenges, new technologies, a shortage of human and other resources, increased numbers of patients with cancer and educational challenges. Registered nurses have to function as guides to patients and their families as they make sense of their cancer experiences. Chemotherapy is associated with undesirable short and long-term side effects despite the fact that it kills cancer cells (Amboto and Amakali, 2017). Failure of registered nurses to provide proper health education regarding chemotherapy side effects in oncology can lead to poor self-management among the oncology patients (Iheanacho, Opara, Ifezulumba, Omotola, Ingwu and Anarado, 2022).

Insufficient health literacy, little capacity to obtain, process and comprehend basic health information are a few of the causes leading to oncology patients not understanding what health providers tell them and patients need the information to make significant health decisions (Berger, Grønberg, Loge, Kaasa and Sand, 2018). An important challenge for registered nurses when providing health education is that there is no established method for evaluating whether patients are well informed or satisfied with the information they have been given (Berger *et al*, 2018).

Patients' inability to understand often contributes to unnecessary visits to emergency room, non-compliance with treatment and poor health results coupled with financial implications. Lack of knowledge hinders oncology patients' capacity to engage in effective interactions with care providers and can also lead to adverse medical outcomes, malpractice lawsuits, missed appointments and medication errors (Duren-Winfield *et al*, 2015).

The lack or inadequate sharing of information and guidance by registered nurses, especially before patients commence the chemotherapy has been highlighted as one of the contributing factors for non-adherence to self-care guidelines, (Swami and Case, 2018). The registered nurses are functioning under stressful conditions because of poor staff retention and this impact negatively on the clients' expectation of care (Swami and Case, 2018). Regrettably, it is common to have mismatch between nurses' level of communication and a patient's level of comprehension (Swami and Case, 2018).

Studies have indicated that patients sometimes do not understand or they often misinterpret information given to them by health-care providers, there is information overload and anxiety on the new diagnosis and its explained treatment modalities (Baker, Gazmararian, Sudano and Patterson, 2000 cited by Duren-Winfield, Onsomu, Case, Pignone and Miller, 2015).

The period between the registered nurses communication and the patients' thought and decision to be taken, is assumed to be the main deciding factor (Iheanacho, Opara, Ifezulumba, Omotola, Ingwu and Anarado, 2022). The researcher proposes creating a brochure for registered nurses; registered nurses in turn would educate patients and alerting them of possible emotional concepts that they might encounter throughout the chemotherapy journey. The brochure will be used by registered nurses to assist in educating oncology patients who need further information and guidance regarding oncological care and management, together with accessible numbers to call for any enquiries and assistance.

Given the current financial constraints on staff development programs, along with challenges such as increased nurse turnover and a complex healthcare environment, it is important to identify areas where nursing knowledge may be lacking and implement interventions that promote on-going competence among healthcare professionals (Iheanacho, Opara, Ifezulumba, Omotola, Ingwu and Anarado, 2022).

About six hundred and forty one oncology nurses were on the South African Nursing Council (SANC) register up to the end of 2018 (Nursing Council SA 2020). The statistics provided by

the statutory body are clear evidence that the oncology-specialized nurses are too few when compared to the demand for them to serve the public (Nursing Council SA 2020). The timely resolution of the challenge at hand may prove to be a formidable task, due to the financial constraints and budget cuts imposed by government policies (Bai, Gu, Chen, Xiao, Liu and Tang, 2017). The researcher would like to develop a brochure that will assist registered nurses when educating patients and ultimately improve patient and nurse outcomes. This brochure will act as a bridging information tool between the registered nurses and the patient requiring information. Should the registered nurses have the knowledge, the right attitude and competency, they will be able to educate their patients and continue to support them not only physical but holistically. Nursing is generally a dynamic process that creates a nursing care plan under the light of the physical, emotional, mental and social health care needs of the individual; puts it into practice, and then evaluates it systematically (Sancar, Yalcin, and Acikgoz, 2018).

Providing chemotherapy education effectively is pivotal to assist patients to cope better with chemotherapy and improve their overall treatment journey (Sahin and Erguney, 2016; Traeger, McDonnell, McCarty, Greer, El-Jawahri and Temel, 2015). Registered nurses can make use of the developed brochure to assist them when educating patients.

1.3. AIM OF THE STUDY

The aim of the study is to develop a brochure to be used by registered nurses working in oncology settings to educate patients undergoing chemotherapy, in public and private oncology settings in KwaZulu-Natal.

1.4. Objectives

1. To describe the knowledge of registered nurses regarding chemotherapy administration in the oncology settings.
2. To explore registered nurses' attitudes regarding chemotherapy administration in the oncology settings.
3. To determine the competency needs of registered nurses regarding chemotherapy administration in the oncology settings.
4. To develop a brochure to be used by registered nurses working in oncology settings to educate patients undergoing chemotherapy, in public and private oncology settings in KwaZulu-Natal.

1.5 Research Questions

1. What knowledge do registered nurses working in the oncology settings have regarding chemotherapy administration?
2. What are the attitudes of registered nurses working in oncology settings towards chemotherapy administration?
3. What are the competencies of registered nurses working in the oncology settings regarding chemotherapy administration?
4. Will an information on the brochure assist registered nurses working in oncology settings, to be able to educate patients undergoing chemotherapy.

The table below outlines the research process (Table 1)

Table 1: Illustrating Approach, Population, Sampling, Data Collection And Data Analyses

Research Objectives	Approach	Population and sampling	Data collection process	Data Analyses
1. To describe the knowledge of registered nurses regarding chemotherapy administration in the oncology settings.	Quantitative	Registered nurses working in the oncology units Non-probability census sampling Quantitative (n=64)	Self-administered Questionnaire	Descriptive statistics
2. To explore registered nurses' attitudes regarding chemotherapy administration in the oncology settings.	Quantitative	Registered nurses working in the oncology units Non-probability census sampling Quantitative (n=64)	Self-administered Questionnaire	Descriptive statistics

3. To determine the competency needs of registered nurses regarding chemotherapy administration in the oncology settings.	Quantitative	Registered nurses working in the oncology units Non-probability census sampling Quantitative (n=64)	Self-administered questionnaire	Descriptive statistics
4. To develop a brochure to be used by registered nurses working in oncology settings to educate patients undergoing chemotherapy, in public and private oncology settings in KwaZulu-Natal.	Qualitative	A total of eight nurses consented to be interviewed, interviews were carried out across three settings, some interviews were face-to face	Qualitative interviews as per the semi-structured interview guide. Focus group and experts interviews.	Content analysis

1.6. SIGNIFICANCE OF THE STUDY

1.6.1. PATIENT CARE

The brochure will answer questions that patients may have before commencing chemotherapy and how they can be managed during chemotherapy. In this study; registered nurses will use the brochure to educate patients undergoing chemotherapy.

1.6.2. NURSE EDUCATION

Managers responsible for education and training of all personnel will ensure quality distribution of competent, oncology-trained nurses in the units. They will ensure continuous staff development of all staff as per units' needs. All registered nurses who are already allocated in the oncology units without oncology speciality are allocated a mentor until they are competent to work independently whilst awaiting their turn to undergo specific oncology training.

1.6.3. NURSING RESEARCH

More research conducted in this area will provide insight to the fact that patients need to be well equipped with information in order to manage side effects at home in conjunction with nurses knowledge and understanding of chemotherapy. Funding should be allocated in order to conduct a large- scale research in order to be able to generalise findings.

1.6.4. NURSING ADMINISTRATION

Once the brochure is developed and accepted by selected institutions, it may be benchmarked and adopted in future if possible by both public and private health institutions for better patient outcomes.

1.7 CONCEPTUAL FRAMEWORK- KNOWLEDGE, ATTITUDES AND PRACTICE MODEL (KAP)

For the current study, the KAP model (figure 1) has been helpful in order to understand the knowledge, attitudes and competency of registered nurses working in the oncology settings. The assumption is, if the registered nurses have the knowledge, the right attitude and practices, they will know how to educate their patients competently and continue to support them not only physically but holistically.

The KAP model (figure 1) created the understanding as to how knowledge relates to attitudes and practices towards chemotherapy administration, and it identifies the gaps in order to create understanding. The KAP was developed in the 1950s in order to look into what is known, assumed and done by participants in a specific topic (Launiala, 2009). In nursing practice research, KAP is used as an instrument to investigate experience, opinions and behaviour and has been a commonly used model in research to collect patients' and health providers' information for many years (Launiala, 2009). Knowledge, attitude, and practice model is very popular in the field of mental health and may assess health-related beliefs and behaviours in the context of specific illnesses or specific treatments (Andrade, Menon, Ameen, and Kumar Praharaj, 2020).

The current research describes knowledge, attitude and practice as follows;

Knowledge is a person's own understanding of chemotherapy administration, its indications and any side effects that emerge from chemotherapy. The main objective of registered nurses administering chemotherapy is to ensure patients' safety while providing support to

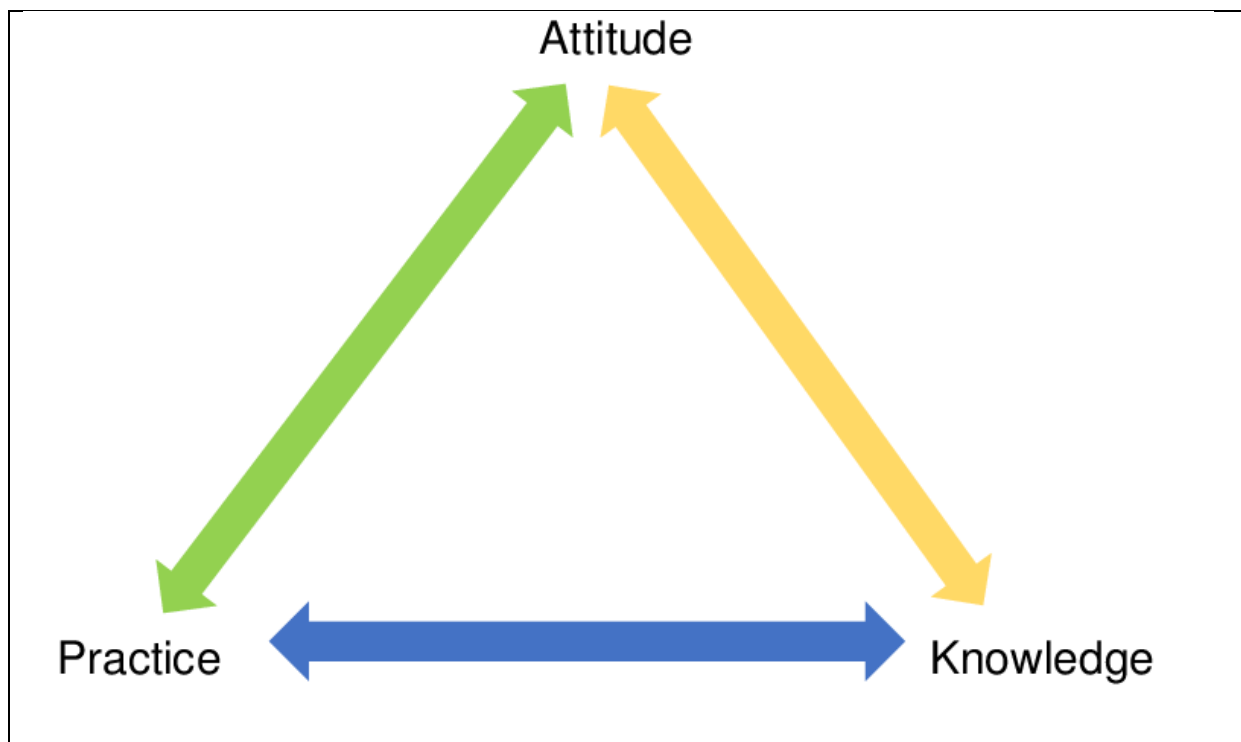
caregivers and family members. Registered nurses need to be knowledgeable, competent and have the right attitudes in order to assist patients manage their physical and psychological status whilst on chemotherapy (Khan et al, 2012). Guerrero, Ali and Attallah, (2022) affirm that one of the key factors for registered nurses to fulfil their clinical function in their practice is to build and strengthen their self-confidence.

Attitude is a tendency, based on ones beliefs and experiences, to react to events in a certain way (Khan et al, 2012). Attitude encompasses the essence of caring, how registered nurses approach and respect their patients. Registered nurses' attitude towards chemotherapy administration plays a huge role in patient care (Khan et al, 2012).

Practice is the action of registered nurses towards chemotherapy administration. Registered nurses need to adhere to chemotherapy safety protocols regarding chemotherapy handling, administration and patient care after treatment. There are guidelines and procedures within the settings that guide registered nurses need when dealing with chemotherapy administration these guidelines have an important role to play towards nurses' competency (Eedes, Bailey and Burger, 2018).

Figure 1 below illustrates The Knowledge-Attitude-Practice Model (Bano, AlShammari and Fatima, 2013). KAP model is a rational model in health education. It is based on the notion that increasing personal knowledge will influence behaviour change (WHO, 2012).

Figure 1: The Knowledge-Attitude-Practice Model (Bano et al., 2013)



1.8 OPERATIONAL DEFINITIONS

BROCHURE

A brochure is an informative paper document which can be folded into a leaflet or pamphlet. Brochures may be an effective way of communicating important information to health care providers in specific therapeutic areas (Bester, Vito-Smith, McGarry, Riffkin, Kaehler, Pilot and Bwire, 2016). In this study; registered nurses will use the brochure to educate patients undergoing chemotherapy.

REGISTERED NURSE

A registered nurse is an individual who has successfully completed a nursing program and possesses the necessary competencies to practice comprehensive nursing independently as per the prescribed level. In the exercise of their duties, a nurse is required to assume accountability and responsibility, demonstrating a high level of professionalism and expertise, (Singh and Mathuray, 2018). In this study the registered nurse refers to one who is working in an oncology setting.

PATIENT

An individual who receives medical treatment under physician's care for a particular disease or condition, (Allande-Cussó, Fernández-García and Porcel-Gálvez, 2022). In the current study, a patient is referred to as someone receiving chemotherapy and oncology care that is provided by registered nurses.

CHEMOTHERAPY

Chemotherapy drugs are the most widely used treatment modalities for treating cancer. Over a hundred distinct chemotherapeutic agents are currently available. It is also referred to as antineoplastic, cytotoxic, or anticancer drugs or agents because it kills rapidly dividing cancer cells by interrupting the cell cycle (Abd El-Salaheen, Hegazy, Mahmoud and Omran, 2022).

ONCOLOGY SETTING

An oncology setting is the place where registered nurses administer, monitor chemotherapy and other various duties. The setting may be an outpatient clinic, hospital or palliative care facility. Within the setting, the medical team may conduct diagnosis, offer surgical oncology, radiation, medical and palliative nursing care.

1.9 SUMMARY

This chapter has provided an outline of the study. The purpose of the study, problem statement, study objectives and significance of the study has been described. The researcher also discussed the conceptual framework underpinning the study and operational terms. The following chapter will review literature related to the study.

CHAPTER TWO

2.1. SCOPE OF THE LITERATURE REVIEW

A literature review can broadly be described as a more or less systematic way of collecting and synthesizing previous research, by integrating findings and perspectives from many empirical findings, a literature review can address research questions with a power that no single study has (Snyder, 2019). In addition, a literature review is an excellent way of synthesizing research findings to show evidence and to uncover areas in which more research is needed (Snyder, 2019).

The following sources were used in the literature search:

Printed material such as books and journals; references obtained from the journal articles' reference list of the reference lists; and electronic databases including Google Scholar, Pub Med and Ebscohost.

The search words used in retrieving relevant material included “registered nurses”, “brochure”, “knowledge, attitudes, practices”, competency “side effects”, “self-management”, and “patients’ chemotherapy administration”.

This chapter reviews literature which relates to and is consistent with the study objectives. Relevant literature addressed aspects pertaining to the development of a brochure for registered nurses to educate patients undergoing chemotherapy in the private and public health setting in KwaZulu-Natal.

2.2 REGISTERED NURSES KNOWLEDGE AND ROLE IN CHEMOTHERAPY ADMINISTRATION

Chemotherapy administration is a complex medical procedure which requires high levels of competency to prevent errors that may cause harm to patients and nurses (Eedes, Bailey and Burger, 2018). Ulas, Silay, Akinci et al. (2015) describe a study conducted in Turkey that reported 83% of nurses reported one or more errors during chemotherapy preparation whereby patients’ dosages were over-dosed or under dosed; incorrect chemotherapy drugs were administered and administration of chemotherapy to wrong patients.

Registered nurses are primarily responsible for ensuring that patients receive chemotherapy safely and they provide patients with support in order to cope both physically and

psychologically with their treatment (Flanders, 2018). Registered nurses' knowledge can influence their practice in chemotherapy administration. Registered nurses working in oncology focus on administration of chemotherapy agents, education, patient assessment and symptom management (Eedes, Bailey and Burger 2018). Solera-Gómez, Benedito-Monleón, LLinares-Insa, Sancho-Cantus and Navarro-Illana, (2022) affirm that registered nurses working in oncology need to broaden their knowledge based on continuous evolving chemotherapy and biological treatment modalities, inserting intravenous lines, accessing central lines, evaluating laboratory results, drug calculations based on body surface area are among the few responsibilities of registered nurses in oncology and they need to be competent (Solera-Gómez, Benedito-Monleón, LLinares-Insa, Sancho-Cantus and Navarro-Illana, 2022).

However, oncology nurses, frequently often feel incompetent which can be related to a lack of competence, education, and skills. Especially nurses working in oncology that do not have an added specialisation of oncology nursing, together with any training or education during their undergraduate academic and clinical exposure (Iheanacho, Opara, Ifezulumba, Omotola, Ingwu, and Anarado. 2022).

Registered nurses are at the forefront of providing chemotherapy education and knowledge to patients. Iheanacho, Opara, Ifezulumba, Omotola, Ingwu and Anarado (2022) further report that level of knowledge of cancer management among nurses is low coupled with a lack of ongoing in-service education. This is despite Registered nurses are expected to be at the forefront of providing chemotherapy education and knowledge to patients. As affirmed by Flanders (2018) registered nurses can demonstrate their knowledge by showing competence in accessing intravenous lines, monitoring infusion time and responding promptly to any adverse reactions. Registered nurses may use different methods to promote patients' education in chemotherapy (Eedes, Bailey and Burger 2018). Examples of teaching materials include, verbal instruction or printed materials (Henderson, Gosbee, Classen, and Johnson, 2015; Morgan, Laing, McCarthy, McCrate, and Seal, 2015).

Registered nurses' ability to educate efficiently can be facilitated by taking on structured teaching processes and policies that will eradicate challenges, learning is an on-going process that materializes over time and studies suggest that registered nurses must point out and set out patient learning needs before starting treatment education and ensure there is sufficient time for patients' unanswered questions and concerns (Ballard and Hill, 2016; Flanders,

2018). In-service training is an effective tool for the increase of knowledge in nurses in most institutions.

The supportive nursing care of patients with cancer can be stressful, challenging, and emotionally demanding, requiring advanced communication and counselling skills and specialist knowledge in both the theory and practice of cancer care (Al Zoubi, Saifan, Alrimawi, Aljabery, 2019). In a study conducted by De Calvo, Esperanza, and Sepulveda-Carrillo (2016), oncology nurses highlighted unfulfilled psychological expectations due to feeling sad, anxious and depressed over their patients conditions and prognosis.

Registered nurses, especially those without any specialized oncology training, often feel inadequate in meeting the challenge of cancer care due to a lack of competence, education, and skills (Maga, Balay and Jung, 2017). Therefore, holistic care that aims at improving patient's quality of life becomes a priority (Maga *et al* 2017).

Knowledge and attitude of registered nurses regarding chemotherapy exposure may be affected by their adherence to safety measures, i.e. their behaviour or performance when handling antineoplastic drugs. Hon, Teschke and Shen (2015) conducted a study on knowledge, perceptions, and behaviours of a range of health-care workers regarding antineoplastic drugs. The results indicated that there was a gap between knowledge and compliance with glove usage, and hand hygiene. They also reported the lack of awareness regarding risks of occupational exposure to antineoplastic drugs in some health care workers (Eedes, Bailey and Burger 2018). Chemotherapy administration is a complex medical procedure that requires high levels of knowledge and competency in order to prevent errors that may cause harm to patients and staff (Huff, 2018).

2.3 REGISTERED NURSES COMPETENCY REGARDING CHEMOTHERAPY ADMINISTRATION

A combination of technical skills, critical-thinking, reflection, and interpersonal strategies may be used to assess and validate the competency level of the registered nurse, (Beaver, Magnan, Henderson, DeRose, Carolin, and Bepler, 2016). Competency-based training programs can be used to increase the quantity and quality of the workforce by increasing the number of professionals with basic competency as well as improving their skills and knowledge in an area of practice (Beaver *et al* 2016). Oncology nurses follow a similar pathway in order to function as a registered professional oncology nurse, their practice

requires a cancer-specific knowledge base demonstrated with clinical expertise in cancer care (Yates, Charalambous, Fennimore, Nevidjon, So, Suh, Woodford and Young, 2020).

Unlike other specialities working in different areas within the hospital, oncology nursing success is not measured or governed by cure. Oncology care plans do not focus on early discharge planning, but each registered nurse's role includes administering toxic therapy that would sometimes cure patients or sometimes buy additional time, and taking steps to eliminate or minimize the treatment side effects (Yates, Charalambous, Fennimore, Nevidjon, So, Suh, Woodford and Young, 2020). Registered nurses may not be able to prevent treatment side effects, but they need to be competent enough to understand the important components of patient and family education designed to reduce symptoms and minimize complications (Yates *et al* 2020). As affirmed by Flanders (2018) registered nurses can demonstrate their knowledge by showing competence in accessing intravenous lines, monitoring infusion time and responding promptly to any adverse reactions.

Educating patients is an intricate process composed of practical, logical teaching strategy, evidence-based methods that require nurses to actively interact with, and support patients and meet their individual health needs (Lovell, Luckett, Boyle, Phillips, Agar and Davidson, 2014). Registered nurses in oncology are expected to be well-rounded and competent; they know what they are doing and are able to convey their knowledge by explaining things and giving useful answers to patients (Khan *et al*, 2012). The common factor that is highlighted throughout literature is the utilization of registered nurses who play a primary role in coaching patients during chemotherapy education (Khan *et al* 2012). Registered nurses are often exposed to challenges as they continue to teach and these include insufficiency of teaching materials, interruptions, heavy workloads and no managerial support which can contribute to unsuccessful patient education (Lovell, Luckett, Boyle, Phillips, Agar and Davidson, 2014).

The nurse must be able to plan strategically, put into practice, assess, and re-assess learning accomplished through educational practices. Flanders, (2018) highlights that in order to minimize information; literature recommends that no more than one to three key points should be taught per teaching session. When teaching principles are applied to educational practices, patients are able to retain information better throughout their cancer journey. The availability of reading materials such as brochures can enhance registered nurses' competency in the oncology discipline, (Laws, Lee, Taubin, Rogers and Wilson, 2018). The

registered nurses will be aware of important areas that need to be covered when educating patients undergoing chemotherapy (Flanders, 2018).

The communication between the nurse and the patient in the cancer context is considered one of the main aspects of providing this type of health-care, (Romeiro, Peuker, Bianchini and De Castro, 2016). The effectiveness of communication involves discussing test results and clinical procedures, treatment plans such as surgery, chemotherapy, radiotherapy and the disease prognosis (Hack, Degner and Parker, 2005) cited by Romeiro, Peuker, Bianchini and De Castro, (2016).

2.4 REGISTERD NURSES' ATTITUDE TOWARDS CHEMOTHERAPY

Attitude is a product of a complex interaction of beliefs, feelings, and values (Khan *et al* 2012). Registered nurses' attitudes toward chemotherapy can have a significant effect on the quality of the care they give to their patient (Zayed, Saied, El-Sallamy and Shehata, 2019). Caring for oncology patients and their families is a challenge that requires both advanced skills and appropriate attitudes regarding the provision of this care (Giezendanner, Jung and Banderet, 2017). The nursing skills required to care for these patients are holistic; for example; such care includes, management of pain and anxiety, nausea, vomiting, constipation, depression and agitation, caring for the patient's loved ones and identifying spiritual distress (Giezendanner, Jung and Banderet, 2017). Along with nurses' knowledge and competence for ensuring safe administration of treatment, nurses have to demonstrate a high-level positive attitude in order to assist cancer patients in their psychological issues resulting from chemotherapy. So nurses are responsible for the whole process of chemotherapy and beyond, hence the need to be knowledgeable, competent and have the correct attitude (Zayed, *et al* 2019).

Some nurses come through to oncology nursing where contact with sick patients and family members often occur on a daily basis. Many of these nurses consider themselves insufficiently prepared for this situation because of a lack of training (Muñoz- Pino, 2014). Some nurses may develop negative attitudes, such as patient avoidance, fear, self-doubt and communication problems (Muñoz- Pino, 2014). According to Wang, Li and Zhang (2018), attitudes comprise ideas and beliefs that are attached to specific emotions. Thus, a positive attitude towards chemotherapy care is essential for nurses coming to oncology in order to feel confident and develop the skills necessary to offer quality, holistic nursing care to oncology patients (Wang, Li and Zhang, 2018). Silva-Rodrigues, da Silva, Nunes, Cardoso and

Nascimento (2019) reinforce that concentration to the emotional needs of the patient surpasses the technical aspect of chemotherapy.

Registered nurses providing oncology care are responsible for eliminating patient's fears; they make plans to emotionally and physically prepare patients for the chemotherapy journey as well as family members (Wang, Li and Zhang, 2018). In holistic care, it is of great significance for the nurses to perceive the patient as a whole person and provide proper care accordingly. The nurses need to be equipped with the necessary skills and understanding in order to meet the physical as well as the emotional needs of the patient. The nurses' attitudes toward chemotherapy can have a significant effect on the quality of the care they give to their patients (Zayed, Saied. El-Sallamy and Shehata,2019). Access to quality nursing care is every patient's right. In order to ensure such care is provided, nurses should be aware of their own attitudes toward chemotherapy and how potential negative attitudes can affect the type of care they give to patients (Wang, Li and Zhang, 2018).

2.5 CHEMOTHERAPY ADMINISTRATION IN ONCOLOGY.

The main reason for giving chemotherapy is to relieve symptoms, reduce the size of the tumour and improve well-being (Institute for Quality and Efficiency in Health Care, 2015). Chemotherapy administrative goals are classified into four categories: neo-adjuvant, adjuvant, palliative or curative (Institute for Quality and Efficiency in Health Care, 2015). Neo-adjuvant is given to shrink large tumours before surgery, curative is given to eradicate cancer cells thereby achieving a cure and adjuvant is administered to kill remaining cancer cells after surgery (Institute for Quality and Efficiency in Health Care, 2015).

There are several routes through which chemotherapy can be administered, and they include intravenous, subcutaneous, intramuscular, intra-arterial, intra-peritoneal, topical and orally (Polovich, Olsen and LeFebvre, 2014). Chemotherapy is commonly administered intravenously and patients are able to travel to the unit for a specified number of days depending on lengths of cycles (American Cancer Society (ACS), 2015b). A combination of two or three chemotherapy drugs is often prescribed by the oncologist and is more potent at killing cancer cells (ACS, 2016). Nail changes, mouth sores, loss of appetite, hair loss and gastrointestinal upset are the most common side effects, (ACS, 2016d). However, the severity of side effects may differ based on the type of drug, the actual dosage and length of treatment cycles. Taxanes, epirubicin and carboplatin are known to cause peripheral neuropathy which may interfere with quality of life if not treated. Heart damage and hand-foot syndrome can be

caused by using doxorubicin and drugs can cause mental cloudiness resulting in unusual forgetfulness (ACS, 2016).

Despite the physical side effects that patients receiving chemotherapy may encounter, there are numerous psychosocial side effects that oncology patients may experience. One side effect is psychological distress which can impact the patients oncology projection together with affecting their quality of life (Baye, Bogale, Delie, Melak Fekadie, Wondyifraw, Tigabu and Kebede (2023). The extent of the psychological distress has been found to depend on the type and stage of the cancer. Other factors that contribute include advanced stages of cancer, uncontrolled pain relief, severe fatigue, reversal of family roles, physical weakness and the fear of cancer relapse (Baye, Bogale, Delie, Melak Fekadie, Wondyifraw, Tigabu and Kebede (2023). Psychological distress can lead numerous adverse consequences which include non-adherence to chemotherapy, delay in decision-making, increase in morbidity, decreased quality of life, financial stress and reduced survival rate Baye, Bogale, Delie, Melak Fekadie, Wondyifraw, Tigabu and Kebede (2023). Psychological distress as experienced by family/caregivers may also be present. The patients' death could also lead to complicated or traumatic grief suffered by family or caregiver (Grassi, Spiegel and Riba, 2017).

Due to the everyday contact that nurses working in oncology have with their patients, they are well placed to identifying if the patients are experiencing any emotional side effects. However, studies have demonstrated that nurses working in oncology often times fail to perceive if patients are experiencing emotional side effects (Granek, Nakash, Ariad, Shapira and Ben-David, 2019). The afore-mentioned authors highlighted three main themes as to why oncology nurses failed to identify distress in their patients. These themes included: the patients concealing their distress, the nurses' inability to recognise distress together with time limitations. This is concerning as it is the oncology nurses' responsibility to be able to identify emotional side effects and provide immediate assistance Granek, Nakash, Ariad, Shapira and Ben-David, 2019).

2.6 BROCHURE DEVELOPMENT

Brochures are used to inform clients or customers of certain benefits and can be used as a promotional document to introduce a service. The researcher's main objective is to develop a brochure for the registered nurses which will be used as means to educate patients undergoing

chemotherapy. The information on the brochure will highlight what nurses need to teach patients undergoing chemotherapy (need for having investigations, waiting time prior to chemo, side effects management, how to self-manage at home and when to make an emergency call).

In 2015, a study was conducted which included medical students who were asked to create patient education pamphlets using a standardized assessment instrument (Sandridge, (2016). The main aim of the study was to focus on improving students' communication skill toward patients. In order to assist students expand their ability to explain procedures, the radiology instructor assigned the creation of the brochure by students as a course project. Students had to select an imaging procedure including various contrasts (Sandridge, 2016). The intended participant was a patient. The brochure had to include the following information: A short explanation of the procedure, preparation required for the examination, expectations during the procedure and post-procedural instructions. One of the outcomes of the study was to learn the reasons why certain things are done as part of an imaging examination, such as removal of clothing and contrast preparation (Sandridge, 2016). Medical imaging assisted students formulate appropriate responses to patient questions and brought in understanding as to why these aspects are important. The early preparation of patient educational brochure in radiologic science stimulated students' ways of thinking about communication skills and best methods to pass information to patients (Sandridge, 2016). The study highlighted that there is a positive relationship between the quality of patient-provider communication and outcomes such as symptom management, treatment compliance, emotional health, satisfaction with treatment and retention of information, (Sandridge, 2016).

In a study conducted by Vijn, Fluit and Kremer (2017), entitled "Involving medical students in providing patient education for real patients", the findings suggested that medical education using brochures has the power to improve quality care provided to patients and contributes towards patient-provider communication. The study concluded that student-provided patient education complemented patient's health behaviour, attitude, shared decision-making and disease management, (Vijn *et al* 2017).

Another study conducted by Bester, McGarry, Di Vito-Smith, Riffkin, Kaehler, Pilot and Bwire (2016), entitled, "The effectiveness of an educational brochure as a risk minimization activity to communicate important rare adverse events to health-care professionals", the study identified that educational brochures are an important tool for communicating risk to

healthcare providers. The aim of the study was to assess the effectiveness of an educational brochure distributed to healthcare professionals as an approach to communicate uncommon and important adverse reactions (Bester, Di Vito-Smith, McGarry, Riffkin, Kaehler, Pilot and Bwire, 2016). The study concluded that educational brochures are effective channels for sharing information to patients including information on how to effectively manage adverse events (Bester, Di Vito-Smith, McGarry, Riffkin, Kaehler, Pilot and Bwire, 2016).

According to the ASCO and NCCN standardized guidelines, health education must be given to patients before initial treatment and be used to assist informing patients to make decisions regarding treatment goals and outcomes (Neuss, Gilmore, Belderson, Billett, Conti-Kalchik, Harvey and Polovich, 2016; NCCN, 2019). The gold standard of care in any oncology setting is the provision of accurate written and verbal instructions relating to patient's treatment plan. Presentation of verbal and written information will guarantee that patients are able to continue reviewing and learning from the material when they are at home after receiving initial education (Garcia, 2014).

The use of plain language enables patients to understand what they read, locate the information they need, and make use of what they find to meet their expectations, (The Plain Language Action and Information Network, n.d.). Characteristics of plain language include simplifying grammar, avoiding medical jargon and writing using an active voice, the use of italics, capital letters and abbreviations should not be used, while tables, bulleted lists and implementation of basic headings are useful (The Plain Language Action and Information, n.d). Making use of graphics and visuals can assist patients in understanding the materials more easily (The Plain Language Action and Information, n.d).

Essential quality for teaching materials or brochures should include, putting pictures in the appropriate context of the document and employing the use of whitespace where one message per visual is allowed (Centers for Disease Control and Prevention, 2014). The use of illustration must be to the point and the graphics should be clear as they are able to catch the patients' eyes and demonstrate what the words describe (Centers for Disease Control and Prevention, 2014).

Registered nurses can prepare patients by providing informational needs surrounding chemotherapy and teach patients about possible chemotherapy side effects. In a study conducted by Apor, Connell, Faricy-Anderson, Barth, Youssef, Fenton, and Mega (2018),

one of the recommendations highlighted that patients starting chemotherapy treatment need to be supported by educational materials that are suitable for them to read.

Patients who are newly diagnosed with cancer tend to be very anxious and require information that will help them cope. American Society of Clinical Oncology (ASCO) National Comprehensive Cancer Network (NCCN) guidelines affirm that patient education should be provided prior to treatment commencement. Apor, Connell, Faricy-Anderson, Barth, Youssef, Fenton and Mega (2018) concluded that timing is crucial in a study that was conducted to assess the validity of a 60-90-minute nurse-led teaching session on patients' anxiety, knowledge of treatment duration and management of side effects. Patients were given a short survey to assess their perceived knowledge on the topics that were given prior and surveys were re-administered during first day of first and second session (Apor *et al.* 2018). The findings showed a significant improvement in patient' understanding of their treatment schedule, symptom controlling management and potential adverse reaction by their first session and reduction of anxiety related to chemotherapy by the second session (Apor *et al.*, 2018).

In a study conducted by Maree, Parker, Kaplan, Oosthuizen (2016) entitled “The Information Needs of South African Parents of Children with Cancer”, the study aimed to explore information needs of parents of children treated at an academic hospital in Gauteng. Qualitative interviews were conducted and indicated and four themes emerged from the data: the shock of the diagnosis, information needs about the disease and investigations, living with the treatment, and communication of the information. There was no consensus on which information was needed at specific points in time and parents had different opinions on how information should be made available to them. The study concluded that continuous assessment allowing individualized information, according to the preference of the parents in the language of choice, could possibly meet their information needs (Maree, Parker, Kaplan, Oosthuizen 2016). The study also highlighted that information is an important need in order for parents to be empowered to face their child's cancer condition (Maree, Parker, Kaplan, Oosthuizen 2016).

2.7 REGISTERED NURSES HEALTH EDUCATION TO PATIENTS

Cancer belongs to the category of diseases with high stress potential, due to significant changes in physical health, negative prognosis for life and complex treatment (Benner, 2022). Registered nurses should be able to provide cancer education to patients by means of

reducing fear, guilt and anger (Yuce and Yurtsever, 2017). Registered nurses can improve the information they provide to patients by having a deep understanding of their duties and the nature of oncology patients. Many registered nurses have focused on managing a single symptom, such as oral mucositis or fatigue, but it is likely that meaningful improvement in quality of life can only be achieved by interventions that focus on multiple symptoms that cancer patients face (Yuce and Yurtsever, 2017).

Registered nurses in oncology deal with patients and their relatives and caregivers under very stressful conditions. They routinely confront pain, suffering, death and experience various challenges due to continuous changes of the therapeutic environment (Al-Attiyatt and Banifawaz, 2018). Routinely, patients are given counselling and health education regarding possible physical chemotherapy side effects before starting; however, often the emotional aspect that they go through before and after chemotherapy is not taken care of. Registered nurses tend to concentrate more on the physical aspects of chemotherapy and side-effects management at home. Patients often go through different emotional stages and need nurses' support (Mak and Yin Ching, 2015)

It is common for family members and friends to think that patients are fine once treatment has finished. They may not understand the actual emotional state and the psychological recovery that is about to unfold (National Cancer Institute, 2011). Having a knowledgeable, competent, health-care professional can be reassuring and help with these feelings. Once treatment has finished, there will be less visits to the health-care provider which might decrease worries about cancer (Wang, Li and Zhang, 2018)

2.8 SUMMARY

The chapter discussed the literature that was used to justify the importance of the current research study's objectives. The chapter also highlighted that educating patients regarding their emotional needs is an intricate process that requires nurses to actively interact, support patients and meet their individual health needs before, during and after chemotherapy. The next chapter will discuss the study's methodology.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

Methodology is described as a technique used by researchers to formulate a study, collect and analyse information in a structured manner (Polit and Beck, 2021). In methodology, researchers use different principles for addressing the given research problem. This chapter outlines the research approach, paradigm, design, setting, sampling, data collection and data analysis.

3.2 RESEARCH DESIGN

Creswell (2014) stated that mixed methods designs may be fixed or emergent, and researchers need to be acquainted with the approach that they use considering the research problem. The current study took on an explanatory sequential mixed methods design where quantitative and qualitative methods were planned at the beginning of the research process, and the procedures were implemented as pre-planned. A mixed methods design can provide comprehensive and detailed data in order to answer research questions and achieve the research objectives. Creswell and Clark (2014) affirm that the explanatory sequential design is a two-stage mixed method design. This study appropriately employed the explanatory sequential design, for which the researcher collected quantitative data first, analysed it, and then followed with qualitative data collection.

3.2.1 Strengths of explanatory sequential design

The researcher has decided to use this design because data were collected in stages (quantitative followed by qualitative). The qualitative stage was guided by the findings from the quantitative questionnaire. The researcher chose this design because the findings are written in a quantitative section followed by a qualitative section providing a clear presentation for readers.

3.2.2 Challenges in using sequential explanatory design

Implementing the two stages can be time consuming and qualitative data collection takes longer even though it requires few participants. Researchers need to recognise that enough time must be planned for the qualitative phase.

3.3 RESEARCH APPROACH

The current study adopted a sequential explanatory mixed methods approach, which combines quantitative and qualitative approach to collect and analyse data (Tashakkori and Cresswell, 2007). The approach allowed the researcher to have a dialogue with the participants following a quantitative stage in order to deepen understanding of the need for developing a brochure. Mixed methods research does not have one approach to research but it allows the researcher to use variation depending on the research objectives (Shannon-Baker, 2015).

The use of a single approach has limitations when used on its own, and the main aim of using mixed methods is to help researchers eliminate those limitations and approach questions from a different perspective, (Creswell, 2014). The critical issue is to integrate quantitative and qualitative information which is greater than the sum of the individual parts (Fetters and Freshwater, 2015). The table 1 below illustrates different approaches used to address the research objectives.

Table 2: Summary of the Research Process

Research Objectives	Approach
1. To describe the knowledge of registered nurses regarding chemotherapy administration in the oncology settings.	Quantitative
2. To explore registered nurses' attitudes regarding chemotherapy administration in the oncology settings.	Quantitative
3. To determine the competency needs of registered nurses regarding chemotherapy administration in the oncology settings.	Quantitative
4. To develop a brochure to be used by registered nurses working in oncology settings to educate patients undergoing chemotherapy, in public and private oncology settings.	Qualitative Integrating qualitative and quantitative

3.4 RESEARCH PARADIGM

Pragmatism was the research paradigm underpinning the study and it allowed the researcher to find solutions to a real world problem. Pragmatism is interested in determining the meaning of things-it is outcome-oriented and places importance on the research question, (Johnson and Onwuegbuzie, 2006). According to Tashakkori and Teddlie (2010), “Pragmatism allows researchers to study what is of value to them, study it in different ways that they consider appropriate, and use the results in ways that can bring about positive consequences”.

3.5 RESEARCH SITES

The researcher selected three oncology settings in which to conduct her study. One was a private outpatient setting and the two were public in/out-patient settings.

Setting A

The private cancer centre where the research took place is a group practice that had experienced oncologists who specialise in chemotherapy and radiation. It is a day centre that offers services to the population of about 5000 with main branches situated in Durban and Hilton. Chemotherapy suites accommodate about 13 seated oncology patients receiving chemotherapy at a time from Monday to Friday between 07h30 and 16h30. Approximately 25-30 patients receive treatment on an average day. There are 12 partners who consult between different venues in KwaZulu-Natal and the other satellite clinics, including Pietermaritzburg, Hillcrest, Port Shepstone, Ladysmith and Gateway. The setting had 20 registered nurses who administer chemotherapy, support and monitor the flow of patients through the practice, assist doctors with procedures such as paracentesis, lumbar punctures, mix and administer chemotherapy, and provide health education to patients and family members regarding chemotherapy, radiotherapy side effects and palliative care.

Setting B

A public/private partnership hospital that is situated in eThekweni District in KwaZulu-Natal opened in 2002 with occupancy of 846 beds. Patients are referred from provincial regional hospitals and the Eastern Cape through an electronic or telephonic booking system. World-class tertiary and central services are provided through the provision of first-class facilities by trained and competent people working together and always putting the needs of patients first.

The setting has 14 oncologists working in between the oncology clinics and wards. The oncology domain consists of a solid tumour ward, oncology clinic, gynaecology and oncology clinic, paediatric oncology, haematology, radiotherapy and nuclear medicine. There were 36 registered nurses between the oncology clinics and wards who administer chemotherapy, support patients as they receive chemotherapy and radiation therapy.

Setting C

The institution is a referral hospital providing 100% tertiary services to patients and is located in Pietermaritzburg which falls in the Umgungundlovu Health District. Tertiary services are offered to the Western half of Kwazulu-Natal and include five health districts with a total population of 3.5 million. The hospital has 530 beds and is presently utilizing 507. The facility provides 24hour emergency services and only accepts patients who have been referred and accepted by a doctor or have a referral letter from regional or district hospitals like Edendale, Northdale, Montobello, Appelsbosch, etc. The institution is one of the three that provides oncology services, including radiotherapy in KwaZulu-Natal. The institution has the following oncology units, oncology clinic, oncology ward-palliative and radiation, paediatric ward and paediatric clinic. The setting had 29 registered nurses and 12 oncologists looking after and support patients receiving chemotherapy and radiation.

3.6 STUDY AND TARGET POPULATION

Polit (2021) defines the population as the total number of objects, subjects, or members that meet specific criteria. The study population was all registered nurses working in the three selected oncology settings. The target population were those registered nurses who have worked in the oncology units for a period of at least six months and above.

Inclusion criteria:

All registered nurses working in the oncology units during day and night shift that possess the South African Nursing Council registration.

b.) Registered nurses who have worked in the units for a period of at least six months in order to have taken care of oncology patients and administer chemotherapy.

c.) Registered nurses who have voluntarily consented to participate in the study.

Exclusion criteria:

Registered nurses not working in the oncology units

Part-time or agency nurses

Registered nurses who did not give consent

The table below (Table 3) shows the three settings, the various oncology wards/department and the number of registered nurses employed.

Table: 3. Registered Nurses employed at the three settings

TARGET POPULATION PER SETTING	Units/ward	Registered Nurses
SETTING A	Chemotherapy suites	20
	Total	20
SETTING B-IN/OUTPATIENT SETTING	C3 East-solid tumours-	8
	Oncology clinic	8
	Gynaecology and oncology	7
	Nuclear Medicine	3
	Haematology	5
	Radiotherapy	2
	Paediatric Oncology	3
Total	36	
SETTING C-IN/OUTPATIENT SETTING	Oncology Clinic	7
	Oncology Ward-Palliative and Radiation	7
	Paediatric Ward	12
	Paediatric Clinic	3
	Total	29
	Approximate total of nurses	85

3.7 SAMPLING AND SAMPLING TECHNIQUE

Sampling is described as the process of selecting a portion of the population to represent the entire population (Polit and Beck, 2021). A sample is a portion of the target population selected to participate in the research study. The sample for the current study was all registered nurses working in the oncology units. The nature of sampling is that it should maximise representativity and allow for generalization of the selected population as precisely as possible, (Polit and Beck, 2021). The researcher used non-probability census sampling for quantitative data and all recruited participants were informed about the multi-staging processes (stages) in data collection.

3.8 SAMPLE SIZE

It is generally recommended to utilize the largest sample size feasible, as larger samples tend to be more representative of the population. Conversely, smaller samples are more likely to be non-representative and may yield less accurate results (Polit and Beck, 2021). The researcher consulted with a statistician to assist with the sample size calculation, and with the use of the Stata V15 calculator, was advised by the statistician to utilise the total population of 85 participants. On the information sheet that was given to participants during the first stage of data collection, the information did ask the participants to indicate if they would be interested in participating in an interview. A total of eight nurses consented to be interviewed, interviews were carried out across three settings, some interviews were face-to face in a private room during off duty time and some interviews were conducted telephonically during off duty time. For qualitative data interviews were held until data saturation was reached.

3.9 SAMPLE REALISATION

The researcher anticipated 85 participants as a sample size and distributed 85 questionnaires. Some potential participants did not consent as they were off-sick, or too busy to participate in the study. Sixty four participants inclusive of all three settings formed the final sample size, thus the response rate was 75.29%.

3.10 DATA GATHERING

3.10.1 QUANTITATIVE DATA GATHERING

The researcher was able to visit the sites and personally handed the questionnaires to participants and collected them at their earliest convenience. Quantitative data were analysed

before collecting qualitative data and reports were generated as well as recommendations (Annexure G).

3.10.2 DATA GATHERING METHOD

After Covid 19 pandemic restrictions were lifted, questionnaires were handed to respondents personally by the researcher. The participants were able to complete the questionnaire at their convenience and the researcher collected them after they were completed. The data collection process was done in stages. The researcher was able to visit the sites and personally handed the questionnaires to participants and collected them at their earliest convenience.

3.10.3 DATA GATHERING INSTRUMENT

The researcher collected data from all three settings. The researcher made use of the questionnaire by Brixley and Mohan (2010) which is available on open access. The researcher has adopted and adapted the tool by modifying some questions in the tool in order to suite the current study (Annexure G). Areas of interest were knowledge, attitudes and competency of registered nurses regarding chemotherapy administering in the oncology settings. A five- point Likert scale required participants to state their response with strongly disagree, disagree, neutral, strongly agree and agree. The questionnaire had sections, A to E. The researcher used the conceptual KAP to formulate the research questions and objectives. The five-point Likert scale required participants to state response with strongly disagree, disagree, neutral, strongly agree and agree. Table below illustrates the research instrument addressing the first three research objectives.

Table 4: Research Instrument Addressing Research Objectives (Quantitative Stage 1).

Research Objectives	Items on questionnaire	Conceptual framework KAP Model
1. To describe the knowledge of registered nurses regarding chemotherapy administration in the oncology settings.	Section B1-5	Knowledge
2. To explore registered nurses' attitudes regarding chemotherapy administration in the oncology settings.	Section C1-6	Attitudes
3. To determine the competency needs of registered nurses regarding chemotherapy administration in the oncology settings.	Section D1-4	Competency

3.10.4 STAGE 1-QUANTITATIVE DATA COLLECTION

The researcher was able to visit the sites and personally handed the questionnaires to participants and collected them at their earliest convenience. Quantitative data were analysed before collecting qualitative data and reports were generated as well as recommendations (Annexure G). The quantitative questionnaire had open-ended questions, the answers given and the additional findings indicated that there was a need to conduct qualitative interviews in order to get more information.

3.11 INSTRUMENT RELIABILITY

Cronbach's alpha reflects if the tool has been designed in such a way as to measure accurately the variable of interest (Casanoves, González, Salvadó, Haro and Novo, 2015). The questionnaire used in the current study measured .820 which indicates that it is reliable and measured what it was intended for. The table below illustrate the reliability of the instrument.

Table 5: Reliability of the instrument A Self-Assessment Tool for Oncology Nurses (Brixey, and Mahon, 2010)

Name of the scale	Cronbach’s Alpha	Number of items
Overall Scale	.820	22
Knowledge	.848	10
Attitudes	.529	6
Competency	.820	6

Quantitative data were analysed before collecting qualitative data and reports were generated as well as recommendations (Annexure G).

3.12 PILOT STUDY

The researcher approached five registered nurses to complete the questionnaire. The goal of the pilot study was to test and validate the reliability of the instrument. The registered nurses that were part of the pilot study were not included in the main study. The results of the pilot study indicated that the questionnaire items did not need revision (quantitative stage).

3.13 QUALITATIVE DATA GATHERING

3.13.1 DATA GATHERING METHOD

The semi-structured interviews offered the participants an opportunity to describe their own experiences in providing knowledge to their cancer patients and gaps in the information that they provide. In order to obtain in-depth information from participants, the researcher carefully asked open-ended questions and utilised probing questions in order to allow and encourage participants to share their own experiences freely (Annexure H1 and H2). The open ended questions on the questionnaire and findings (stage 1) created a need to conduct interviews and obtain more information. The various components of the KAP model assisted in the development of the interview questions and probing questions during the interview.

3.13.2 DATA GATHERING INSTRUMENT

The researcher conducted eight semi-structured interviews, amongst the three settings. An interview guide was developed, based on the quantitative findings. Questions posed to the participants included: Nurses knowledge, attitudes and competency towards chemotherapy; what would guide and enhance registered nurses’ towards chemotherapy, resources and

information to offer a patient. The researcher also used probes to elicit additional information from the participants (Annexure H1). A p-value < 0.05 was considered significant.

3.13.3 PLANNING OF QUALITATIVE DATA GATHERING

The semi-structured interviews offered the participants an opportunity to describe their own experiences in providing knowledge to their cancer patients and gaps in the information that they provide. In order to obtain in-depth information from participants, the researcher carefully asked open-ended questions and utilised probing questions in order to allow and encourage participants to share their own experiences freely (Annexure H1 and H2). The open ended questions and findings created a need to probe further to obtain more information.

3.13.4 STAGE 2 PART ONE (QUALITATIVE)

The researcher invited registered nurses to participate in a face to face or virtual interview. Interviews were conducted in English and lasted between 20 and 30 minutes using the interview guide and probing questions (Annexure H1). In each interview the researcher explained the purpose of the study and gave assurance of confidentiality, privacy and the right to withdraw at any time without fear of recrimination. Following which, willing participants completed an informed consent for the interview. Participants were informed that the interview would be audio recorded. After eight interviews the researcher determined that redundancy and completeness of the data had been reached. Objective number 4 was addressed which was to develop a brochure to be used by registered nurses working in oncology settings to educate patients undergoing chemotherapy, in public and private outpatient oncology settings

3.13.5 STAGE 2 PART TWO

Following a meeting and a discussion with the supervisor, there was a need to return to participants for more information from the participants that formed part of both quantitative and qualitative data collection that formed part two of the interviews (Annexure G2). Participants that were available were interviewed during their off-duty time and the interview took between 10 to 15 minutes (stage 2-part one-Annexure G1). The researcher made field notes during the interview and the audio recorded

3.13.6 STAGE 3-BROCHURE DEVELOPMENT

The researcher developed a brochure using quantitative and qualitative data collected from participant together with participants' recommendations. This stage captured all the meanings and themes which generated in the formation of a brochure to be used in the oncology settings.

3.13.7 STAGE 4 A- FOCUS GROUP ONE

The researcher invited registered nurses that had formed part of the quantitative and qualitative data collection to a virtual focus group interview. Four registered nurses responded to the invitation. The objective of the focus group interview was to assess the relevance of a developed brochure and to obtain the registered nurses input. The researcher worked on refining the brochure, making it user friendly (Annexure I).

3.13.8 STAGE 4 B-FOCUS GROUP 2- EXPERTS INTERVIEW

The researcher approached health professionals who have been in oncology for a long time and with oncology qualifications to review the brochure and give their input. The experts consisted of 2 Radiation and Medical Oncologists, 1 Registered Oncology unit manager, 1 Oncology Senior registered Nurse and 1 Oncology Trial Co-ordinator. Experts were given the developed brochure to further critique it such that the final product best suited the aim and objectives of the study. The final stage of brochure presentation took place after the researcher conducted interviews virtual and face to face with various experts in the field of oncology that focused on what the experts think about the brochure. Experts' recommendations were incorporated into the final version of the brochure (Annexure I).

3.13.9 STAGE 5-BROCHURE PRESENTATION

The final product (brochure) was presented to the oncology settings for use and the researcher will in future evaluate its use before it is fully adopted by other oncology settings who may want to use it (Annexure J).

3.14 DATA ANALYSIS

3.14.1 QUANTITATIVE DATA ANALYSIS

The statistical data analysis was conducted in R Statistical computing software of the R Core Team, 2020, version 3.6.3. The descriptive statistics of numerical measurements were summarized as the minimum, maximum, quartiles, interquartile range, means, standard

deviation and the coefficient of variation. In addition, histograms or boxplots were used for the visual display of the descriptive patterns. On the other hand, the categorical variables were described as counts and percentage frequencies where pie, simple, component and multiple bar charts was used to visually display the categorical variables.

Correlation analysis was applied to determine the association between different numerical measurements. On the other hand, Likert plots and heatmaps were used for handling multidimensional presentation of the categorical data. Where applicable, statistical test results was annotated on panelled graphs of categorical data. Depending on the distribution of the numerical variables between two independent groups, mean or median differences were assessed using either t-test or Wilcoxon respectively. In order to assess the mean difference of numerical variables across at least three levels of a categorical variable ANOVA test was used for normally distributed measurements and Kruskal Wallis for assessing the median difference of the non-normally distributed measurements. In the case of significant mean difference, post-hoc tests were conducted using Tukey's HSD single-step multiple comparison procedure and similarly with Dunn test for significant difference in the medians.

3.14.2 QUALITATIVE DATA ANALYSIS

Qualitative data analysis occurs concurrently with data collection but for the purpose of the current study the researcher analysed qualitative data based on the analysis steps as described by Graneheim and Lundman (2004). Manifest content analysis, is a method whereby data collected is compared in order to arrange it into categories and themes, which reappear throughout the data.

The first step: Reading the transcribed interview to get the feel of the whole. As suggested by Graneheim and Lundman (2004), the researcher started to see patterns in the data.

Second step: The text was divided into smaller parts called meaning units. A meaning unit contains aspects related to each other through their content or context and always conveys one central meaning.

Third analysis step: The process of condensation, whereby the meaning units were shortened, but still keeping the central meaning.

Fourth step: Labelling each condensation with a code.

Fifth step: The coded condensations are grouped into categories based on how the different codes are related.

Final analysis step: This is the creation of themes.

A theme can be considered as a red thread of underlying meaning that ties the data together.

Results are therefore related in such a way that they carry readers to a broader understanding of the phenomenon or concept that is the focus of the study (Graneheim and Lundman, 2004).

3.14.3 MIXING OF QUANTITATIVE AND QUALITATIVE DATA

Integration is not a well-defined process and its role in mixed methods research requires more exploration. Rating the quality of integration as one of the primary characteristics for assessing mixed methods research is still developing (Onwuegbuzie and Johnson, 2006). Integrating qualitative and quantitative components of a mixed methods study should provide a synthesis so that they are interdependent but still retain their unique features (Onwuegbuzie and Johnson, 2006).

In the current study, integration occurred during interpretation of quantitative and qualitative strands. The researcher analysed both sets of data, drew conclusions that reflected what was achieved from the combination of results from the qualitative and quantitative data. The focus is on the development of the brochure.

3.15 MECHANISM TO ENSURE VALIDITY AND RELIABILITY

In mixed methods research, it is significant to seek to compensate the weaknesses of one method with the strengths of another method (Onwuegbuzie and Johnson, 2006). Validity differs in quantitative and qualitative research, but when used in both strands, it serves the purpose of checking on the quality of the data, the results and the interpretation. In quantitative, the researcher concentrates on issues of validity at two levels: the quality of the scores from the instrument used and the quality of the conclusions that can be drawn from the results of the quantitative analyses (Onwuegbuzie and Leech, 2006). Qualitative validity comes from the analysis procedures of the researcher, based on information obtained from participants. In qualitative research, reliability plays a minor role as it relates primarily to the reliability of multiple coders on a team to reach agreement on codes for passages in text (Onwuegbuzie and Johnson, 2006).

3.15.1. ENHANCING CREDIBILITY AND TRUSTWORTHINESS

The process of building rapport and trust to foster detailed responses requires a prolonged engagement between the researcher and the participants. The researcher can promote this process by understanding the participants and phenomenon of the study and allowing adequate time in collecting data. Member check was done verbally and via email to confirm with participants that what was transcribed was the reflection of what they said during the interview.

Credibility

Credibility refers to the perspectives of participants regarding the accuracy of data, as well as the researcher's interpretation and representation of the data (Polit and Beck, 2021). The researcher spent sufficient time with the participants virtually and face to face in order to develop rapport throughout data collection process. The participants were encouraged to be (open and free) during the interviews. The researcher hoped that the data collected would provide thick descriptions. The researcher and supervisor independently reviewed the data and then discussed and agreed on coding. Typed verbatim interviews were presented to the participants to check if the interviews were a true reflection of the descriptions which confirmed the findings. Participants were agreeable to the interviews and did not suggest any changes.

Dependability

Dependability may be achieved when another researcher agrees with the “decision trail” created during the research process (Polit and Beck, 2021). A study would be deemed dependable through the researcher's process and descriptions, and if the study findings were replicated with similar participants in similar conditions (Polit and Beck, 2021). The researcher maintained dependability by compiling a detailed audit trail throughout the study processes.

Confirmability

Confirmability can be described as the researcher's ability to indicate that the data collected represents participants' responses and not the researcher's biases (Polit and Beck, 2021). The researcher recorded her reflections throughout the study (chapter 7). The researcher promoted

confirmability by describing how conclusions and interpretations were established and that the findings are derived directly from the data.

Transferability

Researchers can associate the results with their own experiences and findings should be able to be applied to other settings or groups (Houghton, Casey, Shaw and Murphy, 2013; Polit and Beck, 2021). Sufficient information needs to be provided by the researcher to enable the readers to assess and decide if the findings are transferable to other settings (Shenton, 2004). Transferability is comparable to generalizability, whereby the researcher provided clear methodological approach and sufficient (thick descriptive data).

3.16 DATA MANAGEMENT

Quantitative

The collected quantitative data were coded, double-checked for completeness, and entered into Microsoft Excel data sheet, the researcher utilized the statistician services, then analysed using SPSS software version 26. Questionnaires were kept in a sealed envelope to ensure confidentiality.

Qualitative

In order to protect the participants, pseudonyms were used during the semi-structured interviews to ensure confidentiality. Qualitative data were transcribed from the voice recordings, word for word. Manifest content analysis was used to analyse the data.

3.17 DATA STORAGE

All electronic data have been secured with a password known only to the researcher and supervisor. All paper and electronic data will be stored for five years in the supervisor's lockable room and thereafter be destroyed according to the University of KwaZulu Natal policy.

3.18 DISSEMINATION OF RESULTS

The researcher aims to communicate study findings to the appropriate stakeholders in the following ways:

1. Setting up a virtual meeting with the Health Services Manager to discuss the results, recommendations and possibly implementation of the developed brochure use in the oncology units. A copy of recommendations will be emailed to them.
2. Papers will be presented in professional conferences, articles in journals to share best practices.
3. The university library will have a soft copy of the study for ease of access to all.
4. Hard copies of the research report will be handed to all stakeholders as reference for future needs.

3.19 ETHICAL CONSIDERATIONS

In order to protect participants' human rights, moral behaviour and study integrity, accepted ethical codes and guidelines need to be adhered and considered by researchers throughout the research process. Approval was granted by Senior Management of the three settings; Department of Health, KwaZulu-Natal Provincial Government and the Biomedical Research and Ethics Committee of the University. (Approval number BREC00003935/2022–Annexure F). Letter of support from setting A, B and C was received Annexure D1, D2 and D3).

Emanuel (2004) proposes the following ethical principles to be observed when conducting research. The ethical principles are discussed below.

3.19.1 INFORMED CONSENT

All participants that volunteered to take part in the study signed and dated a consent document before the actual study commenced (Annexure B1). Prior to data collection, registered nurses working in the oncology wards/clinics were each given an information pack (Annexure A). The information highlighted the risks and benefits of the study. All information was kept confidential and the researcher ensured that informed consent was signed by all participants who agreed to participate in this study.

3.19.2 COLLABORATIVE PARTNERSHIP

In this study there was a joint collaboration between the researcher and the participants, and their primary objective was developing a brochure for registered nurses working in oncology

to educate patients undergoing chemotherapy, and this will assist in the fast-tracking of patient's chemotherapy journey.

3.19.3 SOCIAL VALUE

The current study will generate knowledge that will lead to improvements in the oncology settings. Without social value participants will be exposed to risks for no reason and resources will be wasted (Emmanuel, Wedler and Grady, 2004). The study will benefit registered nurses in oncology and ultimately benefit patients undergoing chemotherapy.

3.19.4 FAIR SUBJECT SELECTION

Consistent with the scientific purpose, participants should be selected in a way that enhances benefits to individuals and society and minimizes the risks (Brink, Van der Walt and Van Rensburg, 2012). Participants included registered nurses working in oncology wards/clinics in the selected settings, selection was based on the inclusion and exclusion criteria mentioned above.

3.19.5 FAVORABLE RISK-BENEFIT RATIO

The current research study was not invasive and did not contain sensitive questions that would cause harm to the participants. The researcher ensured the participants' right to protection by securing the wellbeing of the participants from harm and discomfort in any aspect of life.

3.19.6 INDEPENDENT REVIEW

In order to ensure public accountability, independent ethical review of all clinical protocols is necessary. The researcher enhanced accountability and transparency of the research to its prospect participants by use of the Biomedical Research Ethics Committee to ensure that the research meets the ethical requirements and it is not exploitative (see annexure F).

3.20.7 RESPECT FOR RECRUITED PARTICIPANTS

The researcher had an obligation to ensure that there was no harm caused to participants during the research study. The researcher ensured that the organisational culture, image and reputation of the selected oncology settings is respected and the study findings will not be on any publication without the institutional permission. No participants' name appeared on the

questionnaire, only the consent form that needed to be signed to indicate that the participants had voluntarily agreed to participate in the study.

3.20 SUMMARY

This chapter has demonstrated how mixed method can be useful in research and supporting how both methods can be used in order to get more in-depth information. The chapter also highlighted different stages involved in data collection before coming to conclusions as well as ethical consideration. The next chapter will present findings of data analysis.

CHAPTER FOUR

PRESENTATION OF THE RESULTS

4.1 QUANTITATIVE RESULTS

This section outlines the findings from the questionnaires completed by registered nurses working in the oncology units in public and private oncology settings in KwaZulu-Natal. The data analysis occurred in accordance with the study objectives.

The SPSS version 26 was used to capture the data from the questionnaires. The researcher assisted by the statistician, utilised statistical analysis, using descriptive statistics with frequencies and valid percentages. Questionnaire questions have been divided into sections.

Section A -Demographic Details

Demographic data in this study were composed of gender, age, experience as registered nurse, and highest professional qualification. The presentation of the demographic data of the sample is in terms of the following aspects.

4.1.1 Gender of the respondents

Figure 2: Gender of the respondents

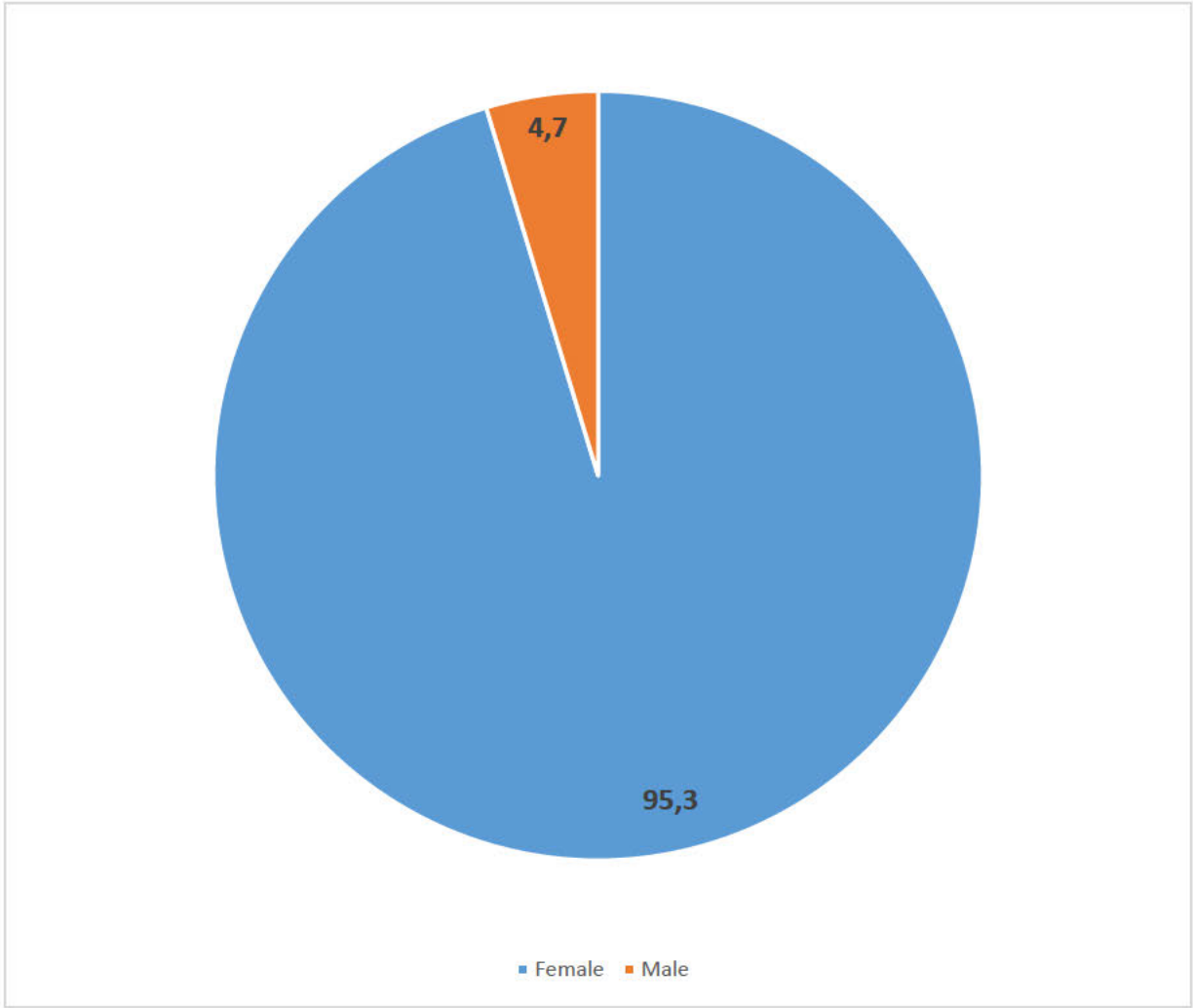
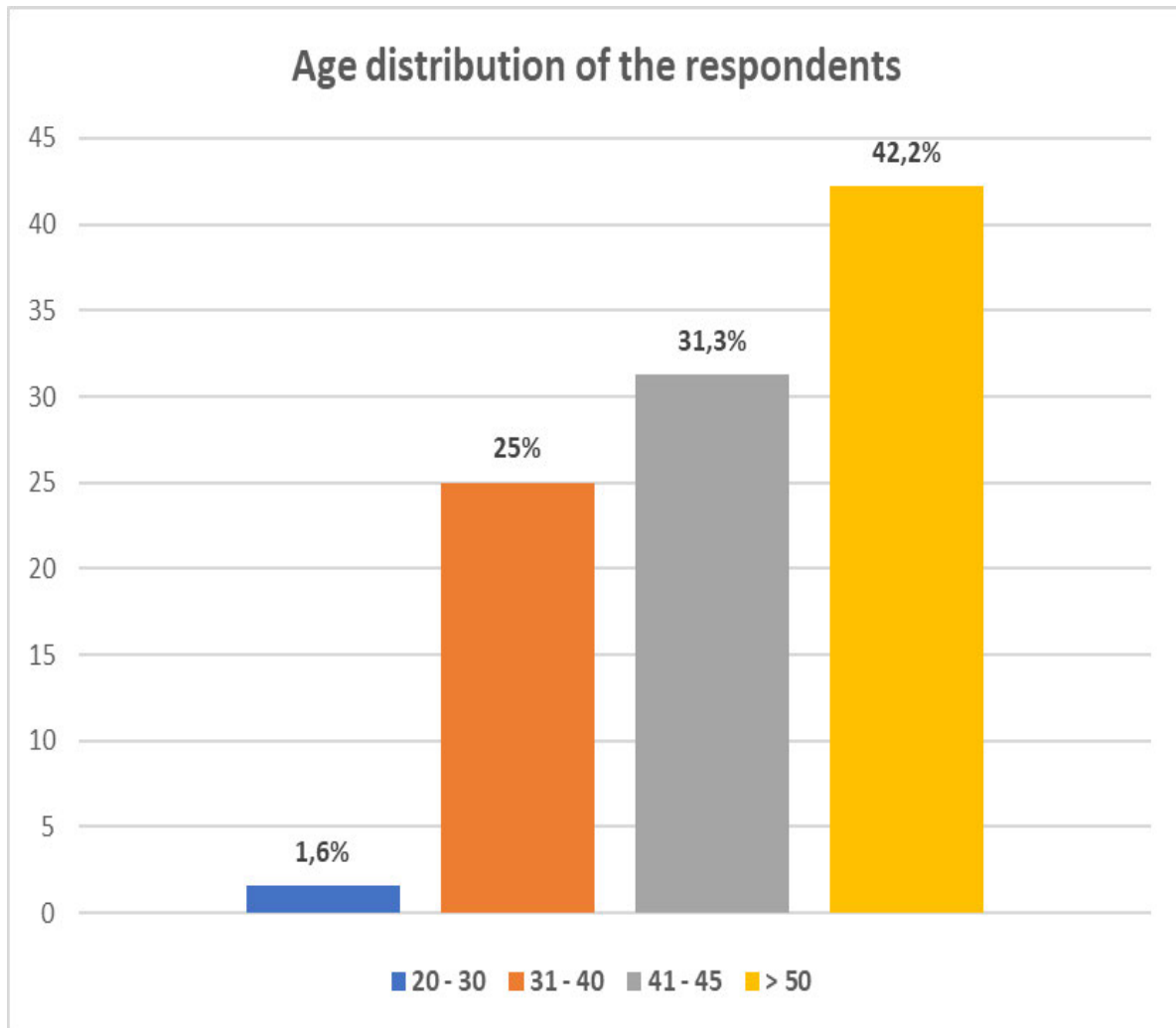


Figure 2 shows that 95.3% (n = 61) of the respondents were females, while only 4.7% (n = 3) of the respondents were male nurses.

4.1.2 Age of the respondents

Figure 3: Age of the respondents



Respondents who participated in this study were all aged 20 years and above. Figure 3 shows that 42.2% (n=27) of the respondents were 50 and above, 31.3 % (n=20) were in the age bracket of 41-45, 25% (n=16), participants were between the age of 31-40 years and minority 1.6% (n=1) was in the bracket of 20-30.

4.1.3 Years of experience as registered nurse

Figure 4: Years of experience respondents

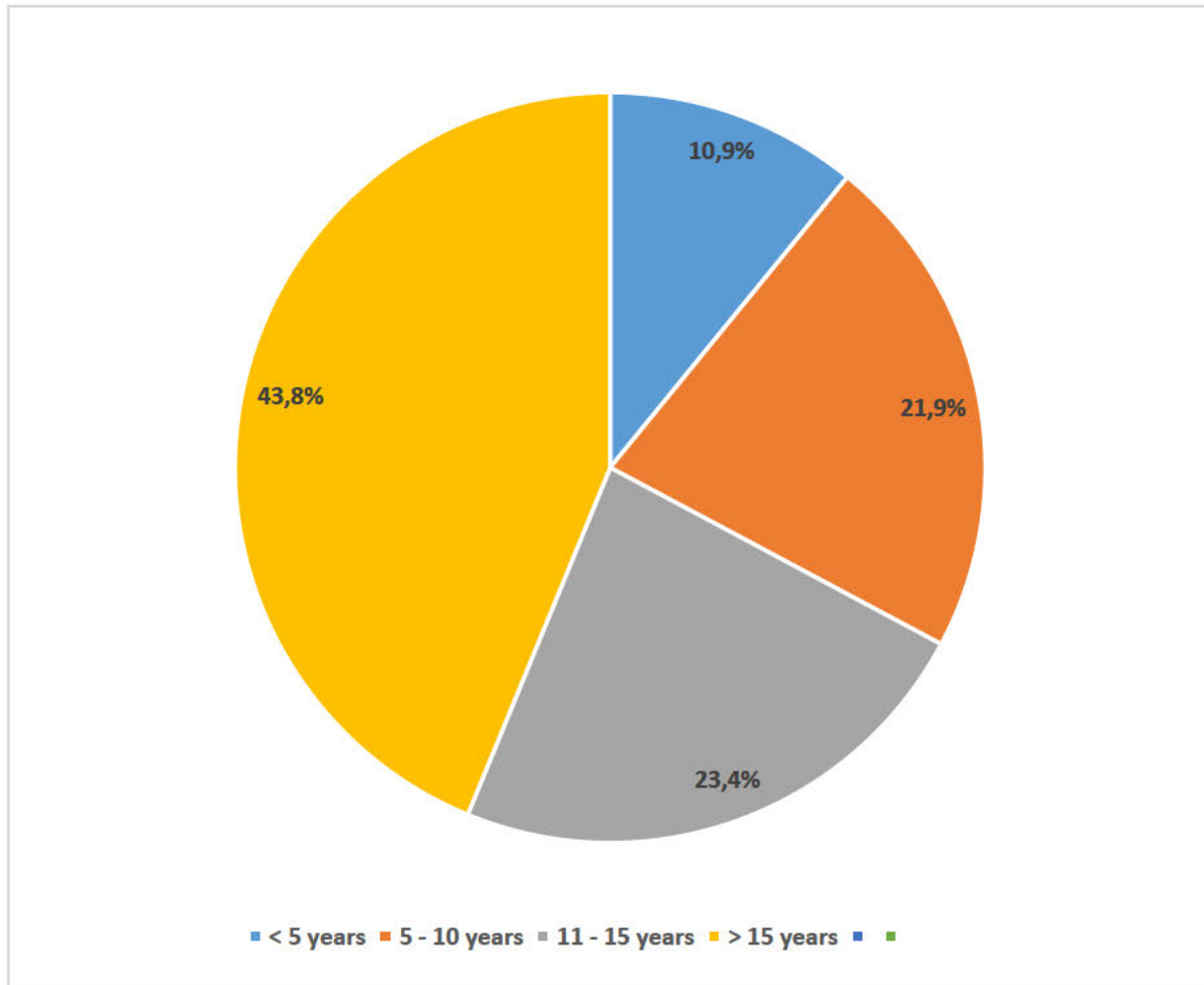
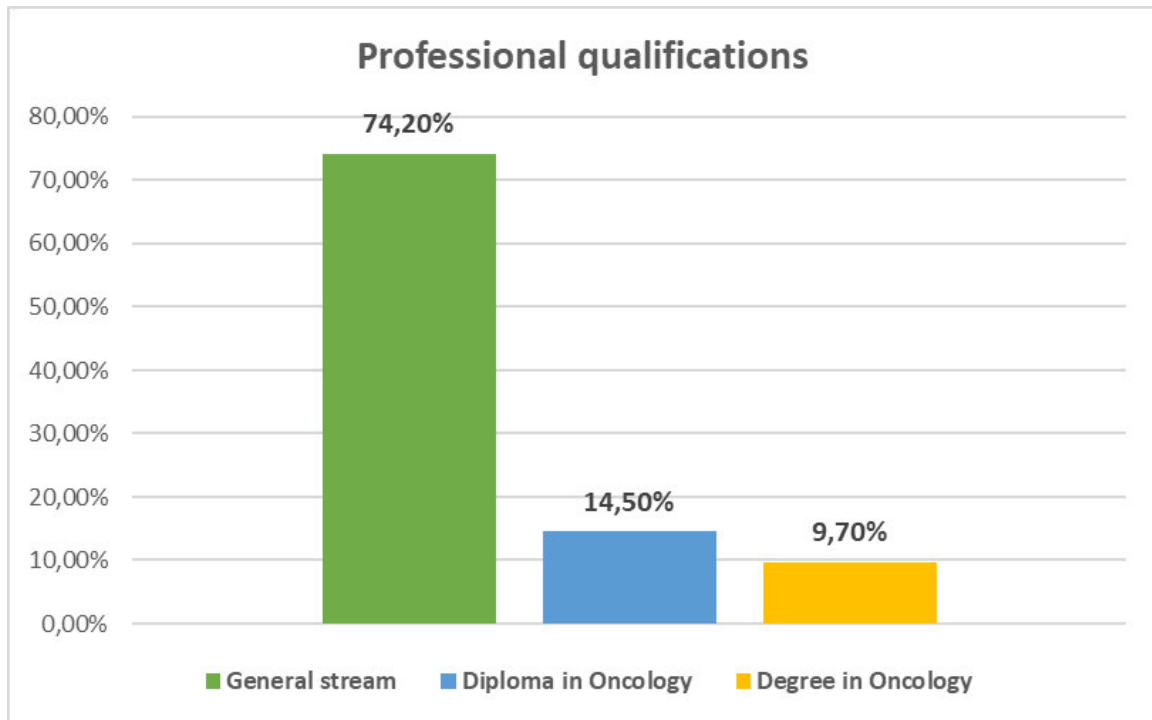


Figure 4 shows that a greater number 43.8% (n=28) indicated that they have worked for greater than 15 years, 23.4% (n=15) have worked for 11-15 years and 21.9% (n=14) have worked for 5-10 years while 10.9% (n=7) have worked for less than 5 years.

4.1.4 Figure 5: Professional qualifications of the respondents



Regarding the respondent's professional qualifications, respondents 74.2% (n=46) were registered nurses in the general stream, 14.5% (n=9) were registered nurses with diploma in oncology and minority 9.7% (n=6) registered nurses with degree in oncology as seen in figure 5.

Section B- Knowledge of registered nurses regarding chemotherapy administration.

To describe the knowledge of registered nurses regarding chemotherapy administration, the respondents were asked on 10 statements.

The five-point Likert scale required participants to state response with strongly disagree, disagree, neutral, strongly agree and agree.

Table 6 Registered Nurses Knowledge regarding Chemotherapy Administration (N=64)

Items	Strongly disagree % (n)	Disagree % (n)	Neutral % (n)	Agree % (n)	Strongly agree % (n)	Total
1. To guide me on daily administration of chemotherapy, I have enough information.	0.0 (0)	6.3% (4)	17.2% (11)	35.9% (23)	40.6% (26)	100% (64)
2. To guide me on daily administration of chemotherapy, I have enough knowledge.	0.0 (0)	4.7% (3)	17.2% (11)	43.8% (28)	34.4% (22)	100% (64)
3. To guide me on daily administration of chemotherapy, I have enough skills.	0.0 (0)	0.0 (0)	14.1% (9)	43.8% (28)	42.2% (27)	100% (64)
4. I know how to access chemotherapy port.	3.2% (2)	6.3% (4)	6.3% (5)	44.4% (28)	39.7% (25)	100% (64)
5. I know how to select veins for chemotherapy administration.	3.2% (2)	4.8% (3)	7.9% (6)	42.9% (27)	41.3% (26)	100% (64)
6. Regarding oncological management, I can manage patients with pains	0.0 (0)	1.6% (1)	9.5% (6)	46.0% (30).	42.9% (27)	100% (64)
7. Regarding oncological management, I can identify adverse reactions.	0.0 (0)	1.6% (1)	3.1% (2)	51.6% (33)	43.8% (28)	100% (64)
8. Regarding oncological management, I can prevent extravasation during chemotherapy administration.	0.0 (0)	0.0 (0)	4.7% (3)	48.4% (31)	46.9% (30)	100% (64)
9. Regarding oncological management, I can manage oncological emergencies (spinal cord compression, pulmonary emboli and other complications)	1.6% (1)	9.5% (6)	15.9% (11)	41.3% (26)	31.7% (20)	100% (64)

10. I know how to calculate body surface area to ensure correct dosage.	7.9% (5)	11.1% (7)	15.9% (10)	38.1% (25)	27.0% (17)	100% (64)
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Regarding the question posed on whether respondents had sufficient information on daily administration of chemotherapy; 40.6% (n = 26) of the respondents strongly agreed and 35.9% (n = 23) agreed while 6.3% (n = 4) strongly disagreed. However, 17.2% (n = 11) were neutral.

Whether respondents had enough knowledge to guide them on daily administration of chemotherapy, (Line 2) 34.4% (n = 22) of the respondents strongly agreed and 43.8% (n = 28) agreed while 4.7% (n = 3) strongly disagreed. Whilst 17.2% (n = 11) were neutral.

The results in Line 3 show that 42.2% (n = 27) of the respondents strongly agreed and 43.8% (n = 28) agreed with the fact that they have enough skills to guide them on daily administration of chemotherapy. However, 14.1% (n = 9) were neutral.

In Line 4, majority of the respondents, 39.7% (n = 25) and 44.4% (n = 28) respectively strongly agreed and agreed that they know how to access chemotherapy port. However, 3.2% (n = 2) and 6.3% (n = 5) respectively strongly disagreed and disagreed, while 6.3% (n = 4) remained neutral.

On how to select veins for chemotherapy administration, (Line 5), 41.3% (n = 26) of the respondents strongly disagreed and 42.9% (n = 27) agreed, while 3.2% (n = 2) strongly disagreed and 4.8% (n = 3) disagreed. However, 7.9% (n = 6) were neutral.

Regarding oncological management (line 6), 42.9% (n = 27) 46.0% (n = 30) of the respondents strongly agreed and agreed that they can manage patients with pains respectively. However, 1.6% (n = 1) disagreed and 9.5% (n = 6) were neutral.

With regards to oncological management in line 7, 43.8% (n = 28) of the respondents strongly agreed, 51.6% (n = 33) agreed that they can identify adverse reactions. However, 1.6% (n = 1) disagreed and 3.1% (n = 2) were neutral.

Line 8, regarding oncological management, respondents, 46.9% (n = 30) and 48.4% (n = 31), strongly agreed and agreed that they can prevent extravasation during chemotherapy administration respectively. However, 4.7% (n = 3) were neutral.

Concerning oncological management in line 9, respondents, 31.7% (n = 20) and 41.3% (n = 26) respectively strongly agreed and agreed that they can manage oncological emergencies (spinal cord compression, pulmonary emboli and other complications). However, 1.6% (n = 1) and 9.5% (n = 6) strongly disagreed and disagreed, while 15.9% (n = 11) were neutral.

On how to calculate body surface area to ensure correct dosage (Line 10), the majority of respondents, 27.0% (n = 17) and 38.1% (n = 25), strongly agreed and agreed. A number of respondents, 7.9% (n = 5) and 11.1% (n = 7) strongly disagreed and disagreed, and another number, 15.9% (n = 10) were neutral.

Section C - Attitudes of registered nurses regarding chemotherapy administration

To explore the attitudes of oncology nurses regarding pre, during, and post chemotherapy administration, the respondents were asked based six statements.

Table 7: Attitudes of Registered Nurses regarding chemotherapy administration (N=64)

Items	Strongly disagree % (n)	Disagree % (n)	Neutral % (n)	Agree % (n)	Strongly agree % (n)	Total
1. I consider the emotional, cultural and spiritual context of patients and families pre, during and post chemotherapy	0.0 (0)	1.6% (1)	3.2% (2)	52.4% (34)	42.9% (27)	100% (64)
2. I always feel that I have supported patients during their chemotherapy.	0.0 (0)	0.0 (0)	4.7% (3)	62.5% (40)	32.8% (21)	100% (64)
3. I feel confident to manage patients who are experiencing bad side effects from chemotherapy.	1.6% (1)	0.0 (0)	1.6% (1)	50.0% (32)	46.9% (30)	100% (64)
4. I avoid patients who are experiencing bad side effects from chemotherapy.	46.8% (29)	29.0% (18)	4.8% (3)	9.7% (6)	9.7% (6)	100% (62)

5. I encourage patients to have family support during chemotherapy journey.	0.0 (0)	0.0 (0)	1.6% (1)	53.1% (34)	45.3% (29)	100% (64)
6. I allow my patients to express their feelings regarding chemotherapy and its complications.	0.0 (0)	0.0 (0)	0.0 (0)	57.8% (37)	42.2% (27)	100% (64)

When considering the emotional, cultural and spiritual context of patients and families pre, during and post chemotherapy, the majority of respondents (Line 1) 42.9% (n = 27) and 52.4% (n = 34), strongly agreed and agreed. However, 1.6% (n = 1) disagreed and 3.2% (n = 2) were neutral.

On the statement “I always feel that I have supported patients during their chemotherapy”, (Line 3) 32.8% (n = 21) strongly agreed, 62.5% (n = 40) agreed, and 4.7% (n = 3) were neutral.

In response to feeling confident to manage patients who are experiencing bad side effects from chemotherapy (line 3), 46.9% (n = 30) of the respondents strongly agreed, 50.0 (32) agreed, 1.6 (1) strongly disagreed, and another 1.6 (1) were neutral.

Line 4, 46.8% (n = 29) of the respondents strongly disagreed they avoid patients who are experiencing bad side effects from chemotherapy, while 29.0% (n =18) disagreed and 4.8% (n = 3) were neutral. However, 9.7% (n =6) agreed and another 9.7% (n =6) strongly agreed. It is noted that two participants did not answer this question.

Regarding encouraging patients to have family support during chemotherapy journey (Line 5), almost all the respondents, 53.1% (n = 34) and 45.3% (n = 29) agreed and strongly agreed respectively. However, only 1.6% (n = 1) were neutral.

All the respondents reported that they allow their patients to express their feelings regarding chemotherapy and its complications (Line 6). Specifically, 57.8% (n =37) agreed and 42.2% (n =27) strongly agreed.

Section D Competency Needs of Registered Nurses Regarding Chemotherapy Administration

To determine the competency needs of oncology nurses regarding chemotherapy administration, using the five-point Likert scale, the respondents were asked to state response with strongly disagree, disagree, neutral, strongly agree and agree based on six statements.

Table 8: Competency Needs of Registered Nurses Regarding chemotherapy administration (N=64)

Items	Strongly disagree % (n)	Disagree % (n)	Neutral % (n)	Agree % (n)	Strongly agree % (n)	Total
1. I require further training in oncology nursing.	6.3% (4)	0.0 (0)	4.7% (3)	60.9% (39)	28.1% (18)	100% (64)
2. To meet up with the evolving cancer care and demands, our institution needs to provide us with in-service training	3.2% (2)	0.0 (0)	0.0 (0)	47.6% (31)	49.2% (31)	100% (64)
3. To meet up with the evolving cancer care and demands, our institution needs to provide us with workshops	1.6% (1)	0.0 (0)	3.1% (2)	46.9% (30)	48.4% (31)	100% (64)
4. To meet up with the evolving cancer care and demands, our institution needs to provide us with formal continuing education	1.6% (1)	0.0 (0)	0.0 (0)	46.9% (30)	51.6% (33)	100% (64)
5. When patients present with complications caused by chemotherapy. I feel confident to handle them.	1.6% (1)	0.0 (0)	12.5% (8)	42.2% (27)	43.8% (28)	100% (64)
6. I have competency in chemotherapy administration and management of chemotherapy adverse reaction.	3.1% (2)	3.1% (2)	14.1% (9)	35.9% (23)	43.8% (28)	100% (64)

Results demonstrated that the majority of respondents, 60.9% (n = 39) and 28.1% (n = 18), agreed and strongly agreed that they require further training in oncology nursing respectively (Line 1). However, 6.3% (n = 4) strongly disagreed and 4.7% (n = 3) were neutral.

The majority of respondents, 47.6% (n = 30) and 49.2% (n = 31), respectively agreed and strongly agreed that, to meet up with the evolving cancer care and demands, their institution needs to provide them with in-service training. However, 3.2% (n = 2) strongly disagreed.

A good number of respondents, 46.9% (n = 31) and 48.4% (n = 31), respectively agreed and strongly agreed that to meet up with the evolving cancer care and demands, their institution needs to provide them with workshops (Line 3). However, 1.6% (n = 1) strongly disagreed and 3.1% (n = 2) were neutral.

Regarding the statement “that, to meet up with the evolving cancer care and demands, their institution needs to provide them with formal continuing education” (line 4), respondents, 46.9% (n = 30) and 51.6% (n = 33), agreed and strongly agreed Only 1.6% (n = 1) strongly disagreed.

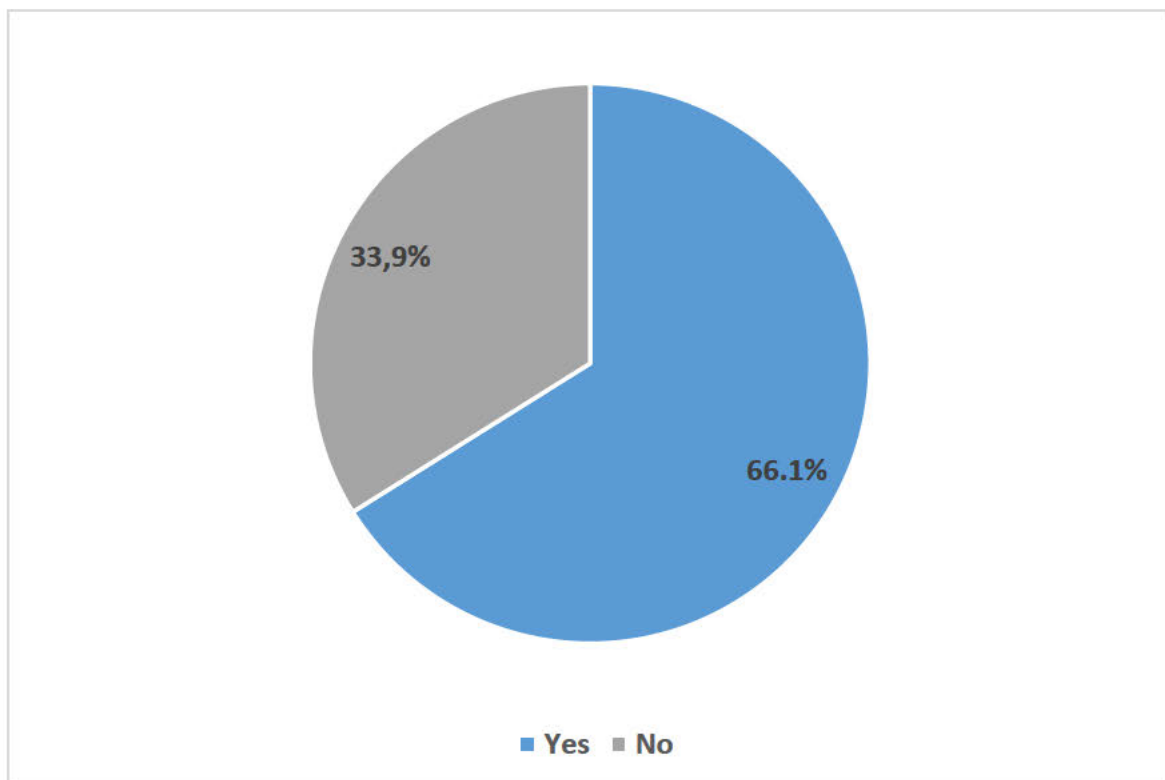
“When patients present with complications caused by chemotherapy. I feel confident to handle them” (Line 5) demonstrates that 42.2% (n = 27) of the respondents agreed, 43.8% (n = 28) strongly agreed. However, 1.6% (n = 1) strongly disagreed and 12.5% (n = 8) were neutral.

Having competency in chemotherapy administration and management of chemotherapy adverse reaction was agreed and strongly agreed by 35.9% (n = 23) and 43.8% (n = 28) of the respondents respectively. However, 3.1% (n = 2) and another 3.1% (n = 2) strongly disagreed and disagreed, while 14.1% (n = 9) were neutral.

Section E - Additional findings

Respondents were asked if they think that patients undergoing chemotherapy are well informed about the process.

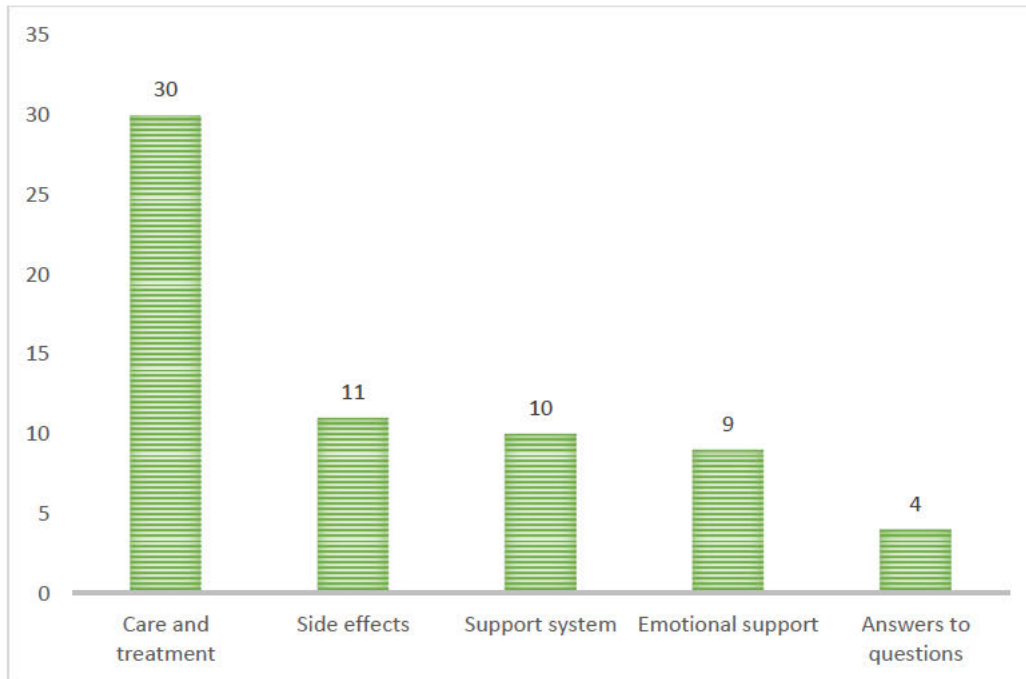
Figure 6: Participants' responses regarding informing patients about chemotherapy process.



The figure above shows that 66.1% (n = 41) of the respondents thought that patients undergoing chemotherapy are well informed about the process, while 33.9% (n = 21) thought that patients undergoing chemotherapy are not well informed about the process

Additionally, the respondents who thought that patients were well informed were asked to suggest five keys things to include in the health education process as shown in figure 6.

Figure 7: Five key things to include in the health education process.



The figure 7 shows that respondents mentioned that the health education process should include information about the care and treatment (30 mentions), the side effects of chemotherapy (11 mentions), the support system that the patients undergoing chemotherapy should have (support programmes, support groups, family support) (10 mentions), the emotional support (9 mentions), and a time to answer questions asked by patients (4 mentions).

Further, the respondents who thought that patients were not well informed were asked to give suggestions on what must happen to ensure that patients undergoing chemotherapy are well informed about the process. Their responses are captured in the figure below.

Figure 8: Respondents feedback regarding informing patients

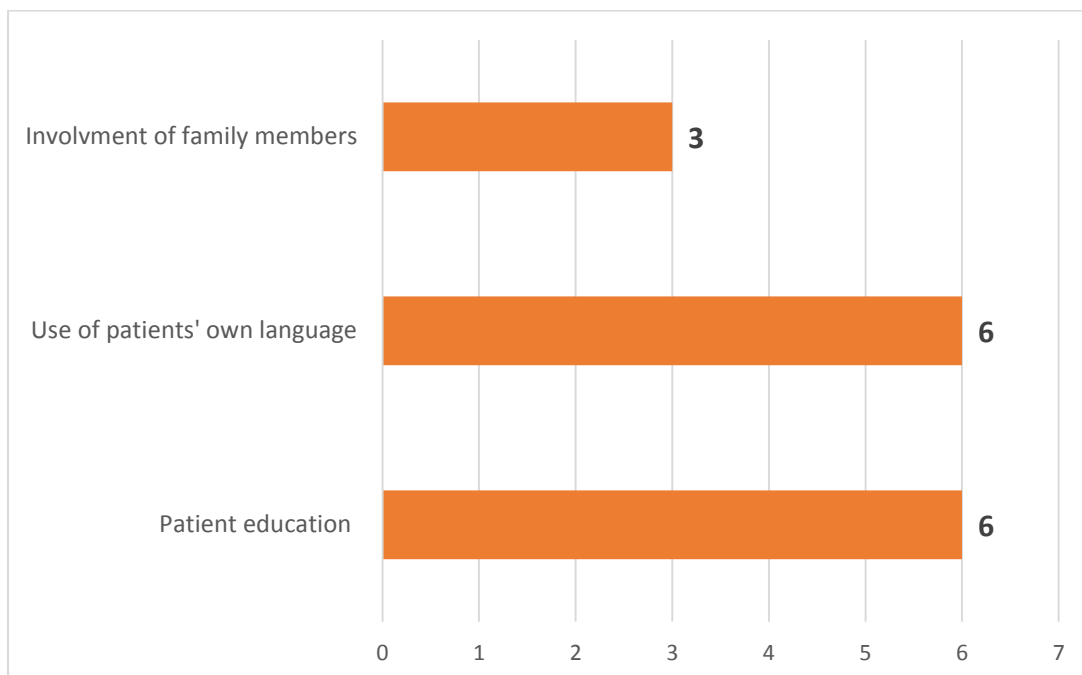


Figure 8 shows that of the respondents who thought that patients undergoing chemotherapy were not well informed about the process, six suggested that patients need to be educated about the process, the side effects, and the concurrent visits. Another six suggested that patients need to receive information in their own language to understand what is being said. A small portion suggested that because patients undergoing chemotherapy are very sick, their family members need to be involved in patient education.

Finally, respondents were asked what would contribute towards nurses' ability to provide comprehensive information to oncology patients. It is of concern to note that out of 64 respondents, only 48, attempted this section, with the following responses.

Figure 9: Respondents' suggestions to provide comprehensive information to oncology patients.

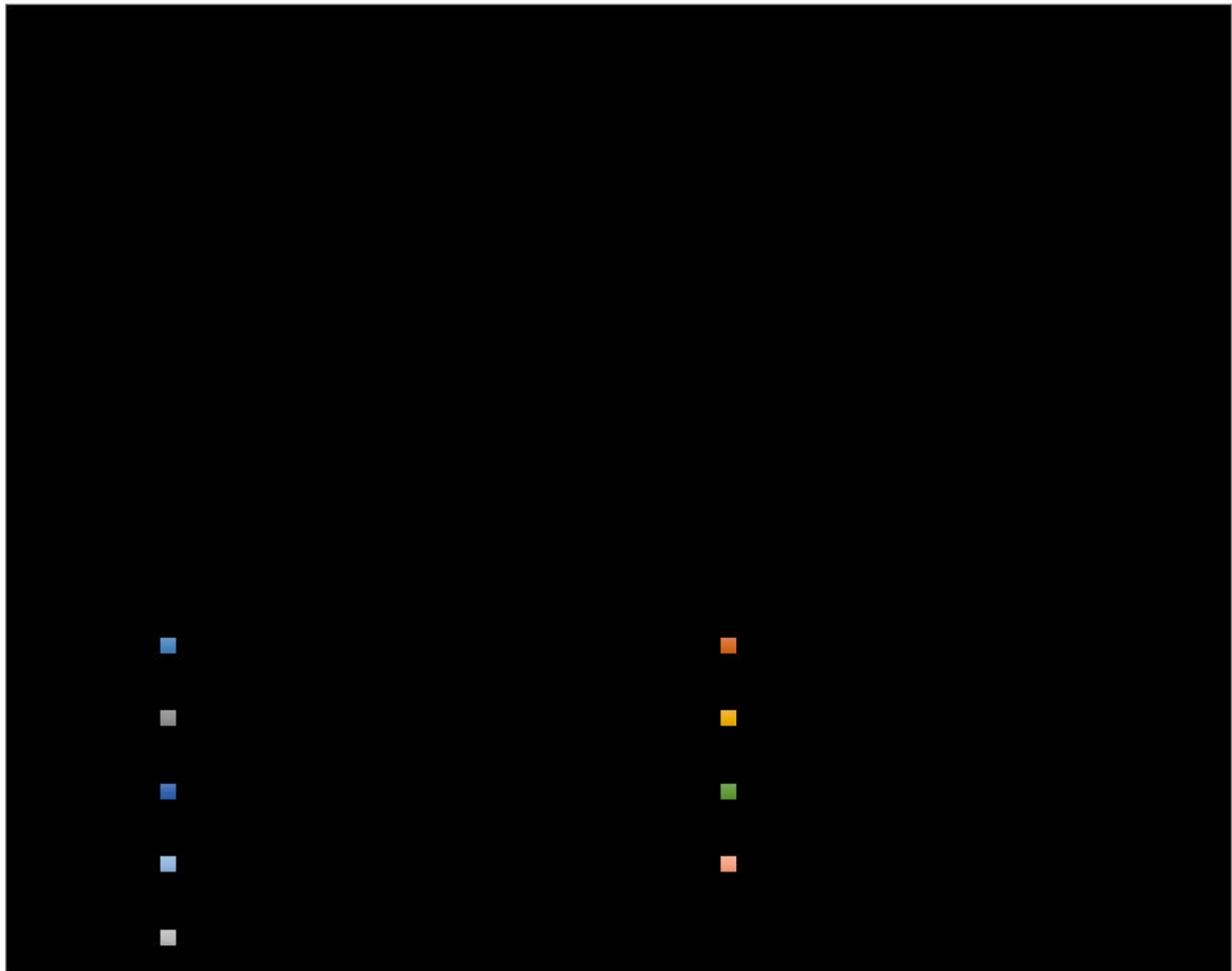


Figure 9 summarises their responses, results are presented based on the number of respondents and not in percentages. Training of nurses was mentioned 37 times, the availability of detailed guidelines 2 times, recruitment of staff 2 times, and multidisciplinary work 2 times. Some elements were only mentioned once, like counselling for nurses times 1, support from nurse managers times 1, cultural awareness and sensitivity times 1, better working conditions times 1 as well as more time to spend with patients times 1. These suggestions will be included in the developed brochure.

4.2 QUALITATIVE RESULTS

On the information sheet that was given to participants during the first stage of data collection, the information did ask the participants to indicate if they would be interested in participating in an interview. A total of eight nurses consented to be interviewed, interviews were carried out across three settings, some interviews were face-to face in a private room during off duty time and some interviews were conducted telephonically during off duty time.

The various components of the KAP model assisted in the development of the interview questions and probing questions during the interview. The main objective of the in-depth interviews was to specifically obtain information from registered nurses on how they perceive their knowledge of chemotherapy administration, their attitudes, competency and what information could should be included in the brochure to help them better inform their patients.

Interviews were conducted in English and lasted between 20 and 30 minutes using the interview guide and probing questions (Annexure H). In each interview the researcher explained the purpose of the study and gave assurance of confidentiality, privacy and the right to withdraw at any time without fear of recrimination. Following which willing participants completed an informed consent for the interview. Participants were informed that the interview would be audio recorded. After eight interviews the researcher determined that redundancy and completeness of the data had been reached.

Participants' demographic

Eight participants, seven participants were females and one male participant; ages ranged between 20 and 50 years. Participants were from the three sites and all worked in oncology discipline. All participants had the oncology experience, between 10 to more than 15 years. Five participants had the oncology qualifications and three had the oncology experience. Participants were interviewed during their spare time, not while on duty. Interview were conducted in English and lasted between 20 and 30 minutes using the interview guide and probing questions (Annexure G). All participants consented to participate and to have the interview audio-recorded.

Three categories emerged from the data: professionalism of registered nurses, improved confidences and patient support.

Table 9: Manifest content analysis of qualitative interviews (Graneheim and Lundman, 2004).

Theme	Sub-theme	Quotes
Professionalism of Registered nurses	Knowledge of Chemotherapy	“There’s never an end to knowledge of chemotherapy.”
	Attitude of Chemotherapy administration	“You also have to put yourself in that patient’s shoes and be understanding.”
	Competency	“I think most nurses in my ward are competent but some are not.”
Improved Confidence	Guidance during administration	“In our practice, we have guidelines that we use to teach new nurses before they administer chemotherapy.”
	Enhance ability	“You have to have people who are trained and know what they are doing in order to help other people.”
Patient support	Physical chemotherapy side-effects	“We have standing orders to help them manage with gastro-intestinal tract and cardiac abnormalities that have been caused by chemotherapy.”
	Coping emotionally	“It think knowing how their emotions towards treatment because emotions play a very important role, we talk about denial, anger and fear throughout the treatment journey.”
	Patient information	“The main thing is patient support, they need to know just by looking at the brochure that they have access to people that can support them.”

Theme one-Professionalism of Registered nurses.

Knowledge of chemotherapy

Registered nurses are at the forefront of providing chemotherapy education and giving knowledge to patients. Registered nurses should be well informed and have sufficient understanding and knowledge about treatment modalities for cancer. Their knowledge plays an important role in ensuring that patients are given the necessary information. Often patients are overloaded with information, hence a brochure can be taken home by the patient to refer to at a later date.

“There’s never an end to knowledge of chemotherapy.” (Lilly)

“You come to a point where you realise there’s still too much that you don’t know because of newer things that are coming.” (Rose)

“I think they have enough knowledge to provide patients on what they need especially side-effects management”. (Petal)

“Some nurses are knowledgeable when it comes to giving patients information like side-effects and some are not” (Sissy)

This participant was asked to elaborate on the nurses that are not knowledgeable.

“Like one has to study and get the knowledge, we hardly have any in-service training as we’re so few and some nurses are not willing to learn” (Sissy)

Attitude regarding chemotherapy administration

Positive attitudes of nurses was demonstrated when respondents were asked if they avoid patients who are experiencing bad side effects.

“You have to be neutral, especially when it comes to chemotherapy.” (Lilly)

This participant was asked to elaborate on what she meant by neutral.

“Nurses have to keep their own opinion and judgement when it comes to doctor deciding whether to give chemotherapy or not.” (Lilly)

“You also have to put yourself in that patient’s shoes and be understanding.” (Blom)

“Well, in our practice nurses take chemotherapy very seriously and which should be like that all over.” (Petal)

“It is not so much attitude but you fear for the patient since I see them bubbly now and wonder how they would be in four months down the line after starting chemotherapy.” (Letsy)

Competency with chemotherapy administration

The quantitative findings revealed that majority of respondents agree that they require training in oncology respectively. Participants reported ambiguous feelings regarding competency in all stages regarding chemotherapy administration. A possible reason offered by the participants for their weak skills in the above mentioned areas was high work load, understaffing and high patient volume.

“As much as they are competent but I think there are things that are limiting them to their competency.” (Blom)

“I think most nurses in my ward are competent but some are not.” (Sissy)

“I would think they are competent from the clinical point of view but require training.” (Francis).

This participant was asked to elaborate on the statement “competent from the clinical point” and stated that:

“Out of 8 registered nurses, I am the only oncology trained nurse so they work under my supervision because they have not done the course”

“Yes, they are competent because we have booklets and information on how to manage side effects at home” (Petal)

Participant was asked to clarify further on side effects management at home.

“Sometimes we underestimate how patients experience cancer related fatigue, I am not only referring to only that but other psychological impact of chemotherapy” (Petal)

Theme two-Improved Confidence

Guidance during administration

Staff training in oncology care has been topped listed as one of the major barriers in providing oncology care by the oncology nurses.

“In our practice, we have guidelines that we use to teach new nurses before they administer chemotherapy.” (Moneit)

“Nurses’ knowledge plays a big role especially when it comes to picking up blood abnormalities before administering chemotherapy and observing patients for any possible chemotherapy adverse reactions” (Blom).

“I think on-going training and education is always the best thing.” (Moneit)

Enhance ability to educate patients

Resource availability was mentioned as one of the factors that could enhance information sharing between nurses and patients. Participants elaborated on human and material resources.

“You have to have people who are trained and know what they are doing in order to help other people.” (Rose)

“Even if it means they have to distribute pamphlets so that will help the patient and relative read so they will have more understanding about what their mother or father is going for.” (Letsy)

“I think it’s time management and how you manage your time, prioritize and you work with the resources that are available.” (Blom)

Theme three-Patient support whilst receiving chemotherapy

It is being there and present in the moment with people that you connect with, because sometimes patients want to talk and need someone to talk to.

“We don’t have time, our priority is to give the treatment, observe and discharge the patient but we don’t have time to know them better”. (Blom)

“That’s where knowledge comes in, the minute they walk in, you give them the ammunition to fight and reassure them that you’re on the other side of the phone call”(Lilly)

“The most important thing is to build the relationship of trust, if patients trust you; they’ll do what you tell them”. (Rose)

“To be quiet honest, we don’t have time and we’re busy, we need to educate before and after chemo, we need to do follow up after chemo and check them before they come back, we don’t have enough resources to do that.” Moneit

“We have standing orders to help them manage with gastro-intestinal tract and cardiac abnormalities that have been caused by chemotherapy.”(Francis)

Information regarding chemotherapy side-effects

Chemotherapy side effects have come out strongly during our first interview and quantitative data. Participants were asked about what they would want to see on the brochure.

“I think as much as we look at the physical side effects of chemotherapy, we also have to remember that we have to treat patients holistically.” (Rose)

Rose further related:

“I think one of the things, we always seen to be lacking behind or fall short on is the psychological well-being of a patient, we take care of the physical being but not the emotional needs.”(Rose)

“I think patients can benefit if they could be given tips on how to manage psychological impact of chemotherapy as a whole.” (Petal)

Petal was asked to elaborate:

“Patients need to be prepared emotionally before starting regarding coping mechanism, the anxiety turns to kick in right at the onset, feeling of helplessness and which direction to run to after being told such terrible news” (Petal)

“We normally discuss the immediate side effects when we speak to our patients and we don’t pay more attention to the delayed effects that may occur at home emotionally.” (Blom)

The participant was asked to elaborate further on the delayed effects that may occur.

“Side-effects like peripheral neuropathy, clumsiness, discolouration of the hands and nails, hair loss, hearing impairment and physical face changes impact on their self-esteem and emotional status” (Blom)

Participants were asked if there was any specific information that could be included in the brochure.

“The main thing is patient support, they need to know just by looking at the brochure that they have access to people that can support them” (Petal)

The participant explained further that:

“Patients need to be prepared emotionally before starting in terms of coping mechanism, the anxiety turns to kick in right at the onset and patients experience feelings of helplessness and not knowing which direction to run to” (Petal).

“The information about support groups that they can contact the counsellors that they can contact”. (Rose)

“Management of physical side effects, nutrition, lifestyle changes, how to cope emotionally and simple things that would help them cope day by day.” (Lilly)

“I think knowing how their emotions towards treatment because emotions play a very important role, we talk about denial, anger and fear throughout the treatment journey” (Blom)

Following a meeting and a discussion with the supervisor, there was a need to return to participants for more information from the participants that formed part of both quantitative and qualitative data collection that formed part two of the interviews (see annexure G2). Participants that were available were interviewed during their off-duty time and the interview

took between 10 to 15 minutes (stage 2-part one-see annexure G1). The researcher made field notes during the interview and the audio recorded.

Participants were asked the two questions as follows:

1. Chemotherapy side effects have come out strongly during our first interview. What side effects would you like to see on the brochure?

“Because some of the physical side-effects cannot be hidden, patients find it hard to cope and they can easily get depressed”. (Blom)

Participant was asked to explain further:

“I would mention physical appearance, something that we see with our female patients, they can get depressed after losing their hair after chemotherapy”. (Blom)

“The greatest fear is losing hope and uncertainties about tomorrow”. (Petal)

2. What would you like to see in the brochure specifically?

“May be the brochure could look at supporting patients emotionally as they go through a lot during this stage and their family support structure”. (Lilly)

“Some of our patients are bread-winners and majority of the time; they are unable to support their families due to being ill”. (Moneit)

“We want to be their advocates but at times we don’t know what they are going through as our focus is on helping them manage general side effects but they go through a lot”(Moneit)

“There is a lot but I would like to see anything that will contribute to how we provide care to our patients”. (Petal)

4.3 SUMMARY

This chapter has highlighted findings of quantitative and qualitative data. Percentages, graphs and charts have been used to present quantitative data. The quantitative data analysis as described by Graneheim and Lundman (2004) has been applied in order to get themes and subthemes that guided the researcher to develop the brochure. Quantitative and qualitative results have been integrated at interpretation of the results in order to develop a brochure which is discussed in chapter 6.

CHAPTER FIVE: DISCUSSION ON FINDINGS

5.1 INTRODUCTION

The results from quantitative and qualitative data were presented in Chapters 4. This chapter presents a discussion on the quantitative and qualitative results. The evidence from both quantitative and qualitative data provided to the development of the brochure.

5.2 DISCUSSION (STAGE 1)

The study consisted of 64 registered nurses with the majority of the respondents being females 95.3% and 4.7% males. A likely reason for this disproportionate gender representation could be the perception that nursing is a female-dominated profession, resulting in a lack of interest from their male counterparts to oncology nursing. The results are similar to a study conducted by Orujlu, Habibzadeh, Sakhvidi and Hajaghazadeh, (2016) where majority of nurses (92.6%) were females. Historically, nursing is predominantly a female profession and the results attest to the gender distribution worldwide, as well as in South Africa. There is a slight shift as more men follow this career compared to decades ago, according to the South African Nursing Council (2021) statistics, 28 000 men were registered as nurses in 2021 compared to 250 000 women.

Interestingly, majority of the respondents (42.2%) were 50 years and above. The results indicate that the respondents have been in the profession for some time, their maturity should be the reason for them to be knowledgeable and competent. The young nurses between 20 to 30 years of age are in the minority perhaps because the younger age groups are not willing to work in places that may be considered dangerous in terms of radiation and chemotherapeutic exposure or they are not given opportunities to advance to oncology speciality (Al Zoubi, Saifan, Alrimawi, and Aljabery, 2020).

Interestingly, majority of 43.8% of the respondents have the experience in oncology of greater than 15 years. Similar results were revealed by Khan, Khowaja, Zulfiqar and Ali (2012) where majority 18 (51%) had more than 10 years of working experience as a general nurse, while 16 (46%) had less than 5 years of work experience in oncology. In a study by Alrahman, Abdullah and Rasheed (2018) entitled Nursing Staff Knowledge regarding Safe Chemotherapy Administration at Oncology Center in Kirkuk City, the respondents' years of experience was between 1-6 years which attributed to them having inadequate knowledge on chemotherapy administration. The study further revealed that (60%) of the respondents had

no oncology training but relied on consultations with colleagues. The results indicate that nurses are placed in the oncology units with no speciality, reasons could be limited opportunities to advance from the organisation or the government at large.

It is concerning to see that the study revealed that majority of participants 74.2% were registered nurses in the general stream with no oncology training and a minority of 9.7% with degree in oncology. Similar results by Khan, Khowaja, Zulfiqar and Ali (2012) indicated that majority of the participants 19(54%) had less experience as chemotherapy nurses. Conversely, a descriptive study in Iran by Alehashem and Baniasadi (2018) entitled Safe Handling of Anti-Neoplastic Drugs in the University Hospitals, out of all 80 respondents in total, 73.8% had been trained and competent to work in the oncology units. The health-care oncology facilities need to realise the importance of providing nurses with skills, knowledge and competency to work in these demanding oncology wards.

The demographic results indicate that there is a great need to provide training in oncology units, attested by the fact that 74.2% have not had any oncology training. Registered nurses that are qualified in general stream indicate a need for oncology training that is required in order to provide comprehensive safe nursing care to oncology patients. Common factors that hinder nurses from learning or engage in speciality are time constraints, financial constraints, workplace culture, access and competency in accessing electronic evidence-based literature (Shadadi, Sheyback, Balouchi and Shoorvazi, 2018).

The respondents were asked if they have enough information to guide them on daily administration of chemotherapy, 40.6% of the respondents strongly agreed and 35.9% agreed to the statement. The study by Watheeq and Kadhim (2022) highlighted that oncology settings needs registered nurses to keep up-to-date knowledge and skills in a continuously changing environment. Another study by Nwozichi, Ojewole and Oluwatosin, (2017) emphasized that a strong nursing workforce in oncology settings can impact the quality of care patients receive and their overall outcomes.

Registered nurses have various simultaneous roles, especially supportive roles and providing health education to patients (Amboto and Amakali (2017). The results indicated that registered nurses do have information to guide them but it brings the question if the same knowledge is shared with patients as expected.

Registered nurses are on the forefront in providing chemotherapy education and generating knowledge to patients, their knowledge plays an important role in ensuring that patients are

given the necessary information. Literature affirms that nurses should be well informed and have sufficient understanding and knowledge about treatment modalities for cancer (Christina, Abigail and Cuthbertson, 2016). Registered nurses need to be well equipped with information so it can be passed on to patients thus improving their health outcomes.

The current study revealed that 43.8% of the respondents agreed that they have enough knowledge guiding them on daily administration of chemotherapy, these findings are concerning because if oncology nurses did not have advance knowledge and they have insufficient competency, it will be considered unsafe to administer chemotherapy safely and chances for medication administration errors will be on the increase. In the study by Khan, Khowaja and Ali, (2012), results affirm that nurses knowledge scores significantly increased with educational training. The researcher strongly suggests there is a great need for the research settings to specifically pay attention to the establishment of training of all nurses handling chemotherapy drugs, (Vijn et al, 2017) described some responsibilities of an employer for establishing a comprehensive program including reviewing guidelines regularly, developing policies based on guidelines, training of staff and monitoring of adherence to guidelines. Efficient nurses' knowledge about chemotherapy measures in their practices has positive effect on cancer patients' response to treatment process.

In a study by Asefa, Aga, Dinegde Demie (2021), the study results showed that nearly 69% of nurses reported the lack of training program on the handling of cytotoxic drugs at their workplaces, which is similar to findings of studies conducted in South Egypt and Erbil city. The current result is similar to the results of studies conducted in Hospitals of Urmia University, Iran (Orujlu, Habibzadeh, Zare , Hajaghazadeh 2016), Egypt and Kenya (Asefa, Aga, Dinegde Demie (2021), in which about three-fourth, more than half, and 40.37% of the nurses had previous training respectively. The difference could be attributed to limited resources for the training of healthcare workers. Moreover, in order to increase positive patient outcomes, workshops and other training forums are important for oncology nurses in all oncology settings.

Based on occupational safety and health administration (OSHA) guidelines, training of staff involved in any aspect of chemotherapy is essential (Al-Azzam, Awawdeh, Alzoubi, Khader and Alkafajei 2014). As reported in the previous studies, participating in training programs significantly enhances the nurse's knowledge (Hashish, Aly and Alsayed, 2020). The current study also showed a significant difference between knowledge scores of trained and untrained registered nurses regarding work in oncology settings. The nursing literature shows that

effective nursing care results from the combination of knowledge, skills, and attitudes and has an intellectual, psychological, spiritual, and physical dimension. Nurses who are prepared with knowledge and clinical expertise will have much to offer holistically to patients (Apor, Connell, Faricy-Anderson, Barth, Youssef, Fenton and Mega, 2018). Nurses' information regarding chemotherapy and knowledge about administration of chemotherapy remains a concern linked to advance in safety standards (Khan *et al*, 2012). In a study from Congo, similar results were noted. However, knowledge and practice do not always correlate (Paul, Sinha, Asifullah, Mallick Mondal, 2017).

Positive attitudes of nurses was demonstrated when respondents were asked if they avoid patients who are experiencing bad side effects, 46.8% (29) of the respondents strongly disagreed with the statement. Conversely, a study conducted by Khan, Zulfiqa, Khowaja and Ali (2012), 86% of the nurses agreed to the statement of avoiding patients, nurses tried to avoid those patients who developed any complication caused by chemotherapy. The results indicated that participants may have had less confidence, in their ability to manage complications, although they admitted that they were confident in this particular area. It has been proposed in previous research studies that although there is a possible correlation between knowledge and preventive behaviour, the interaction is low which means that the level of knowledge does not greatly influence preventive behaviour in practice (Khan Zulfiqa, Khowaja, Ali, 2012). It was noticed that not all registered nurses answered this question about avoiding patients. A possible reason for not answering the question is that the registered nurses could have felt guilty regarding avoiding patients experiencing bad effects from chemotherapy.

The current study revealed that 62.5% of oncology nurses agreed to the statement "I always feel that I have supported patients during their chemotherapy". Similarly to a study by Khan *et al* (2012), 74% of the participants agreed with the statement. Positive attitude indicates that when patients present complications caused by chemotherapy, nurses feel confident competent to handle them. 57.8% of the current study respondents agree to the statement that they "I allow my patients to express their feelings regarding chemotherapy and its complications".

The study findings revealed that majority of respondents, 60.9% agree that they require training in oncology respectively. The overall findings of the study indicated that respondents lack competency in all stages including pre administration, during administration and post

administration of chemotherapy. The justification given by the nurses' for their weak skills in the above mentioned areas was high work load, understaffing and high patient volume.

Majority of the respondents strongly agreed that in order to meet up with the evolving cancer care and demands, their institution needs to provide them with formal continuing education. The results are in line with the report by Gagusti, George, Bruce, Brucker, Leija, LeFebvre, and Mackey (2017) in the *Oncology Nurse Generalist Competencies, Education, Clinical Practice, Standards journal*, that training programs that focus on increasing and building competency can strengthen and multiply the workforce of nurses who deliver high-quality care to patients with cancer.

Oncology nurses need to establish learning and performance goals for themselves and engage in learning opportunities to achieve their competency. They need to participate in formal and informal performance evaluation to improve practice and competency. They advocate for the delivery of high-quality, patient-centered care, and they participate in mentorship and leadership opportunities to grow individually as well as guide the next generation of oncology nurses (Gagusti, George, Bruce, Brucker, Leija, LeFebvre, and Mackey 2017) .

The study results of 60.9% respondents indicate the need for further training that is required in oncology nursing respectively. The results can be attributed to the 74% respondents that work in the oncology units and qualified as general stream with no oncology training.

Institutions need to understand the purpose of requirements, standards, and guidelines related to nursing practice and providing safe, quality cancer care. Nurses should be able to identify patient access barriers and provide solutions to ensure seamless, quality care. Finally, they collaborate with inter-professional experts to support quality initiatives, including patient safety, performance improvement, accreditation, and infection prevention which play a role in their competency (Gagusti, George, Bruce, Brucker, Leija, LeFebvre, and Mackey, 2017)

The results showed that 66.1% of the respondents thought that patients undergoing chemotherapy are well informed about the chemotherapy process especially physical side effects. An important challenge for registered nurse when providing information is that there is no established method for evaluating whether patients are well informed or satisfied with the information they have been given. The provision of written information by staff was regarded as insufficient. Leaflets of cancer and related issues were the most popular source of additional information. The length of time since diagnosis, employment status, physical condition and mood had the strongest associations with patients receiving or searching for

information (Berger *et al*, 2018). Most respondents wanted information because it had a positive impact on their feelings and attitudes and it helped them to cope with their situation.

Respondents were asked what would contribute towards nurses' ability to provide comprehensive information to oncology patients and training was mentioned by the majority of nurses. Registered nurse's training in oncology care has been topped listed as one of the major barriers in providing oncology care. Health care provider affirmed that the ignorance and lack of awareness about the existing program and resources of oncology care were the major factors that limit the oncology patients from oncology from receiving comprehensive care (Berger *et al*, 2018).

5.3 DISCUSSION (STAGE 2)

On the information sheet that was given to participants during the first stage of data collection, the information did ask the participants to indicate if they would be interested in participating in an interview. A total of eight nurses consented to be interviewed, interviews were carried out across three settings and some were face-to face during off duty time and some were done telephonically during off duty time. Data saturation was reached.

The various components of the KAP model assisted in the development of the interview questions and probing questions during the interview. The main objective of the in-depth interviews was to specifically obtain information from oncology nurses on how they perceive their knowledge of chemotherapy administration, their attitudes, competency and what information could be included in the brochure to help them better inform their patients.

The researcher explained the purpose of the study during the interview and reassured the participants that their participation was voluntary and reminded them that they have the right to withdraw from the study without fear at any time. Participants were also reminded that the interviews were audio-recorded. Duration of the interviews was between 20 to 30 minutes and all interviews were conducted in English. Data generated from the interviews was analysed using manifest content analysis (Graneheim and Lundman, 2004). Three categories emerged from the data: professionalism of registered nurses, improved confidences and patient support.

THEME ONE-PROFESSIONALISM OF REGISTERED NURSES

Generally, participants reported that they have knowledge and information to provide patients undergoing chemotherapy but one of the comments was concerning. Participants reported ambiguous feelings regarding competency regarding administration of chemotherapy. A

possible reason offered by the participants for their weak skills in the above mentioned areas was high work load, understaffing and high patient volume. A concerning statement was made by one of the participants who said:

“Out of 8 registered nurses, I am the only oncology trained nurse so they work under my supervision because they have not done the oncology course” Francis. The participant implied that there are fewer registered nurses who are trained to deal with patients’ needs when the patients are still undergoing chemotherapy.

This is affirmed by the findings from Ramutumbu, Ramathuba and Maputle, (2021), study which provided evidence of a lack of skilled health professionals in oncology care services, can create poor cancer management and co-ordination. A cancer diagnosis is burdensome, as it affects the patient physically, psychologically, and financially. Therefore, a co-ordinated team of multidisciplinary health personnel is required to manage the patient holistically and comprehensively (Ramutumbu, Ramathuba and Maputle, 2021). The healthcare system has a shortage of multidisciplinary specialists required in oncology care (Ramutumbu, Ramathuba and Maputle, 2021). Furthermore, the participants implied that they lack the knowledge and skills to satisfy the cancer patients’ psychosocial care and support needs.

Oncology nurses will reach established levels of competency in nursing practice by utilizing nursing skills. This includes mastering the complexity of cancer treatment, negotiating interdisciplinary teamwork, and incorporating safety standards into practice, among a few of other duties necessary to provide evidence-based oncology nursing care (Oncology nursing society 2021) Understanding the importance and roles of nurses places patients in a better position to know what physical and emotional support they may require as they undergo chemotherapy. The interview results indicated that nurses tend to focus more on the possible physical side effects and neglect the emotional aspect of chemotherapy.

THEME TWO-IMPROVED CONFIDENCE

One of the quotes from the participant was “we have guidelines that we use to teach new registered nurses before they start administering chemotherapy” Benner (2018) believed that good experience of educational level lead to more proficiency in registered nurses, improve their decision making abilities and skills and reflect the high level of depth of caring. Registered nurses level of knowledge and experience can affect their clinical skills and practices in dealing with patients undergoing chemotherapy. The statement confirms one of the current study’s objectives which is to explore the registered knowledge and competency.

The ability of registered nurses to provide quality patient care can be enhanced if they possess the necessary knowledge, competence, and a positive attitude.

THEME THREE-PATIENT SUPPORT

The qualitative results also highlighted that there is a lack of support groups where patients could go and express their emotions. Qualitative results indicated that registered nurses mostly provide patients with physical support and the emotional aspect is often left unaddressed. The quote from the participant was “we have standing orders to help them manage with gastro-intestinal tract and cardiac abnormalities that have been caused by chemotherapy”. Romeiro, Peuker, Biachini and de Castro (2016), highlighted that the type of information provided by registered nurses to patients about diagnosis, treatment or prognosis is oriented towards evaluating the physical condition of the patient.

The observation that is common in oncology is that the health provider’s attention is usually focused on clinical aspect of the disease, without integrating them to psychological and emotional aspects of the patient (Romeiro, Peuker, Biachini and de Castro 2016).

Having a brochure that will support registered nurses in educating their patients will enhance their knowledge in their daily practice contribute positively towards their competency as they have to continue to holistically support patients on chemotherapy. Dulmen, Driesenaar, van Weert, van Osch and Noordman (2017) affirm that health education is the cornerstone in the oncology settings. It improves patient’s knowledge, compliance to treatment and self-management of disease. Health professionals usually educate patients verbally. However, the patients tend to forget this verbal information. Therefore, to increase the effectiveness of health education, information given to patients verbally should be supplemented and reinforced with written materials (Dulmen, Driesenaar, van Weert, van Osch and Noordman 2017). One of the current study’s objectives was to develop a brochure that will close the gap in the information that registered nurses provide to patients undergoing chemotherapy.

Similar findings Vijn *et al* (2017), suggested that patient education has the potential to improve the quality of care and education. The study also highlighted that registered nurses’ patient education enhanced patient health, health attitude, health behaviour and shared decision making (Vijn *et al* 2017).

5.4 SUMMARY

This chapter presented quantitative and qualitative discussion. The discussion of this study highlighted the need to develop a brochure to be used by registered nurses in the oncology settings which is discussed in the next chapter.

6.1 CHAPTER SIX: BROCHURE DEVELOPMENT

The overall aim of using mixed methods is to overcome the limitations of the other two major methods when used on their own and to approach the question from different theoretical perspectives. The justification for using a mixed method research is that it provides an advanced and comprehensive method to handle both qualitative and quantitative data (Creswell, 2014).

This study appropriately employed the mixed method sequential explanatory model of which the researcher collected quantitative data first, analysed it then followed by qualitative data collection. The researcher obtained a clear understanding from the quantitative data and then used qualitative data to provide better guidance of brochure development. The researcher developed a brochure (Annexure J) using quantitative and qualitative data collected from participants. The brochure was developed using recommendations from both the quantitative and qualitative analysis (mixing of both data sets).

An interesting aspect to the mixed methods approach is that it represents the consolidation of techniques researchers had been using, without necessarily calling it by that name, for decades. Onwuegbuzie and Hitchcock, (2019) suggest that mixed method research has existed as a research approach for a long time. The integration of qualitative and quantitative methods frequently results in superior research, (Onwuegbuzie and Hitchcock, 2019).

It is imperative to keep in mind that quantitative research and qualitative methods have both strengths and weaknesses, (Onwuegbuzie and Hitchcock, 2019). By combining these two research methods in the current study, the researcher was able to complement the other by offsetting the other method's weaknesses.

Table 9.1 Components included in the brochure

Component	What was included?	Participants' comments
Introduction	<ul style="list-style-type: none"> • What happens • Anxiety • Cancer Treatment 	<p>“There’s never an end to knowledge of chemotherapy” (<i>Lilly</i>).</p> <p>“Out of 8 registered nurses, I’m the only oncology trained nurse” (<i>Francis</i>).</p> <p>“Sometimes we underestimate how patients experience cancer related fatigue and other psychological impact of chemotherapy” (<i>Petal</i>)</p>
	<ul style="list-style-type: none"> • Common side effects of Chemotherapy 	<p>“I think as much as look at the physical side effects, we also have to remember that we have to treat patients holistically” (<i>Rose</i>)</p>
	<ul style="list-style-type: none"> • Emotional Stages 	<p>“Anxiety turns to kick in right at the onset , feeling of helplessness and which direction to run to after being told such terrible news” (<i>Blom</i>)</p>
	<ul style="list-style-type: none"> • Role of Registered Nurse 	<p>“I think one of the things that we always seem to be lacking is the psychological well-being of the patient, we take care of the physical being but not the emotional needs” (<i>Rose</i>)</p>
	<ul style="list-style-type: none"> • Advice for Patients • Support groups available 	<p>“Management of physical side effects, nutrition, lifestyle changes and how to cope emotionally” (<i>Lilly</i>).</p> <p>“The information about the support groups that they can contact” (<i>Rose</i>)</p>

The quantitative recommendations pointed out the need for registered nurses to be competent and share their knowledge with patients in order to assist patients manage chemotherapy side-effects at home, meantime, qualitative recommendations highlighted the need to support patients cope with the emotional side effects of chemotherapy. All captured meaning and

themes that were generated were used to guide the brochure formation and development. Quantitative data assisted in guiding the formulation of the qualitative interview guide which was used during the interview. The researcher's aim was to understand the experiences of participants through careful analysis of their narratives (Polit and Beck, 2017).

The researcher carried out literature review in an attempt to identify the need to develop the brochure which will aid registered nurses educate their patients. Development of the brochure was established from findings obtained from the quantitative component (stage 1) and the qualitative component (stage 2). Each component of the brochure was carefully decided upon and its relevance to assist registered nurses with knowledge that is required to educate their patients.

The information that the researcher obtained was read and re-read and decided upon based on its relevance to developing a brochure for oncology nurses to use on patients. The brochure development commenced (stage 3) and the first draft was ready to be presented to the registered nurses within few weeks.

The researcher conducted a focus group meeting with a group of four oncology nurses and presented the draft copy of the brochure. The first draft of the brochure was presented to participants and well received. The registered nurses were asked to give their views on the developed brochure and the questions were:

1. Did you find the information that was contained in the brochure useful?
2. How will the brochure help you to fulfil patient's information needs?
3. What is your overall feel about the brochure? (Annexure I)

All the oncology nurses were unanimous and felt there was a need for the brochure which will aid oncology nurses to cover all aspects when they do counselling or giving health education to patients. One participant said:

"Yes the information is useful but would have liked it more if it was in IsiZulu so it can help patients who do not speak English"(Blom)

"I think there is enough information on the physical side-effects but this is reminding us to look at patients' holistically" (Petal)

The researcher made field notes during the focus group and that information was to be incorporated after meeting the experts (table 9). After compiling the second draft of the brochure, the researcher sought feedback from experts (2 registered oncology nurses, 2

radiation and medical oncologists and 1 oncology trial co-ordinator). The brochure was then presented for review to the three selected settings. Those consulted made comments and suggestions regarding the brochure. The contents of the brochure were explained and participants agreed to go through the brochure during their spare time and agreed to give feedback after a week or two.

One of the experts made comments that the brochure will be of benefit to registered nurses and patients, and was willing to assist with correcting some of the grammar to make it more user-friendly. Some sentences were changed so that they were clearer to the brochure users. Another expert suggested that more visuals be added and some of the emotional aspects that patients go through. The end product was well received with no further suggestions from the other experts (Annexure J). The brochure is an A5 size page when printed but has been displayed as an A4 to make it readable and for submission purposes.

Table 10: Experts qualifications and suggestions

No.	Educational qualifications	Suggestions and recommendations
1.	Radiation and Medical Oncologist	Grammar correction, use simple words and keep the sentences short.
2.	Radiation and Medical Oncologist	None, got very busy but trusts that it will add value to oncology patients.
3.	Registered Oncology Unit manager	None
4.	Oncology Senior registered Nurse	None
5.	Oncology Trial Co-ordinator	Suggested to add more pictures on the brochure to make it easy for readers to understand.

6.2 SUMMARY

This chapter has discussed how the brochure has been developed and how useful it is going to be assist registered nurses to better inform their patients. The developed brochure highlighted the importance of supporting patients emotionally and providing them with support as they undergo chemotherapy, the uncertainties that they normally have throughout their chemotherapy. The brochure has also included some of the support that patients can access

during their cancer journey. The next chapter will discuss the recommendations and limitations of the study.

CHAPTER SEVEN

OVERVIEW, RECOMMENDATIONS, LIMITATIONS AND CONCLUSION

7.1 OVERVIEW OF THE STUDY

This chapter will present an overview, recommendations, limitations and conclusion of the study. The chapter will further discuss the limitations of the study and, in line with the findings, present recommendations to nursing practice, administration, education and research. The chapter will also discuss research objectives. The study objectives were as follows:

1. To describe the knowledge of nurses working in oncology regarding chemotherapy administration.
2. To explore registered nurses' attitudes regarding chemotherapy administration.
3. To determine the competency needs of oncology nurses regarding chemotherapy administration.
4. To develop a brochure for registered nurses working in oncology to educate patients undergoing chemotherapy administration in public and private oncology settings.

The ability to deliver competent care while maintaining patient safety is one of the nurse's basic skills (Zhou, Snoswell, Harding, Bambling Edirippulige, Bai and Smith, 2020). The basis for changing behaviour is knowledge and attitudes which are considered significant motivators of behaviour change. Zhou, et al., (2020) affirms that the ability to deliver competent care while ensuring that patients are educated whilst undergoing chemotherapy is one of the registered nurses' basic skills in the oncology settings.

7.2 RECOMMENDATIONS

The findings from this study informed the following recommendations for research, education, nursing practice and administration.

7.2.1 Research recommendations

- As this study was conducted in the KwaZulu-Natal province it is recommended that similar studies be conducted in other provinces throughout South Africa, so as to enable comparison of the various studies results.

7.2.2 Education recommendations

- The study promotes provision of continuous professional development to ensure that oncology nurses knowledge is regularly updated.
- Oncology nursing needs specialized, and efficient nursing care, so nurses employed for oncology nursing should be provided with appropriate oncology training so comprehensive and compassionate care is rendered to their patients.

7.2.3 Nursing Practice recommendations

- The study can provide informative reading material on chemotherapy administration to guide nurses in dealing with patients undergoing chemotherapy in the oncology units.
- The study highlights that Chemotherapy safety administration standards must be applied for nurses that working in oncology units.

7.2.4 Nursing Administration recommendations

- The researcher believes that the results from this study are informative and meaningful for health policy makers and it could be considered when developing and implementing plan to guide nurses and enable them to provide oncology care comprehensively in the near future.

7.3 LIMITATIONS

1. A limitation of the study was that, not all oncology nurses could be reached as some were on vacation, off-sick and some did not want to participate.
2. The study was carried out in three oncology facilities in Ethekewini and Mgungundlovu district and does not reflect the general population of the whole region.
3. Data collection was conducted immediately once Covid 19 regulations were relaxed. The researcher experienced that a few registered nurses displayed despondency and verbalised no interest to participate.
4. Support groups in brochure are applicable to Durban only.
5. Only registered nurses were included in the study, no patients were included, hence their voices were not represented.

7.4 THE RESEARCHER REFLECTION

From being a registered nurse to qualifying as a registered oncology nurse, I realized that there was so much to give in the oncology setting. I have realized that oncology is unique

compared to other nursing domains. The researcher is a qualified oncology registered nurse who is employed by a private oncology practice with 19 years of experience in oncology nursing.

I was worried about this knowledge of registered nurses and the information that is shared with patients as they undergo chemotherapy which prompted me to investigate registered nurses knowledge, attitudes and competency, then develop something that will bridge the observed information gap.

During the interview one of the participants asked “How do we give health education in the private sector as they are sometimes very busy in the public sector to see to all patients?” I explained that I am aware that the process may be different but the main focus is to ensure that health education is given as patient will cope better when they know what to expect. An observation made during the interviews was that majority of the participants felt that there was not much follow up and emotional support that is given to patients which prompted the development of the brochure (Annexure J)

Conducting mixed methods research was my first experience and exposure was particularly difficult. I was overwhelmed by the amount of data and the detailed descriptions of the participants. It was fascinating to realise how quantitative data, codes and themes from qualitative data, all integrated in the development of the brochure.

7.5 CONCLUSION

Nurses’ knowledge, attitude and competency regarding oncology can significantly affect the ultimate treatment outcome.

The current study described the knowledge, attitudes and competence of nurses working in oncology settings. Emanating from the quantitative and qualitative data obtained a brochure was then developed and evaluated by experts. Registered nurses play an important role in educating patients. It is hoped that nurses working in oncology settings will use this brochure to empower patients as they provide valuable emotional support to patients undergoing chemotherapy. In turn, it is hoped that patients will feel emotionally resilient by being able to be aware of the various emotions that could be encountered as well as the knowledge to access support, whilst receiving chemotherapy. The current study was sent to professional editors for grammar and spelling errors before submission, corrections were done and certification was issued (see annexure K).

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Annexure A: Information sheet-Stage 1 and 2

Dear Colleague

My name is Bonisiwe Mdletshe-215078950, a Master's student from the Department of Nursing/School of Nursing and Public Health/University of KwaZulu-Natal/Howard campus.

You are being invited to consider participating in a research study that is entitled **“Developing a brochure for registered nurses working in oncology to use for patients, pre, during and post chemotherapy** under the supervision of Dr E.Z.Gumede and Dr D.Wentzel. The study is expected to enroll approximately eighty-five participants in total using all sites in the eThekweni and uMgungundlovu health districts, KwaZulu-Natal. The duration of your participation if you choose to enroll and remain in the study is expected to be in phases depending on your availability. The study will involve a mixed method approach. You will be required to complete a questionnaire (approximately 20-30 minutes) and, interviews at a later stage.

In view of the current pandemic, we will use different methods of communication including emails, skype, zoom sessions, whatsapp etc. All this will be guided by the participant's preferences. The individual interviews will be recorded. The researcher and the supervisor will manage the data obtained from the study. All data will be kept for a period of 6 years; thereafter it will be destroyed according to the UKZN policy.

Ethical Consideration

- Your participation in this study is voluntary, and you may withdraw at any time without any penalty, should you request to.
- Your privacy, confidentiality and anonymity will be assured at all times.
- You will not receive any monetary or any other type of incentives.
- You will not be expected to cover any cost withdraw towards the study.

In the event of any problems or concerns, you may contact the researcher, supervisor, co-supervisor or the UKZN Biomedical Research Ethics Committee, contact details as follows:

BIOMEDICAL RESEARCH ETHICS ADMINISTRATION

Research office, Westville Campus

Govan Mbeki Building

Private Bag X54001

Durban

4000

KwaZulu-Natal, South Africa

Tel: 27 31 2604769 – Fax: 27 31 2604609

Email: PREC@ukzn.ac.za

Research Supervisor: DR. E.Z. Gumede

Address: UKZN Howard Campus

Cell no: [REDACTED]

Email: gumede@ukzn.ac.za

Co- Supervisor: Dr. D. Wentzel

Address: UKZN Howard Campus

Cell no: [REDACTED]

Email: wentzel@ukzn.ac.za

Researcher: Mrs B.Mdletshe

Address: Hopelands Cancer Centre

Cell no: [REDACTED]

Email: [REDACTED]

Thank you

Researchers' signature

Witness' signature

___/___/___

Date

___/___/___

Date

Annexure B1. Informed Consent for Quantitative-Stage 1

Ihave been informed about the study entitled “Developing a brochure for registered nurses working in oncology to use for patients, pre, during and post chemotherapy in public and private outpatient oncology settings in KwaZulu-Natal” by Bonisiwe Mdletshe.

I have been given an opportunity to ask questions about the study and have had answers to my satisfaction.

I declare that my participation in this study is entirely voluntary and that I may withdraw at any time without affecting any of the benefits that I usually am entitled to.

If I have any further questions/concerns or queries related to the study I understand that I may contact the researcher on b [REDACTED] or 0 [REDACTED].

If I have any questions or concerns about my rights as a study participant, or if I am concerned about an aspect of the study or the researcher then I may contact:

BIOMEDICAL RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus

Govan Mbeki Building

Private Bag X 54001

Durban

4000

KwaZulu-Natal, SOUTH AFRICA

Tel: 27 31 2604769 - Fax: 27 31 2604609

Email [BREC@ukzn.ac.za](mailto: BREC@ukzn.ac.za)

Signature of Participant

___ / ___ / _____

Date

Signature of Witness

___ / ___ / _____

Date

Annexure-B2: Informed consent –Qualitative-Stage 2

I _____ (Full name of participant) have been informed about the study entitled “Developing a brochure for registered nurses working in oncology to use for patients, pre, during and post chemotherapy in public and private outpatient oncology settings in KwaZulu-Natal” by Bonisiwe Mdletshe.

I understand the purpose and procedure of the study.

I have been given an opportunity to answer questions about the study and have had answers to my satisfaction.

I declare my participation in this study is entirely voluntary and that I may withdraw from the study at any time without any penalty. I understand that I will not receive any monetary reward for my participation in this study.

I give permission that the interview be audio recorded. YES / NO

If I have any further questions related to the study, I understand that I may contact the researcher on 0 [REDACTED]; email address: [REDACTED]

If I have any questions about my rights as a study participant, or if I am concerned about any aspect of the study or the researchers then I may contact:

BIOMEDICAL RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus
Private Bag X 54001
Durban
4001
KwaZulu-Natal, SOUTH AFRICA
Tel: 27 31 2604769 – Fax: 27 31 2604609
Email: BREC@ukzn.ac.za

Signature of Participant

___ / ___ / ___
Date

Signature of Witness

___ / ___ / ___
Date

Annexure B3: Information sheet- Focus group discussion – Stage 4A and 4B

Good day

My name is Bonisiwe Mdletshe, studying at the University of KwaZulu-Natal, School of Nursing and Public Health. My contact number is [REDACTED] and my email address is [REDACTED] or 215078950@stu.ukzn.ac.za.

You are being invited to consider participating in a focus group discussion in the study entitled: **Developing a brochure for registered nurses working in oncology to use for patients, pre, during and post chemotherapy** under the supervision of Dr E.Z.Gumede and Dr D. Wentzel. The focus group discussion will take place in two stages.

Stage one is expected to enroll registered nurses depending on their availability that have formed part of quantitative and qualitative information to a virtual focus group interview, to check the relevance of a developed brochure and getting their input. Stage two will invite experts in the field of oncology that will focus on what they think about developed brochure, recommendations and their input.

Although every effort will be made to ensure that other participants will respect confidentiality of what you disclose in the group, this cannot be guaranteed. For this reason, you are advised not to disclose personal sensitive information in the focus group.

The researcher will use the audio recorder during the focus group discussion depending on their consent. All ethical considerations will be adhered to.

- Please be aware that participation is voluntary, participants may disengage at any time during the study and will not lose any benefit.
- There are no foreseen possible risks associated with participation in this study and there is no direct benefit linked to the participation in this study.
- Potential benefits associated with the study is that the developed brochure may contribute towards knowledge, attitudes and competency of nurses working in oncology units.
- Anonymity of all data will be maintained by the use of pseudo names or participants A or B etc.
- All questions are focused on the study and are in no way of a personal nature.
- All forms of data will be kept safe under lock and key in a safe place for 5 years and will be destroyed by shredding.

There will be no costs incurred by you as a result of your participation in the study, as well as incentives.

In the event of any problems or concerns, you may contact the researcher, supervisor or the UKZN Biomedical Research Ethics Committee, contact details as follows:

BIOMEDICAL RESEARCH ETHICS ADMINISTRATION

Research office, Westville Campus

Research Supervisor: DR. E.Z. Gumede

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Tel: 27 31 2604769 – Fax: 27 31 2604609

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Researcher: Bonisiwe Mdletshe

Address: 28 Hopelands Cancer Centre

Cell no: 0 [REDACTED]

Email: b [REDACTED]

Thank you

Researchers signature

___/___/___

Date

Annexure-B4: Informed consent –Focus group and Experts

I _____ (Full name of participant) have been informed about the study entitled “Developing a brochure for registered nurses working in oncology to use for patients, pre, during and post chemotherapy in public and private outpatient oncology settings in KwaZulu-Natal” by Bonisiwe Mdletshe.

I understand the purpose and procedure of the study.

I have been given an opportunity to answer questions about the study and have had answers to my satisfaction.

I declare my participation in this study is entirely voluntary and that I may withdraw from the study at any time without any penalty. I understand that I will not receive any monetary reward for my participation in this study.

I give permission that the focus group discussion be audio recorded. YES / NO

If I have any further questions related to the study, I understand that I may contact the researcher on 0 _____: email address: _____

If I have any questions about my rights as a study participant, or if I am concerned about any aspect of the study or the researchers then I may contact:

BIOMEDICAL RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus
Private Bag X 54001
Durban
4001
KwaZulu-Natal, SOUTH AFRICA
Tel: 27 31 2604769 – Fax: 27 31 2604609
Email: BREC@ukzn.ac.za

Signature of Participant

___ / ___ / ___
Date

Signature of Witness

___ / ___ / ___
Date

Annexure C 1

Email requesting permission from Setting A

Inbox

Bonie Mdletshe <b[REDACTED]m>

Attachments

Thu, Oct 1, 2020, 7:27 AM

to sashwin, vanessa, Bonisiwe

Dear Sashwin and Vanessa

Hope this email finds you well.

As part of my research project for my master's degree, I hereby request permission to conduct research at our institution.

My topic is **“Developing a Brochure for Registered Nurses working in oncology to use on patients prior, during and post chemotherapy”**.

The study approach is a mixed method that will include a questionnaire and interviews with consented participants. The participants will be all registered nurses who will be required to fill in a questionnaire that may take approximately 20-30 minutes of their time and interviews with 2-4 doctors.

In order for me to receive ethical approval, the requirement is the support letter from the research setting.

I will forward the whole proposal and recommendations on completion of the study.

Kind regards

Boni

Annexure C 2

Email requesting permission from Setting C

Inbox

Bonie Mdletshe <b[REDACTED]>

Attachments

Sun, Dec 13, 2020, 9:44 AM

to logandran.naidoo, mckenziekt.mckenzie, Bonisiwe

Dear Dr/Nurse Manager

My name is Boni Mdletshe, I am a registered oncology nurse employed at Hopelands cancer centre and I am currently doing my masters' degree in nursing research at the University of KwaZulu Natal under the supervision of Dr Gumede and Wentzel. As part of my research requirement, I hereby request permission to conduct research in your highly appreciated institution.

My topic is **Developing a brochure for registered nurses working in oncology to use for patients, pre,during and post chemotherapy in public and private oncology settings.**

Due to covid 19 pandemic and restrictions, the questionnaires and interviews will be virtual and may take 20-30 minutes of consented registered nurses.

Oncology nursing requires continuous knowledge and competency and developing a brochure may be beneficial to oncology health care workers and improve patient outcomes regarding information required, before,during and post chemotherapy.

In order to get ethical approval, I will be needing a support letter from the research setting.

Attached is the research protocol, interview guide and questionnaire.

Thanking you in advance

Kind regards

Boni

Annexure C 3

Email requesting permission from Setting B

Inbox

Bonie Mdletshe [REDACTED] m>

Attachments

Sun, Dec 6, 2020, 8:02 PM

to Nomusa, mandisa.hlongwane, Bonisiwe

Hope this email finds you well.

My name is Boni Mdletshe, I am a registered oncology nurse employed at Hopelands cancer centre and I am doing my master's degree in nursing research at the University of KwaZulu Natal under the supervision of Dr Gumede and Wentzel. As part of my research requirement, I hereby request permission to conduct research in your highly appreciated institution.

My topic is **Developing a brochure for registered nurses working in oncology to use for patients, pre, during and post chemotherapy in public and private oncology settings.**

Due to covid 19 pandemic and restrictions, the questionnaires and interviews will be virtual and may take 20-30 minutes of consented registered nurses.

Oncology nursing requires continuous knowledge and competency and developing a brochure may be beneficial to oncology health care workers and improve patient outcomes regarding information required, before, during and post chemotherapy.

In order to get ethical approval, I will be needing a support letter from the research setting.

Attached is the research protocol, interview guide and questionnaire.

Thanking you in advance

Kind regards

Boni

Annexure D1 Support letter from setting A

Dr. Rob de Bruyne	HONM, FC Rad Onc (SA)
Dr. Shane Cullis	BSc, HONM, FC Rad Onc (SA)
Dr. Luci Jooste	HONM, FC Rad Onc (SA)
Dr. Riaz Mait	HONM, FC Rad Onc (SA)
Dr. Diana Pillay	HONM, DCh, SA, FC Rad Onc (SA), M.Jed (ONC)
Dr. Ziad Seedat	HONM, FC Rad Onc (SA), MBA (Edinburgh)
Dr. Robbie Dent	HONM, FC Rad Onc (SA), PGDipPalnat
Dr. JD Sithu	HONM, FC Rad Onc (SA)
Dr. Rob Wilson	BSc, HONM, FC Rad Onc (SA)
Dr. Hasnah Asmal	HONM, FC Rad Onc (SA), PGDipPalnat
Dr. Adam McCleave	HONM, FC Rad Onc (SA)
Dr. Jaishanthan Reddy	HONM, FC Rad Onc (SA)
Dr. Pelham Plek	HONM, FC Rad Onc (SA), M.Rad Oncology UFS

9th October 2020

Dear Bonisiwe,

RE: LETTER OF SUPPORT

We have received your request to conduct a survey during 2020 & 2021 within our practice to support your research titled "Developing a Brochure for Registered Nurses working in oncology to use on patients prior, during and post chemotherapy"

The directors have granted you permission to conduct the survey amongst our nursing team and look forward to the results, outcomes and recommendations of your research.

Please liaise with our registered nurses at each centre with regards to suitable times to conduct your survey questionnaire.

Kind regards,



Sashwin Padayachee
Chief Financial & Operating Officer
Hopelands Cancer Centre

Annexure D 2 Support letter from setting B



KWAZULU-NATAL PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

Private Bag X 3021, Pietermaritzburg, 3200
231 Town Bush Road, Northern Park, Pietermaritzburg, 3201
Tel: 0339973321 Fax: 0339973398

GREY'S HOSPITAL
OFFICE OF THE CEO

To:	Boniwise Mdletshe Registered Nurse – Hopelands Cancer Centre
From:	Mrs. K.T. McKenzie Acting CEO - Greys Hospital
Date:	14 December 2020
Re:	Request for gatekeeper permission to conduct research at Grey's Hospital: <i>Developing a Brochure for Registered Nurses working in Oncology to use for Patients, pre, during and post Chemotherapy in Public and Private Oncology Settings in KwaZulu-Natal</i>

Dear Ms. Mdletshe

Your request to conduct research at Grey's Hospital refers.


Gatekeeper permission to conduct the above study is hereby granted under the following conditions:

- Final ethics approval is a prerequisite for conducting your study at our hospital. Once obtained, please submit a copy of the full and final ethics approval;
- You are also required to obtain approval for your study from the Provincial Department of Health KZN Health Research Unit prior to commencement. Once obtained, please submit a copy. You will find more information at: <http://www.kznhealth.gov.za/hrkm.htm>
- Confidentiality of hospital information, including staff and patient medical and/or contact information, must be kept at all times; **Patient/staff records are not to be removed from the hospital premises nor are you allowed to photocopy/ photograph them.**
- **You are to ensure that your data collection process will not interfere with the routine services at the hospital;**
- You are to ensure that hospital resources are not used to manage your data collection, e.g. hospital staff collecting and/or collating data; photocopying; telephone; facsimile, etc.;
- Informed consent is to be obtained from all participants in your study;
- Policies, guidelines and protocols of the Department of Health and Grey's Hospital must be adhered to at all times;
- Professional attitude and behaviour whilst dealing with research participants must be exhibited;
- The Department of Health, hospital and its staff will not be held responsible for any negative incidents and/or consequences, including injuries and illnesses that may be contracted on site, litigation matters, etc. that may arise as a result of your study or your presence on site.
- You are required to submit to this office a summary of study findings upon completion of your research.
- You are requested to make contact with the **Nursing Manager, Mrs. K.T. McKenzie**, at Grey's Hospital once you are ready to commence data collection.
- Please keep a copy of this approval on your person at all times whilst in the facility.

Recommended by:


Dr L. Naidoo
Senior Manager: Medical Services

Approved by:


Mrs. K.T. McKenzie
Acting Hospital CEO

Annexure D3-Support Letter from Setting C



KWAZULU-NATAL PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

DIRECTORATE:

KOSI ALBERT LUTHULI CENTRAL HOSPITAL

OFFICE OF THE MEDICAL MANAGER

Private Bag X03, Mayville, 4058

10 Vusi Mzimela (Bellair) Road, Mayville, 4091

031 240 1059 Fax: 031 240 1050 Email: Ursula.john@lalch.co.za

19 April 2021

Ms N Mkhize
Nursing Management
IALCH


Dear Ms Mkhize

RE: Research Application – Ref: N2/190421: Ms Bonisiwe Mdletshe – Student number 215078950: MASTERS RESEARCH PROJECT

Please find attached the following study for approval from Nursing Management

Protocol: Developing a Brochure for Registered nurses working in Oncology to use for Patients, pre, during and post Chemotherapy in Public Oncology Settings in KwaZulu-Natal.

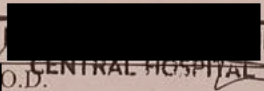
Yours faithfully


pp **Dr L.P. Mtshali**
Senior Manager Medical Services

RECOMMENDATION

The permission for Ms B. Mdletshe to access departments for the purpose of her research is granted.

Approved:


CENTRAL HOSPITAL
O.D.
2021-04-22
MANAGER: NURSING
GROWING KWAZULU-NATAL TOGETHER

None Approved:

H.O.D.

Annexure E 1 –email sent to Department of Health

Bonie Mdletshe [REDACTED] >

Sun, Mar 21, 3:56 PM

to Xaba

Hope this email finds you well.

My name is Rachel Bonisiwe Mdletshe, a masters student doing research under Dr Gumede and Wentzel's supervision.

I would like to request permission to conduct my study at Inkosi Albert and Grey's hospital.

Before submitting my proposal to Ukzn ethics, my supervisor requires that I get correspondence from you indicating my intent to use your institution and then proceed with my ethics application.

Please advise.

Kind regards

Boni

Annexure E 2- Email response from the Department of Health

Xaba Xolani <X[REDACTED]>

Mar 24, 2021, 11:02 AM

to me

Good day,

We can only process your application once you have ethics approval and letters of support from the two hospitals. If you submit your ethics application to UKZN ethics, the REC will issue a provisional ethics approval document which you can then use to approach the hospitals and then the Department of Health for approval.

Regards,

Xolani

Annexure F- BREC approval



06 June 2022

Mrs Rachel Bonisiwe Mdletshe (215078950)
School of Nurs & Public Health
Howard College

Dear Mrs Mdletshe,

Protocol reference number: BREC/00003935/2022

Project title: Developing a Brochure for Registered Nurses working in Oncology to use for Patients, pre, during and post Chemotherapy in Public and Private Oncology Settings in KwaZulu- Natal

Degree: Masters

EXPEDITED APPLICATION: APPROVAL LETTER

A sub-committee of the Biomedical Research Ethics Committee has considered and noted your application.

The conditions have been met and the study is given full ethics approval and may begin as from 06 June 2022. Please ensure that any outstanding site permissions are obtained and forwarded to BREC for approval before commencing research at a site.

This approval is subject to current national and UKZN lockdown regulations, see (http://research.ukzn.ac.za/Libraries/BREC/BREC_Lockdown_Level_1_Guidelines.sflb.ashx). Based on feedback from some sites, we urge Pls to show sensitivity and exercise appropriate consideration at sites where personnel and service users appear stressed or overloaded.

This approval is valid for one year from 06 June 2022. To ensure uninterrupted approval of this study beyond the approval expiry date, an application for recertification must be submitted to BREC on the appropriate BREC form 2-3 months before the expiry date.

Any amendments to this study, unless urgently required to ensure safety of participants, must be approved by BREC prior to implementation.

Your acceptance of this approval denotes your compliance with South African National Research Ethics Guidelines (2015), South African National Good Clinical Practice Guidelines (2020) (if applicable) and with UKZN BREC ethics requirements as contained in the UKZN BREC Terms of Reference and Standard Operating Procedures, all available at <http://research.ukzn.ac.za/Research-Ethics/Biomedical-Research-Ethics.aspx>.

BREC is registered with the South African National Health Research Ethics Council (REC-290408-009). BREC has US Office for Human Research Protections (OHRP) Federal-wide Assurance (FWA 678).

The sub-committee's decision will be noted by a full Committee at its next meeting taking place on 12 July 2022.

Yours sincerely,



Prof D Wassenaar
Chair: Biomedical Research Ethics Committee

Biomedical Research Ethics Committee

Chair: Professor D R Wassenaar

UKZN Research Ethics Office Westville Campus, Govan Mbeki Building

Postal Address: Private Bag X54001, Durban 4000

Email: BREC@ukzn.ac.za

Website: <http://research.ukzn.ac.za/Research-Ethics/Biomedical-Research-Ethics.aspx>

Founding Campuses: ■ Edgewood ■ Howard College ■ Medical School ■ Pietermaritzburg ■ Westville

INSPIRING GREATNESS

Annexure G: Quantitative Tool

SECTION A-DEMOGRAPHIC

Tick ✓the appropriate box

A1. Please, indicate your gender

Male	1
Female	2

A2. Please, indicate your age

20-30 years	1
31-40 years	2
41-45 years	3
< 50	4

A3. Please, indicate your experience as a registered nurse

Less than 5 years	1
5– 10 years	2
11 – 15years	3
Above 15 years	4

A4. Please, indicate your professional qualifications

Registered Nurse (General stream)	1
R/N (Dipl. in Oncology)	2
R/N (Degree in oncology)	3

SECTION B-KNOWLEDGE

Statement	Strongly Disagree	Disagree	Neutral	Strongly Agree	Agree
B.1. To guide me on daily administration of chemotherapy, I have enough:					
Information	1	2	3	4	5
Knowledge	1	2	3	4	5
Skills	1	2	3	4	5
B.2. I know how to:					
Access chemotherapy port.	1	2	3	4	5
Select veins for chemotherapy administration.	1	2	3	4	5
B.3. Regarding oncological management, I can:					
Manage patients with pains.	1	2	3	4	5
Identify adverse reaction	1	2	3	4	5
Prevent extravasation during chemotherapy administration.	1	2	3	4	5
Manage oncological emergencies, for example spinal cord compression, pulmonary emboli and other complications.	1	2	3	4	5
B.4. I know how to calculate Body surface area (BSA) to ensure correct patient dosage	1	2	3	4	5
SECTION C-ATTITUDES					
C.1. I consider the emotional, cultural and spiritual context of patients and families pre, during and post chemotherapy	1	2	3	4	5
C.2. I always feel that I have supported patients during their chemotherapy.	1	2	3	4	5
C.3. I feel confident to manage patients	1	2	3	4	5

undergoing chemotherapy?					
C.4. I avoid patients who are experiencing bad side effects from chemotherapy	1	2	3	4	5
C.5. I encourage patients to have family support during chemotherapy journey.	1	2	3	4	5
C.6. I allow my patients to express their feelings regarding chemotherapy and its complications	1	2	3	4	5

SECTION D COMPETENCY					
D.1. I require further training in oncology nursing	1	2	3	4	5
D.2. To meet up with the evolving cancer care and demands, our institution needs to provide us with:					
in-service training	1	2	3	4	5
Workshops	1	2	3	4	5
formal continuing education	1	2	3	4	5
D.3. When patients present with complications caused by chemotherapy, I feel confident to handle them.	1	2	3	4	5
D.4 I have competency in chemotherapy administration and management of chemotherapy adverse reactions.	1	2	3	4	5

SECTION E

E.1. Do you think patients undergoing chemotherapy are well informed about the process?

Yes [1]	No [2]
---------	--------

If Yes, what are the (5) key things that should be included as part of their health education process?

- 1.....
- 2.....
- 3.....

4.....

5.....

If NO, what must happen, please explain?

.....

E.2. In few words, what do you think would contribute towards nurses' ability to provide comprehensive (adequate) information to oncology patients?

.....

.....

.....

THANK YOU FOR YOUR COOPERATION

Annexure H1: Qualitative Tool

Interview Guide for interviews-Stage 2-part 1

Introduction of the researcher/ice-breaking

What can you tell me about nurses' knowledge on chemotherapy?

Probe

- information
- skills

What do you think about nurses' attitudes towards chemotherapy in your unit?

What are thoughts regarding nurses' competency?

- Level of competency
- training/in-service

What would guide nurses regarding daily chemotherapy administration?

Probe

- Chemotherapy side-effects
- management of side-effects at home
- attitudes towards chemotherapy

What do you think would enhance your ability to provide information on chemotherapy?

Probe

- availability of reading materials
- time

What resources do you think would support you as a nurse regarding chemotherapy administration?

How do you think nurses can inform patients undergoing chemotherapy about the chemotherapy process?

Probe

- waiting time
- investigations prior to starting chemotherapy
- follow-up visits

Annexure H2: Qualitative Tool

Interview guide- Qualitative- Stage 2-part 2

1. Chemotherapy side effects have come out strongly during our first interview. What side effects would you like to see on the brochure?
2. What would you like to see in the brochure specifically?

Annexure I

Focus group and Experts interview guide

1. Did you find the information that was contained in the brochure useful?
2. How will the brochure help you to fulfil patient's information needs?
3. What is your overall feel about the brochure?

Annexure J: Developed Brochure and Presentation

HELPING CANCER PATIENTS COPE WITH THE EMOTIONAL ASPECT OF CHEMOTHERAPY-THE ROLE OF A REGISTERED NURSE



This brochure was developed for the fulfilment of my master’s research entitled “Developing a brochure for registered nurses working in oncology to use for patients, before, during and after chemotherapy in oncology settings”

Developed by Boni Mdletshe, 2023

University of KwaZulu-Natal

What happens?

Cancer has a reputation of being a disfiguring and incurable disease and its diagnosis can have a profound impact on patients and their family members. When patients first receive the news that they have cancer, most of them feel scared and anxious and this can make them particularly vulnerable. Patients worry about their coping skills during this period.

How can anxiety be described?

Anxiety can be experienced as a feeling of nervousness, tension, emotional distance, worry, or fear that something bad is about to happen. Many patients feel anxious all the time and they need on-going support or someone to talk to.

Cancer Treatment

Systemic therapies for cancer include chemotherapy, hormonal and targeted therapies. These treatments can be administered in an inpatient hospital facility or at outpatient clinics. The administration of systemic chemotherapy is cycled every two to three weeks with each session lasting from one to six hours depending on the drug type that you have. In the outpatient setting, patients return to their home after the session of chemotherapy. Oral medication is also dispensed in three-to-four-week cycles at the outpatient oncology facility.

Chemotherapy regimens can impose significant psychological strain on patients creating both anxiety and depression which can impair the quality of life of patients.

Common fears that affect patients emotionally are:

- Changes in physical appearance
- Losing their hair (especially females)
- Fear of losing their jobs (financial implications)
- Feeling of helplessness
- Coping with physical side effects (example, nausea, neuropathy, weight changes and many more)
- Fear related to their fertility
- Loss of their sex drive
- Loss of social relationships
- The unknown
- Feeling of helplessness.

Common chemotherapy side effects

Registered nurses will explain the side effects that your chemotherapy is likely to cause. Most patients worry about whether they will have side effects from chemotherapy and, if so, how they will cope. This includes:

Fatigue, easy bruising and bleeding, infection, anaemia (low red blood cells and neutropenia (low white blood cell counts), appetite changes, constipation, diarrhoea, pain, chemo brain (forgetfulness) and mood changes.

Some chemo drugs cause long-term side effects, like heart or nerve damage or fertility problems. There may be investigations or tests required before commencing chemotherapy; these include heart tests (echo), chest x-ray, scans and blood tests.

Registered nurses often focus on the physical side effects of cancer treatments and unfortunately can sometimes neglect to address the emotional vulnerability of their patients. This can further exacerbate the patients' fragile emotional state of mind leading to a compromise of their quality of life.

Emotional stages

According to Kübler-Ross (1960), patients can go through five different stages when they receive the news about cancer and sometimes their needs are unmet.



These stages do not always happen in the same order. Patients can move from one stage to the other and they need to know that the nurses and other support systems are available to guide them through the process.

The Five stages

1. **Denial** – "I feel fine."; "This can't be happening, not to me." this is usually a temporal defence and usually replaced by awareness.
2. **Anger** – "Why me? It's not fair!"; "How can this happen to me?"; "Who is to blame?"
Once in the second stage, the individual recognizes that denial cannot continue.
3. **Bargaining** – "Just let me live to see my children graduate."; "I'll do anything for a few more years."; "I will give my life savings if...". Psychologically, the individual is saying, "I understand that I have cancer but if I could just have more time..."
4. **Depression** – "I'm so sad, why bother with anything?"; "What's the point of having chemotherapy?" and ", why go on?" This is an important time for the patient to process everything on their own.
5. **Acceptance** – "It's going to be okay."; "I can't fight it, I may as well prepare for it." In this last stage, the individual begins to come to terms with the reality and get ready to fight with the cancer reality.

The use of counselling services and support groups can assist patients to make their cancer journey less trying and more manageable. It must be noted that the diagnosis of cancer can be an overwhelming experience with the patient having no chance to process their emotions.

The Role of the Oncology Nurse



Oncology Nurses need to have a thorough understanding of their patients throughout each of these stages. Their presence and support can be an important buffer to help patients face their fears and worries in a safe, private environment.

Understanding the role of the oncology nurse empowers patients as they provide valuable physical and emotional support prior to, during and post systemic therapy administration.

If patients are both mentally and emotionally strong, they will be able to cope with the physical impact of chemotherapy.

When patients return home following their treatment, they may be assisted by oncology nurses but will also benefit from support from family and friends. Cancer support groups also help relieve the emotional upheaval they face during their chemotherapy journey.

If patients are both mentally and emotionally strong, they will be able to cope with the physical impact of chemotherapy.

Advice for Patients

Speak out and inform your oncology nurse of how you are feeling and if you need emotional assistance. Your doctor also may refer you to qualified professionals who work in association with your healthcare team.

Generic Available support groups:

Cancer Association of South Africa (CANSA) - 031 205 9525

Reach for a dream- 031 566 2220

Childhood Cancer Foundation South Africa (CHOC) - 031-2402917

AL-Ansaar Cancer support group-community support group situated in Overport-
0 [REDACTED]

References

Kübler-Ross, E. (1969). *On Death and Dying* (1st ed.). Routledge.

<https://doi.org/10.4324/9780203010495>

Macmillan Cancer Support Available from: <https://www.macmillan.org.uk/cancer-information-and-support/treatments-and-drugs>

Annexure K Editor's certificate for Language editing.



St Charles College,
Harwin Road,
Scottsville
Pietermaritzburg 3201
Tel: 083 593 2855
admin@kznlanguageinstitute.com
www.kznlanguageinstitute.com

Registration number: 131 804 NPO

Certificate of editing

29 November 2023

Name: Bonisiwe Mdletshe

Title: Developing a brochure for registered nurses working in oncology to use for patients, pre, during and post chemotherapy in public and private oncology settings in KwaZulu-Natal, South Africa

This serves to confirm that the above document was edited substantively by members of the KZN Language Institute's professional English language editing team. The document was returned to the author with tracked changes and comments intended to correct errors and to clarify meaning. It was the author's responsibility to attend to these changes.



J. Kerchhoff

Director of the KwaZulu-Natal Language Institute

KZN Language Institute - Transforming Words

Annexure L-Turnitin receipt



Digital Receipt

This receipt acknowledges that Turnitin received your paper. Below you will find the receipt information regarding your submission.

The first page of your submissions is displayed below.

Submission author: Rachel Bonisiwe Mdletshe
Assignment title: ethics proposal/protocol
Submission title: Developing a Brochure for Registered Nurses working in On...
File name: Topic_2021-Chapter_1_to_3.rtf
File size: 1.19M
Page count: 32
Word count: 9,436
Character count: 54,944
Submission date: 02-Sep-2021 12:49AM (UTC+0200)
Submission ID: 1538259672

CHAPTER ONE

1. INTRODUCTION AND BACKGROUND

Cancer has been one of the leading causes of ill health and leading worldwide, preventable, specific and chronic, (2011) affected that about 711,000 new cases and 501,000 cases of death were reported in Africa. The number of cancer cases is anticipated to increase by 2019 due to population growth and people getting older. According to the National Cancer Registry data, it indicates that in South Africa about one in eight people will experience some form of cancer during their lifetime. Cancer cost is one of the most crucial issues in the healthcare system (Shaw, 2018). Global Action Plan for the Prevention and Control of NCDs 2013-2020 is continuously urging countries to reduce health systems at local and national levels to deliver quality care for cancer patients (Yusuf and Tadjeran, 2018).

Cancer patients usually express a need for information to prepare themselves for treatment, specifically around issues of self-care during their cancer journey. (Shaw-Parker, Kipps, Bryan, Beveridge, Bustinza and Coen, 2016) cited by Schellfeld, Jeffrey, Carey, Thomson, Green, Robinson and Azzabi (2016) agree that to be informed about self-care management was vital to the South African population need. In a sample of people with different types of cancer, its accordance with the law to France on patients' rights (Benoit, 2016), every patient has a right to receive information in their hospital to give information regarding their health and medical system, this are available. When patients are due to receive their chemotherapy drugs, information about the chemotherapy cycle is provided verbally by a nurse during their first consultation. This information is added to previously discussed information by the oncologist such as the diagnosis, treatment options and duration, potential side-effects and management (Shaw, 2018).

Today, healthcare sector is characterized by a variety of competition and an increasing expectation from the patients. Patients are now well informed regarding expected standard of quality and the delivery of services (Hesse-Pfler and Kerschke, 2016). The increased cancer burden is associated with lifestyle adoption and economic development such as smoking, reduced physical activities and unhealthy diets (Khanlou, 2018). Health education plays a major role in any health care institution. It improves patients' ability to self-manage the

Annexure M-Turnitin updated receipt



Digital Receipt

This receipt acknowledges that Turnitin received your paper. Below you will find the receipt information regarding your submission.

The first page of your submissions is displayed below.

Submission author: **Boni Mdletshe**
Assignment title: **Quick Submit**
Submission title: **Final**
File name: **Fibal_Turnitin.docx**
File size: **62.22K**
Page count: **54**
Word count: **20,601**
Character count: **116,677**
Submission date: **01-Dec-2023 07:10AM (UTC+0200)**
Submission ID: **2243939872**

