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**The lived experiences of radiotherapists treating paediatric patients: Gauteng,
South Africa**

By

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A research dissertation submitted in the fulfilment of the requirements of the degree:

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In the

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Faculty of Health Sciences, University of Johannesburg

2021

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DECLARATION

I, the undersigned, hereby declare that this thesis has been composed solely by myself and that it has not been submitted in any previous application for a degree at the University of Johannesburg or any other university. The work presented is entirely my own. Further, I have acknowledged all sources used and have cited these in the reference section.

Signature: _____

Date: 28 August 2021



DEDICATION

I dedicate this dissertation to all the cancer patients and my late mother, Shaista Siddique, whose strength through her cancer journey inspired me. Mum, I feel honoured and privileged to have been your daughter. Thank you for your endless prayers and sacrifices, and for teaching me to believe in hard work and trust in Allah.

I hope I made you proud. I pray Allah elevates your rank, showers you with His mercy and generosity and grants you paradise, Aameen. I love you and I miss you dearly, until we meet again.

Cancer is so limited ...

It cannot cripple love.

It cannot shatter hope.

It cannot corrode faith.

It cannot destroy peace.

It cannot kill friendships.

It cannot suppress memories.

It cannot silence courage.

It cannot invade the soul.

It cannot steal eternal life.

It cannot conquer the Spirit.

Unknown Author

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ABSTRACT

Radiotherapy has an important role in the treatment of paediatric cancers. Paediatric radiotherapy, however, requires absolute precision and accuracy in delivering the prescribed dose. For radiotherapists, the complexity of performing paediatric radiotherapy treatment is augmented by time, pressure constraints and the patient's lack of cooperation due to fear and anxiety. Continually confronting uncooperative paediatric patients and emotional parents enhances radiotherapists' anxiety and emotional challenges. Additionally, paediatric cancers are rare; as a result, radiotherapists' experiences in treating paediatric cancers are limited. Although there is evidence that radiotherapists treating paediatric patients face challenges, there is a paucity of literature in this regard. The multiple challenges that radiotherapists face could have an impact on the quality of patient care provided to paediatric patients if they are not recognised and reduced. Therefore, it becomes imperative to explore their experiences.

The purpose of this qualitative phenomenological study was to explore and describe the lived experiences of radiotherapists treating paediatric patients and to develop guidelines to support radiotherapists. The research population included all qualified radiotherapists in Gauteng registered with the Health Professions Council of South Africa. Data was collected through individual, in-depth, telephonic interviews, and a total of 17 participants were interviewed. Data saturation was reached. The researcher utilised the thematic analysis process to conduct a qualitative analysis of data. The research process required inductive reasoning to identify themes and deductive reasoning to relate the themes to established knowledge to develop guidelines.

The current study identified the importance of radiotherapists gaining familiarity in paediatric radiotherapy to become competent radiotherapists. Furthermore, the study confirmed that radiotherapists treating paediatric patients work within a highly intense emotional context. Their closeness of contact with the paediatric patient, parents and family dimension has both positive and negative implications for their experiences. The necessity to advance the practical infrastructural areas and strive for enhanced professionalism to improve paediatric radiotherapy was emphasised. Guidelines were developed and recommendations made to address the issues identified in the current study to enhance radiotherapists' experiences of treating paediatric patients.

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CHAPTER 1

OVERVIEW OF THE STUDY

1.1 INTRODUCTION

Cancer is a major global public health problem associated with a high incidence of mortality (Moroe & Hughes, 2017:1). A cancer diagnosis is thus associated with fear and has a profound emotional effect on the patient (Cook, Salmon, Hayes, Byrne & Fisher, 2018:791). Cancer is described as a life-threatening disease because, if not treated, it can result in death due to invasion and metastases to surrounding parts of the body (Moroe & Hughes, 2017:1).

Cancer occurs due to genetic damage that is primarily acquired but sometimes congenital and may result from environmental, behavioural and iatrogenic exposure to carcinogenic agents (Singh & Damato, 2019:11, 12). Carcinogens are categorised as chemical, infective, electromagnetic radiation and immunosuppressive (Singh & Damato, 2019:11, 12). Although cancer occurs in both adult and paediatric populations, the aetiology of the disease differs in its cause and origin (Dupain, Harttrampf, Urbinati, Georger & Massaad-Massade, 2017:315; Moroe & Hughes, 2017:1).

Unlike adult cancers, the aetiologic exploration of paediatric cancers reveals that most paediatric cancers do not have a known cause and develop due to chance (Westhoff, Marschall, Grunert, Karpel-Massler, Burdach & Debatin, 2018:3). Aetiological statistics depict that only 5% of all paediatric cancers occur due to inherited mutations, and no more than 8-10% of paediatric cancers are associated with germline mutations (Westhoff *et al.*, 2018:3; Dupain *et al.*, 2017:315). In addition, in contrast to adult cancers, very few cancers in children are caused by environmental or lifestyle factors (Dupain *et al.*, 2017:315). Adult cancers also occur 40 times more frequently when compared to the paediatric population, making paediatric cancers a rare occurrence (Saletta, Seng & Lau, 2014:157).

Even though paediatric cancers are rare, they are the most common cause of death by disease in children and therefore continue to be of significant public health importance (Steinmeier, Schleithoff & Timmermann, 2019:142; Jacques, Udowicz, Bayliss & Jansen, 2014:270; Smith, Hamilton & Grimard, 2014:276,277; Stefan &

Stones, 2012:605). Thirty-six thousand children are diagnosed annually in Africa, and the mortality rate is 60% (Stefan, Stones, Wainwright, Kruger, Davidson, Poole, Hadley, Forman, Colombet & Steliarova-Foucher, 2015:939). Even though the statistics are provided, it should be noted that paediatric cancer statistics and their impact are not readily available in the African continent as only 2% of the total African population is covered by population-based cancer registries (Edwards & Greeff, 2017:1; Stefan *et al.*, 2015:939,947). South Africa is the only country in Africa with a national childhood cancer registry that describes the cancer burden in the national paediatric population (Edwards & Greeff, 2017:1; Stefan *et al.*, 2015:939,947).

The rarity of cancers in the paediatric population results in them becoming a minority population in cancer research, posing a significant challenge in paediatric cancer research (Stefan *et al.*, 2015:939,947; Saletta, Seng & Lau, 2014:157). Moreover, paediatric patients and their malignancies are dissimilar to and distinct from adult patients and their malignancies, and the issue consequently requires proper addressing (Westhoff *et al.*, 2018:2; Stefan *et al.*, 2015:939). Therefore, in oncology, there is a clear distinction between the therapeutic approach utilised for adult cancers and paediatric cancers (Westhoff *et al.*, 2018:2).

A paediatric patient's capability for growth, reproduction, development and longevity is a distinguishing factor (Westhoff *et al.*, 2018:2; Chambers, 1991:1090). Most paediatric cancers differ from adult cancers because they arise from embryonal and developing cells rather than epithelial cells (Dupain *et al.*, 2017:315). Therefore, due to paediatric cancers occurring in the child's developing cells, they are considered to be more complex than adult cancers (Moroe & Hughes, 2017:2). As a result, treatment for paediatric cancers is complex and consequently necessitates specialised care (Moroe & Hughes, 2017:2).

Modern cancer treatments for paediatric cancers comprise a multimodality approach (Burdach, Westhoff, Steinhauser & Debatin, 2018:7). The three standard modalities used are chemotherapy, radiotherapy and surgery (Westhoff *et al.*, 2018:1, Burdach *et al.*, 2018:7). Treatment protocols can differ from one individual to another and can consist of different combinations. The specific combination will be dependent on what is best suited for that particular patient and malignancy (Israels, Challinor, Howard & Arora, 2015:607). Both radiotherapy and chemotherapy treatment

approaches are based on different methods of inducing cell death (Westhoff *et al.*, 2018:1). Paediatric tumours of a solid nature are most commonly treated with a neoadjuvant chemotherapy approach (Burdach *et al.*, 2018:7). This multimodality approach entails administering chemotherapy before the main treatment, identified as either surgery or radiotherapy (Burdach *et al.*, 2018:7). Subsequently, this allows the tumour to shrink, provides information about chemotherapy response and reduces the size of the treatment field (Burdach *et al.*, 2018:7).

One of the most important points to consider when treating paediatric cancer patients is the long-term complications of the treatment the patient might suffer from later in their lives (Westhoff *et al.*, 2018:5, 13). Modern treatment of paediatric cancers goes hand-in-hand with long-term complications such as developmental problems, secondary tumours, a decline in cognitive function and early aging (Burdach *et al.*, 2018:15). Long-term complications in children require careful evaluation since these complications are developmental and quite complex (Westhoff *et al.*, 2018:5, 13). The complexity arises because children cured of cancer may have many years to live. Therefore, they carry a progressively increasing risk of treatment-induced secondary tumours (Westhoff *et al.*, 2018:5, 6).

For paediatric patients (particularly younger than 5 years), chemotherapy is usually preferred over radiotherapy because younger children can tolerate higher doses of chemotherapy than adults (Westhoff *et al.*, 2018:3). The reason for this is that, unlike adults, paediatric patients are less likely to have chronic health conditions such as diabetes and heart conditions. Furthermore, paediatric organs are more primed and prepared for cell death, also known as apoptosis (Cancer.Net, 2019:1, Westhoff *et al.*, 2018:3). Moreover, many paediatric tumours are highly sensitive to chemotherapy (Batra & Wistinghausen, 2019:543). Chemotherapy has increased the survival rates of paediatric cancer patients by 75-85%, and it is highly successful in achieving the primary goal of cancer treatment that is curing cancer and its associated symptoms (Moroe & Hughes, 2017:2). Unfortunately, on that basis, concerns regarding the toxic effect of chemotherapy on the paediatric patient's quality of life are disregarded many a time (Moroe & Hughes, 2017:2).

An additional treatment modality considered for paediatric patients is radiotherapy. The aim of radiotherapy is to accurately deliver a high dose of radiation to the tumour

while sparing the normal tissues to prevent radiation-induced sequelae in the healthy normal tissue (Engvall, Angstrom-Brannstrom, Mullaney, Nilsson, Wickart-Johansson, Svard, Nyholm, Lindh & Lindh, 2016:2). Children are more sensitive and susceptible to radiation-induced long-term side effects and secondary tumours than adults due to their fast-growing tissues (Steinmeier, Schleithoff & Timmermann, 2019:142). Therefore, paediatric radiotherapy treatment planning requires precision from the onset of localisation to ensure accurate delivery of the dose prescribed. Enhancement of quality of life by reducing long-term side effects is of the utmost importance in paediatric radiotherapy (Steinmeier, Schleithoff & Timmermann, 2019:142). Radiotherapy treatment has been proven to successfully treat certain paediatric cancers, namely acute myeloid leukaemia, rhabdomyosarcoma, Wilms tumour, Hodgkin lymphoma and Ewing's sarcoma (Jairam, Roberts & James, 2013: E152). Despite this, radiotherapy is filled with challenges and adverse side effects resulting in its present limited use for the treatment of paediatric cancers (Jairam, Roberts & James, 2013: E152).

Controlling the paediatric patients' motion during localisation and treatment is one such challenge (Engvall *et al.*, 2016:2; Gardling, Manson, Tornqvist & Hallstrom, 2015:660). Immobilisation is therefore necessary and is achieved by using various devices such as masks, cradles and vacuum bags. These devices serve to restrain the intended treatment site on the patient's body, thereby restricting motion and allowing for accurate treatment delivery (Engvall *et al.*, 2016:2). The requirement for immobilisation necessitates a patient's compliance, and this can be difficult to attain when the patient is a child (Engvall, Lindh, Mullaney, Nyholm, Lindh & Angstrom-Brannstrom, 2018:9; Li, Chung, Ho & Kwok, 2016:36; Marcus, 2012:211). Difficulty in attaining compliance arises because paediatric patients undergoing radiotherapy treatment experience emotional stress due to their inability to understand the treatment process (Ponce & Martinez, 2018:3). They also experience difficulty handling symptoms such as pain associated with cancer and display high levels of fear associated with the radiotherapy treatment itself (Angstrom-Brannstrom, Engvall, Mullaney, Nilsson, Wickart-Johansson, Svärd, Nyholm, Lindh & Lindh, 2015:2).

Apart from immobilisation, another challenge radiotherapist face is conquering the fear experienced by paediatric patients. Fear is experienced due to the large radiotherapy equipment and the requirement to be alone in the treatment room during treatment

delivery because of the high energy radiation that is used (Engvall *et al.*, 2018:9; Engvall *et al.*, 2016:2). The length of treatment delivery varies, depending on the dose prescribed and technique used (approximately 10 minutes) (Willis & Barry, 2010:249). During treatment, the patient is continuously monitored by the radiotherapists on closed-circuit television (Willis & Barry, 2010:249). Although radiotherapy is a non-invasive and painless procedure, paediatric patients demonstrate high anxiety levels during treatment (Engvall *et al.*, 2018:9). The anxiety may be from being in an unfamiliar, new environment and fear of being alone in the treatment room during treatment delivery (Angstrom-Brannstrom *et al.*, 2015:2). Anxiety makes the paediatric patient less compliant with the demand to lie motionless during treatment (Engvall *et al.*, 2018:9).

Should the paediatric patient be uncooperative, general anaesthesia (GA) and sedation are used to ensure that the patient lies motionless during treatment for accurate and safe treatment delivery. The use of GA and sedation has been shown to affect the patient's daily life negatively, e.g. sleep disruption, decreased nutrition and clinical complications (Engvall *et al.*, 2016:2). In addition, the use of GA also increases the cost of treatment and is time-consuming (Engvall *et al.*, 2018:9).

A further challenge in paediatric radiotherapy is keeping the normal tissue doses below tolerance levels (Jairam, Roberts & James, 2013:E152). Paediatric tolerance dose levels are lower than in adult patients because there is a higher risk of toxicity (Sahraoui, 2016:208). Even though radiotherapy kills the tumour cells, the accompanying harmful side effects on normal tissue can adversely affect paediatric patients. The side effects include growth and developmental failure, infertility, pulmonary and cardiac abnormalities, neurocognitive defects, gastrointestinal dysfunction and secondary tumours (Jairam, Roberts & James, 2013:E152).

Radiotherapy-induced side effects are the reason why tolerance dose levels of normal organs need to be strictly adhered to in the treatment planning of paediatric cases (Sahraoui, 2016:208; Jairam, Roberts & James, 2013:E152). During radiotherapy treatment planning, some organs in the body, which are overlooked in adults, require protection in children as the patients have not reached their full height and reproductive age (Sahraoui, 2016:208). An example is high doses to the paediatric patient's pituitary gland and reproductive organs (ovaries and testes), which can halt

bone growth and result in infertility, respectively (Olch, 2013:12). In addition, the risk of developing radiation-induced malignancies is higher in children than in adults because a higher rate of cell proliferation in the early stages of human development increases the susceptibility of healthy cells to radiation mutation (Olch, 2013:13). Due to a large amount of evidence of late complications that radiotherapy causes in paediatric cancer patients, radiotherapy's present and future use are cautiously limited to clinical cases where the benefits outweigh the risks (Jairam, Roberts & James, 2013:E152). Jairam, Roberts and James (2013:E155) predict that further advancements and improvements in radiotherapy techniques and technology will lead to fewer side effects from treatment.

1.2 BACKGROUND AND RATIONALE

Radiotherapy is an important modality in the treatment of paediatric cancers, making radiotherapists valuable members of the paediatric cancer team (Janssens, Timmermann, Laprie, Mandeville, Padovani, Chargari, Journy, Kameric, Kienesberger, Brunhofer & Kozhaeva, 2019:48; Smith, Hamilton & Grimard, 2014:277). A radiotherapist is part of a multidisciplinary team involved in the treatment of cancer patients. Their role includes a combination of both technical expertise and patient care skills (Bolderston, Lewis & Chai, 2010:204). Therefore, they are defined as both technologists and carers in their profession (Bolderston, Lewis & Chai, 2010:199).

The radiotherapist's role as a technologist includes using highly advanced technical equipment to accurately plan and deliver radiotherapy treatment to the target volume, thereby eradicating the tumour while sparing healthy tissue (Jacques, 2014:6). The radiotherapist's role as a carer includes developing relationships with their patients through meaningful conversations, paying attention to their physical comfort during treatment and minimising their sense of isolation when left alone for treatment (Bolderston, Lewis & Chai, 2010:200). As carers, radiotherapists also provide information and offer reassurance and support to both paediatric and adult patients to efficiently fulfil their healing and therapeutic role (Bolderston, Lewis & Chai, 2010:200; Pimm, Fitzgerald & Taylor, 1997:28).

Radiotherapists see their patients daily, forming close, trusting bonds with the patients and their families. Consequentially, patients become dependent on radiotherapists to

provide emotional and physical support (Sarra & Feuz, 2018:50). There is an “emotional cost of caring” that radiotherapist experience due to the regular exposure to patient grief and trauma by caring for cancer patients with a dire prognosis (Sarra & Feuz, 2018:50; Smith, Hamilton & Grimard, 2014:277). In addition to knowing that radiotherapy treatment can cure and relieve pain, radiotherapists can be further emotionally distressed due to the knowledge they have of the debilitating long-term side effects of treatment (Steinmeier, Schleithoff & Timmermann, 2019:142; Smith, Hamilton & Grimard, 2014:277). Treating young children with such complex and intense treatment can be emotionally taxing for radiotherapists, more so when the treatment is palliative (Smith, Hamilton & Grimard, 2014:277). Many paediatric radiotherapy cases are palliative, and only one in every three children diagnosed with cancer undergo curative radiotherapy treatment (Janssens *et al.*, 2019:52; Smith, Hamilton & Grimard, 2014:277).

Radiotherapists involved in the treatment of paediatric patients not only face the possibility of dealing with the imminent death of the child, but also experience higher anxiety levels compared to treating adults (Smith, Hamilton & Grimard, 2014:277). Paediatric patients' compliance to remain motionless during treatment is extremely important for the safety and accuracy of radiotherapy treatment and to ensure optimal results (Engvall *et al.*, 2018:9). However, these patients are usually less compliant and cooperative compared to adult patients (Li *et al.*, 2016:36; Marcus, 2012:211). Subsequently, this results in the routine use of sedation for uncooperative paediatric patients (Engvall *et al.*, 2016:2). The sedated patient's vulnerability, requiring continuous monitoring, creates further pressure on the radiotherapist (Jacques, 2014:25).

Treating a paediatric patient, whether sedated or not, requires the radiotherapist to be on high alert all the time (Jacques, 2014:25). Furthermore, the treatment delivery procedure for paediatric patients is time-consuming, and radiotherapists experience a sense of tension and urgency. This poses a challenge in busy radiotherapy departments where patients are allocated short appointment times (Engvall *et al.*, 2016:3; Jacques, 2014:25). Radiotherapists therefore require appropriate knowledge and skills to reduce paediatric patient anxiety. The distinctive needs of children have to be acknowledged in radiotherapy (Engvall *et al.*, 2016:1). This will enable the

management of uncooperative behaviour displayed by most paediatric patients (Li *et al.*, 2016:36; Smith, Hamilton & Grimard, 2014:277).

Uncooperative behaviour displayed by paediatric patients is due to the excessive anxiety experienced when undergoing radiotherapy treatment (Li *et al.*, 2016:36). The paediatric patient's heightened stress levels might be due to the anxiety experienced from being separated from their parents (Engvall *et al.*, 2018:9). Other reasons include being terrified of the “enormous” radiotherapy equipment, meeting new hospital staff, being in physical pain due to cancer and also their inability to understand their diagnosis fully (Engvall *et al.*, 2018:9; Angstrom-Brannstrom *et al.*, 2015:2; Bjorkman, Golsater, Simeonson & Enskar, 2013:10; Marcus, 2012:211). Accordingly, the paediatric population in radiotherapy departments demands additional emotional support compared to adult patients due to the anxiety and distress they experience (Engvall *et al.*, 2016:9-13).

Radiotherapists are therefore advised to provide additional care and support when treating children (Hilder, VanDam & Doherty, 2018:147; Engvall *et al.*, 2016:9-13). However, continuous confrontation with the negative emotions displayed by uncooperative paediatric patients and their emotional parents and family members only adds to radiotherapists' anxiety level and emotional challenges (Li *et al.*, 2016:36; Smith, Hamilton & Grimard, 2014:277). Smith, Hamilton and Grimard (2014:277) highlight that radiotherapist carry a high emotional burden in providing care to children with a dire prognosis. Thus, paediatric radiotherapy has been described as emotionally overwhelming and challenging for radiotherapists (Smith, Hamilton & Grimard, 2014:277; Pimm, Fitzgerald & Taylor, 1997:28). Learning to handle the emotional complexity associated with paediatric cases and gaining expertise in paediatric treatment procedures presents a challenge for radiotherapists because the rarity of paediatric cancers limits radiotherapists' exposure to and experience of the paediatric population (Smith, Hamilton & Grimard, 2014:277). These challenges can further create anxiety in radiotherapists (Jacques, 2014:4, 25).

1.3 RESEARCH PROBLEM

Paediatric cancers are rare and as a result, radiotherapists' experiences in treating paediatric cancers are limited. Therefore, there is a need to explore ways to treat, care for and connect with paediatric patients for a deeper understanding of this minority

patient population (Willis & Barry, 2010:294). Although there is evidence that radiotherapists treating paediatric patients face challenges, there is a paucity of literature in this regard (Gardling *et al.*, 2015:660, 661; Smith, Hamilton & Grimard, 2014:279). A difficulty arises in the approach that can assist radiotherapists treating this minority paediatric population since so little is known about the lived experiences of these radiotherapists. This dearth of research may result in failure to improve in the field of paediatric radiotherapy. The multiple challenges that radiotherapists face could have an impact on the quality of patient care provided to paediatric patients if they are not recognised and reduced (Jacques, 2014:4). Therefore, it becomes imperative to explore the experiences of radiotherapists treating paediatric patients.

1.4 RESEARCH QUESTION

The research question that emerged from the above problem statement is: How do radiotherapists experience treating paediatric patients?

1.5 RESEARCH PURPOSE AND OBJECTIVES

The purpose of this qualitative phenomenological study was to explore and describe the lived experiences of radiotherapists treating paediatric patients.

The following research objectives were formulated:

1. To explore and describe the lived experiences of radiotherapists involved in the treatment of paediatric patients.
2. To develop guidelines to support radiotherapists involved in the treatment of paediatric patients.

1.6 RESEARCH PARADIGM

A research paradigm is defined as the researcher's worldview that comprises the researcher's beliefs, values and methodological assumptions (O'Neil & Koekemoer, 2016:3). Creswell and Creswell (2018:54) define worldview as a basic set of beliefs the researcher possesses that influences and guides their actions. For this qualitative study, the researcher's assumption of how reality should be viewed was through the philosophy of social constructivism. In this philosophy, the researcher believes that there is no truth "out there", but rather a subjective and narrative reality that constantly varies (Gray & Grove, 2021:78; Creswell & Creswell, 2018:56, 382; De Vos, Strydom,

Fouche & Delpont, 2011:309, 310). For the purpose of the study, social constructivism allowed for the experiences of radiotherapists treating paediatric patients to be heard and described. Consequentially, a deeper understanding of what it means to be a radiotherapist treating paediatric patients in Gauteng was achieved.

1.7 DEFINITION OF KEY CONCEPTS

1.7.1 Paediatric patient

A paediatric patient is defined as a child ranging between infancy, childhood and adolescence, before reaching legal adulthood (18 years) (Beevi, 2019:3; Fraser, Waters, Forster & Brown, 2017:2). For the purpose of this study, a paediatric patient is defined as a child between the age of 1 and 14 years (Department of Health, 2012). This age range was suitable for this study because a large amount of literature evaluates paediatric cancer occurrences in the age range of 0 to 14 years (Hubbard, Spector, Fortuna, Marcotte & Poynter, 2019:1; Fraser *et al.*, 2017:2; Smith, Hamilton & Grimard, 2014:277, 280).

1.7.2 Treatment

Treatment refers to the management and care of a patient as well as the application of therapy, medicine, surgery, procedure, or regimens, such as a drug, or exercise, in an attempt to cure or mitigate a disease, condition, or injury (Cohen & Jones, 2020:93). For radiotherapists, “treating” a patient is the radiotherapist’s management of paediatric patients through all processes involved in radiation therapy and continuity of care they provide from the initial consultation to the end of the radiotherapy process (Merchant & Kortmann, 2018:461; *Mosby’s Medical Dictionary*, 2009).

1.7.3 Lived experiences

Consistent with its understanding in qualitative research, in this study, lived experience is defined as the understanding and representation of radiotherapists’ human experiences, opinions, options, choices and perceptions of treating paediatric patients (Vagle, 2018:63, 136, 140). In phenomenological research, the researcher aims to describe experiences from the participants’ perspectives, thus capturing their lived experience (Gray, Grove & Sutherland, 2017:138). In the current study, “lived experiences” is used as a comprehensive term for anything a radiotherapist may

remember, notice, believe and feel about treating paediatric patients (Vagle, 2018:63, 136, 140).

1.7.4 Cancer

Cancer is a disease characterised by the uncontrolled proliferation of abnormal cells resulting in the formation of tumours (Symonds, Mills & Duxbury, 2019:240; Moroe & Hughes, 2017:1). The additional malignant properties of cancer include invasion and destruction of adjacent normal tissue and spread (metastasis) to other parts of the body through the blood and lymphatic fluid (Symonds, Mills & Duxbury, 2019:240).

1.7.5 Palliative treatment

A palliative treatment regime provides rapid relief of symptoms such as pain commonly associated with cancer with a minimal upset from treatment (Symonds, Mills & Duxbury, 2019:268). Palliative care for a paediatric patient focuses on enhancing the patient's quality of life, managing distressing symptoms, offering care through the patient's death and bereavement and supporting the patient's family (Aidoo & Rajapakse, 2019:60).

1.7.6 Public healthcare

Public healthcare is government-funded and offered to all citizens of South Africa. A total of 84% of the South African population depends on the public healthcare sector for their needs (Maphumulo & Bhengu, 2019:1; Maseko & Harris, 2018:22).

1.7.7 Private healthcare

Private healthcare is not controlled by the government and is usually offered through South African citizens purchasing private insurance to be treated at private hospitals and clinics. Some 16% of the South African population have medical aid and are attended to by the private healthcare sector (Maphumulo & Bhengu, 2019:1; Maseko & Harris, 2018:22).

1.7.8 Chemotherapy

This treatment modality involves administering a combination of cytotoxic chemicals, either intravenously or orally, to control the growth of malignant cells (Symonds, Mills & Duxbury, 2019:278; Moroe & Hughes, 2017:3).

1.7.9 Emotional support

This refers to the understanding, reassurance and encouragement provided to a patient by healthcare professionals, including radiotherapists (Sharma & Purkayastha, 2017:75, 76). Radiotherapists provide emotional and psychosocial support to cancer patients through increased communication, information provision, treatment preparation and empathetic management to reduce patient anxiety, emotional distress and concerns (Van Beusekom, Cameron, Bedi, Banks & Humphris, 2019:1; Elsner, Naehrig, Halkett & Dhillon, 2017:220, 230). Emotional support enables paediatric patients to express their feelings in a safe way (Royal College of Radiologists, 2018:13).

1.7.10 Multidisciplinary team

This is a group of different independent healthcare professionals collectively involved in the diagnostic and treatment decision-making and clinical management of the patient. A multidisciplinary team for a paediatric cancer patient comprises a paediatrician, paediatric oncologist, surgeon, radiologist, radiotherapist, pathologist, nurses, social workers and providers of psychological and spiritual support (Israels *et al.*, 2015:607).

1.7.11 Caring

Caring is to feel interested or concerned, display kindness, compassion and empathy, and being cared for is a basic human need (Bolderston, 2016:356; Flynn, 2016:29). While caring is considered a humanistic way of interacting with people, the concept of patient care is regarded as a professional responsibility of a healthcare worker (Naidoo, Lawrence & Stein, 2018:164; Boykin & Schoenhofer, 2013:1). For radiotherapists, a few elements of caring involve developing a therapeutic and healing relationship with patients through meaningful conversations, paying attention to their physical comfort during treatment, being empathetic and minimising the patients' sense of isolation when left alone for treatment (Moreno-Poyato, Rodriguez-Nogueira & MiRTCIME CAT Working Group, 2021:335; Bolderston, 2016:356).

1.7.12 Anxiety

Anxiety is a human being's response to harm and danger. Feelings of tension, dread, worry, fear and apprehension characterise this emotion (Small & Vorgan, 2019:6-15).

Anxiety is a common psychopathological disorder in patients undergoing radiotherapy (Blazquez & Cruzado, 2016:20, 21).

1.7.13 Guidelines

Guidelines in clinical practice refer to systematically developed statements that offer concise instructions informing clinical healthcare programmes and policies, thereby aiding healthcare workers to provide appropriate healthcare for the clinical circumstance concerned (Flemming, Booth, Garside, Tunçalp & Noyes, 2019:1; Graham & Harrison, 2005:68). Guidelines allow for the development of evidence-based recommendations that may be implemented (Florez, Morgan, Falavigna, Kowalski, Zhang, Etxeandia-Ikobaltzeta, Santesso, Wiercioch & Schünemann, 2018:2).

1.7.14 Explore

To explore means to look into, analyse, investigate, or study a phenomenon (*Merriam-Webster Dictionary*, [n.d.]; Vagle, 2018:108). Exploration is used in research to gain insight into and get acquainted with a phenomenon, situation, individual or community (Vagle, 2018:105; De Vos *et al.*, 2011:95).

1.7.15 Radiotherapist

A radiotherapist plays an important role in the oncology therapeutic team. They are involved in the localisation, immobilisation, administration and dosage planning of radiotherapy treatment procedures. Using highly advanced technical equipment, they deliver accurate doses of radiation to tumours, thus eradicating cancer while minimising dose to the surrounding normal tissue. Radiotherapists also offer emotional support to cancer patients and their families throughout the course of radiation treatment (South African Qualifications Authority, 2020; University of Pretoria, 2018).

1.7.16 Epidemiology

Epidemiology is the study of the occurrence, distribution and causes of diseases in the human population (Symonds, Mills & Duxbury, 2019:227; Wassertheil-Smoller & Smoller, 2015:260).

1.7.17 Aetiology

Aetiology refers to a branch of medicine concerned with the study of the causes and origins of diseases. It also includes the factors predisposing an individual toward a certain disease (Shiel, 2018:1).

1.7.18 Mutation

A mutation is an alteration that occurs in the DNA sequence in the nucleus of a cell. This can occur due to environmental factors such as ultra-violet (UV) light or due to an error in the DNA duplication process (Tkacs, Herrmann & Johnson, 2020:222-227, 238).

1.8 RESEARCH DESIGN AND METHOD

1.8.1 Research design

A qualitative phenomenological research design was used for this study. This approach was best suited since this methodology is used when little is known about a phenomenon (Creswell & Creswell, 2018:68-70, 320). A phenomenological design is used to understand and describe the views, perceptions and interpretations of the lived experiences of individuals and groups involved with the subject being researched (Creswell & Creswell, 2018:61; Vagle, 2018:31; Cibangu & Hepworth, 2016:148). In this view, this research study was consistent with phenomenology (Neubauer, Witkop & Varpio, 2019:93). Phenomenology requires the researcher to withhold personal suppositions and beliefs to enable complete focus and immersion into the participants' experiences of the researched phenomenon (Neubauer, Witkop & Varpio, 2019:93; Vagle, 2018:38).

1.8.2 Research method

This study explored the lived experiences of radiotherapists treating paediatric patients by means of individual, in-depth, telephonic interviews. During this study, bracketing was applied. This necessitated the researcher to divorce previous understandings, assumptions, experiences and past knowledge about the phenomenon of interest (Neubauer, Witkop & Varpio, 2019:93; Vagle, 2018:38). In this way, an in-depth understanding of the radiotherapists' experiences of treating paediatric patients was achieved.

1.8.2.1 Research population and sample

The research population included all qualified radiotherapists in Gauteng registered with the Health Professions Council of South Africa (HPCSA). The sample population included radiotherapists above the age of 18 who were involved with the treatment planning and treatment delivery procedures on paediatric patients. Radiotherapists working in both private and public health institutions in Gauteng were included. A purposive sampling method was employed to ensure accurate identification and selection of radiotherapists described to be information-rich regarding the phenomenon of interest (Gray & Grove, 2021:429; Gentles, Charles, Ploeg & McKibbin, 2015:1778). The sample size was reliant on data saturation.

1.8.2.2 Data collection

Data was collected through individual, in-depth, telephonic interviews (Castleberry & Nolen, 2018:808). Due to the nationwide lockdown and non-contact, social distancing period following the outbreak of the COVID-19 pandemic, data collection was delayed and individual face-to-face interviews were not possible. The interviews were conducted at times convenient for the participants and were audio-recorded with their consent (Appendix 1). The use of in-depth interviews was appropriate for this qualitative study because it allowed the researcher to thoroughly explore the participants' unique experiences, thereby enabling her to understand how they perceived the phenomenon in its particular context (Edwards & Holland, 2020:582; McGrath, Palmgren & Liljedahl, 2019:1002). Additionally, telephonic interviews provide rich qualitative data (Saarijarvi & Bratt, 2021:392, 396; Farooq & De Villiers, 2017:295; Drabble, Trocki, Salcedo, Walker & Korcha, 2016:118). Participants were asked a central question: **How has your experience been treating paediatric patients?** This was followed by additional probing questions and paraphrasing to enhance the value of the data collected from the interviews until data saturation was reached (Gray & Grove, 2021:166, 331, 499). The researcher used a reflective journal to improve rigour, and field notes were taken during the interviews (Appendix 2) (Gray & Grove, 2021:315-319; Creswell & Creswell, 2018:98, 299).

1.8.2.3 Data analysis

Data analysis is a process that allows the collected data to attain meaning through interpreting and theorising the collected data (Gray & Grove, 2021:343; Creswell &

Creswell, 2018:331, 333). In qualitative research, data analysis comprises preparing and organising data into codes and themes and then presenting the data (Creswell & Creswell, 2018:331, 333; De Vos *et al.*, 2011:403, 404). Data analysis was initiated during data collection. This tactic adds to the depth and quality of the data analysis process in qualitative research (Creswell & Creswell, 2018:306, 331, 333). A thematic analysis was utilised to deliver a qualitative analysis of data (Gray & Grove, 2021:346-348; Vaismoradi & Snelgrove, 2019:1, 9, 11; Creswell & Creswell, 2018:331, 333). This method of analysing condensed the large amount of collected data in a more flexible way (Castleberry & Nolen, 2018:807).

The interviews' audio-recordings were personally transcribed and verified against the researcher's field notes to determine accuracy (Appendices 2 and 3). The thematic analysis involved familiarisation with the transcribed data (Gray & Grove, 2021:343, 346-348; Smith, Zhu, Dhillon, Milross, Taylor, Halkett & Zilliacus, 2013:3035). Thereafter, the data was coded. An independent coder with extensive experience in coding qualitative data and qualitative research methodology was used to improve the research's reliability (Appendix 4) (Creswell & Creswell, 2018:202; 316; Nowell, Norris, White & Moules, 2017:7). Thereafter, the researcher identified patterns in the codes by organising and abstracting related codes to form potential themes (Castleberry & Nolen, 2018:808; Rosenthal, 2016:513). During the analysis process, the researcher immersed herself in the data until she gained an in-depth understanding of the radiotherapists' experiences. Thematic data analysis provided a logical strategy to identify, analyse and report on the patterns and themes derived from the collected data (Gray & Grove, 2021:343, 346-348; Creswell & Creswell, 2018:331, 333; Castleberry & Nolen, 2018:808). Verbatim quotes have been used to ensure rigour in the research data (Bloomberg & Volpe, 2018:232; Castleberry & Nolen, 2018:809).

1.9 TRUSTWORTHINESS

In qualitative research, trustworthiness is achieved when the researcher can accurately and truthfully denote the participants' experience of the particular researched phenomenon (Gray & Grove, 2021:343, 540; Patton, 2015:276). To achieve trustworthiness in this qualitative study, the four trustworthiness criteria by Lincoln and Guba (1985:219, 290), namely credibility, dependability, confirmability and transferability, was used to achieve rigour (Gray, Grove & Sutherland, 2017:430, 700, 704; De Vos *et al.*, 2011:419). Credibility is confirmed when the participants can

recognise the reported research findings as their own experience (Korstjens & Moser, 2018:121). To achieve credibility in a research study, the researcher validates that the research is conducted in such a manner that the truth of how the participants experience the phenomenon is described and identified (Creswell & Creswell, 2018:314; De Vos *et al.*, 2011:420). Credibility in this research study was achieved through prolonged engagement in the field, triangulation of data, member checking and bracketing.

Dependability allowed the researcher to concentrate on the process of the inquiry and the responsibility of ensuring that the process is logical, traceable, documented and audited (Korstjens & Moser, 2018:121; Patton, 2015:276). Dependability, therefore, relates to the reliability and consistency of the research findings. In this study, the audio-recordings of the interviews, field notes, triangulation and audit trails were used to ensure dependability.

Sufficient information of the participants and a detailed description of the interview settings were provided by means of a rich, thick description to allow for a feeling of shared experience and the assessment of transferability (Creswell & Creswell, 2018:315; Korstjens & Moser, 2018:121; Patton, 2015:276).

Confirmability refers to the agreement between the researcher's interpretations and the actual evidence (Korstjens & Moser, 2018:121). Furthermore, confirmability establishes that the data and its interpretation are accurate and true and not created and fabricated by the researcher (Patton, 2015:256). The researcher needs to ensure that the findings of the research study can be confirmed by another (Gray, Grove & Sutherland, 2017:542; De Vos *et al.*, 2011:421). Confirmability in the research process was established through member checking and confirmability auditing. The audio-recordings of the interviews, transcriptions, coding details and the researcher's field notes will be included in the audit (Appendices 2 and 3).

In chapter 2 the researcher will elaborate on all the trustworthiness measures that were applied.

1.10 ETHICAL CONSIDERATIONS

The researcher's ethical considerations for this qualitative study were guided by the fundamental ethical principles of respect for persons, beneficence, non-maleficence and justice (Dhai & McQuoid-Mason, 2020:17, 18; Farrugia, 2019:48). The rights to

self-determination, privacy, confidentiality, anonymity, fair treatment for all and protection from harm were upheld during this research study (Dhai & McQuoid-Mason, 2020:17, 18; Farrugia, 2019:48). The application of ethical principles to protect the research participants will now be explained in detail.

1.10.1 Informed consent and respect for autonomy

Throughout the research process, the participants were treated with dignity and respect by the researcher, upholding the participants' rights of autonomy and informed consent. The participants were provided with adequate information regarding the research, and the possible risks were mentioned as well (Appendix 5). This allowed them to make an autonomous informed decision and participate voluntarily or decline (Appendix 6). Participants were informed that they had the right to withdraw from the study at any time and that their collected data would be removed. Written informed consent for audio-recordings and participation was completed and emailed back to the researcher before the interviews (Appendices 1 and 6).

1.10.2 Privacy and confidentiality

The participants' rights to privacy and confidentiality were respected and upheld in this study. Privacy applies to the participant; it refers to the participants' right to keep to themselves and control public access to their personal information (Dhai & McQuoid-Mason, 2020:51, 118). Confidentiality can be viewed as an extension of privacy. It pertains to all identifiable data obtained by the researcher and the upholding of the agreement between the researcher and participant about handling the participant's private information in a confidential manner (Dhai & McQuoid-Mason, 2020:118; Farrugia, 2019:49; De Vos *et al.*, 2011:119). To protect the participants' identity, their names and personal details are not published (Farrugia, 2019:49). The participants were reminded to be in a private area for confidentiality reasons. Furthermore, the researcher alone audio-recorded the interviews and occupied a private venue for the duration. All data collected was protected from unauthorised persons and is kept safely in a locked cupboard and on a computer protected by a password. The researcher opted to transcribe the interviews herself to maintain confidentiality (Appendix 3). The independent data coder signed a confidentiality agreement before being allowed to

access any information (Appendix 7). The audio-recordings and the transcriptions will be destroyed two years after the study has been published.

1.10.3 Benefits and risks

Beneficence and non-maleficence principles refer to the researcher's obligation to ensure that the participant's well-being is safeguarded by acting in the participant's best interest and not causing physical, psychological, or social harm to them (Dhai & McQuid Mason, 2020:18; Farrugia, 2019:50). A potential risk was that the participants might suffer from emotional harm by sharing lived experiences that were difficult. The researcher reduced any potential emotional harm by not forcing the participant to discuss an issue they found sensitive to disclose. In addition, the participants were made aware that psychological services were available if needed. A trauma counsellor was on standby but not present during the interviews to maintain the group's confidentiality. The research study will not benefit the participants directly. However, the findings may be used to improve the quality and process of care provided to paediatric patients and provide a better understanding of radiotherapists' needs. The guidelines provided will make a significant contribution to the profession of radiotherapy and therefore benefit the community at large.

1.10.4 Justice

Justice in research refers to equal treatment of all participants (Dhai & McQuid Mason, 2020:18; HPCSA, 2016:2). All eligible radiotherapists were given fair and equal opportunity to participate without any discrimination. Participants were free to withdraw voluntarily at any point.

1.10.5 Permission

Permission and ethical clearance to conduct this study were obtained from the University of Johannesburg, Faculty of Health Sciences Higher Degrees and Ethics Committees, before commencing the study (Appendices 8 and 9). Once the study was approved by the committees mentioned above, the researcher personally visited the managers of the radiotherapy departments to obtain permission to conduct the study (Appendix 10). In addition, for the government hospitals, Gauteng Health Provincial approval was granted through the national health research database. After all the relevant approvals and permission were obtained, the researcher approached

radiotherapists in person and invited those involved in treating paediatric patients to participate in the study. The researcher personally explained the study's aim to the radiotherapists who wished to participate in the study. The participants willing to participate in the study were provided with a study information letter, and informed consent was obtained (Appendices 5 and 6).

1.11 OUTCOME OF THE STUDY

Guidelines have been provided to support radiotherapists in enhancing the treatment and patient care currently practised in paediatric radiotherapy. Insight into the views of the radiotherapists may have a positive impact on the profession, specifically with regard to paediatric radiotherapy. This study's findings will be shared with the professional community through journal publications and may be presented at conferences and seminars.

1.12 DIVISION OF CHAPTERS

CHAPTER 1: Overview of the study

CHAPTER 2: Research design and method

CHAPTER 3: Discussion of findings

CHAPTER 4: Guidelines, recommendations and conclusion

1.13 SUMMARY

This qualitative phenomenological study aimed to explore and describe the lived experiences of radiotherapists treating paediatric patients. Chapter 1 presented the overview, background, rationale, research problem, purpose and objectives of the current study. Furthermore, the research paradigm, ethical considerations, as well as the summation of the research design and method were described briefly. The next chapter will focus on the research design and methodology and the components of trustworthiness utilised in the current study.

CHAPTER 2

RESEARCH DESIGN AND METHOD

2.1 INTRODUCTION

The purpose of the current study was to explore and describe the lived experiences of radiotherapists treating paediatric patients and provide guidelines to support them. In chapter 2 the path used to conduct the study is highlighted and the research design and research methodology are the focus. The components of trustworthiness applied in this qualitative, phenomenological research study will also be discussed.

2.2 RESEARCH DESIGN

The research design is the blueprint that provides an overall framework to the research study by logically sequencing, connecting and directing the different study procedures, thus guiding the researcher to accomplish the proposed research goal (Sileyew, 2019:1; Boru, 2018:2; Creswell & Creswell, 2018:60). The design therefore connects the empirical data of the study to the initial research questions and ultimately to its conclusions, thereby addressing the research problem unambiguously (Boru, 2018:2; Creswell & Creswell, 2018:50; Gray, Grove & Sutherland, 2017:106). The selection of a research design is based on the research question, the type of research problem being addressed, the researcher's personal experiences and knowledge of different available designs (Boru, 2018:2; Creswell & Creswell, 2018:53; O'Neil & Koekemoer, 2016:2). The researcher's worldview and philosophical assumptions must also be reflected on, so consistency can be achieved throughout the research study (Creswell & Creswell, 2018:53; O'Neil & Koekemoer, 2016:3).

The researcher's assumption of viewing reality is through the philosophy of social constructivism, where reality is constructed in the social and cultural context, in coordination with other human beings and not separately within the individual (Creswell & Creswell, 2018:56; Gray, Grove & Sutherland, 2017:123; O'Neil & Koekemoer, 2016:4). This philosophy directed the researcher to select a qualitative phenomenological research design to answer the research question appropriately and construct reality by understanding how people make sense of their world (Creswell & Creswell, 2018:56; O'Neil & Koekemoer, 2016:2). Furthermore, the applied philosophy and research design allowed the themes generated in this thesis to encompass all the

participants' experiences. Consequently, a shared meaning of treating a paediatric patient could be described. The research design was thus consistent since the researcher's motive was to understand, explore and describe the lived experiences of radiotherapists in Gauteng involved in treating paediatric patients (Neubauer, Witkop & Varpio, 2019:93).

2.2.1 Research strategy

A research strategy is a systematic plan of action, providing a detailed explanation of the various steps taken in executing the study to accurately answer the research question and accomplish the study objectives (DePoy & Gitlin, 2019:3, 4, 53; Tajvidi & Karami, 2015:45). The purpose of the current study was to explore and describe the lived experiences of radiotherapists treating paediatric patients in Gauteng. The research strategy was as follows:

2.2.1.1 Qualitative

Qualitative research is an iterative research method utilised to produce in-depth knowledge and improve the understanding of a phenomenon through a thorough examination, attaining closeness and making new significant related distinctions (Gray & Grove, 2021:75, 76; Aspers & Corte, 2019:151, 160; Queiros, Faria & Almeida, 2017:369). In addition, qualitative research is interpretative, naturalistic and concerned with understanding unquantifiable reality; thus, it shows commitment to the participants' viewpoints by exploring the meaning they ascribe to their individual and social experiences (Creswell & Creswell, 2018:51, 320; Aspers & Corte, 2019:142; Queiros, Faria & Almeida, 2017:369). This approach requires the researcher to create a complex and holistic picture, analyse and report on the participants' words and conduct the study in a natural setting (Boru, 2018:2; Creswell & Creswell, 2018:51, 320). Therefore, the qualitative approach was deemed best to present a detailed view of the topic from the perspective of radiotherapists treating paediatric patients. This allowed the researcher to gain insight into the participants' thoughts and emotions and understand how and why the phenomenon occurred (Boru, 2018:12).

Qualitative research is intentional and focused, and has a narrow scope, meaning the research question is relevant only within a specific context and limited to a focused group or population (Bloomberg & Volpe, 2018:187; Creswell & Creswell, 2018:320; Schneider, Coates & Yarris, 2017:370). Furthermore, the meaning of a particular

experience is explored in its natural setting, and the results are unique and context-bound by the time, place and value of participants' experiences (Creswell & Creswell, 2018:320; Schneider, Coates & Yarris, 2017:370). Accordingly, contextualisation enabled the participants in the current study to describe their experiences of treating paediatric patients in radiotherapy to obtain information-rich data. Contextualisation also allowed capturing the setting in which radiotherapists treat paediatric patients, thus attaining a holistic picture of their experiences. The research question was applicable and restricted to qualified radiotherapists involved in the treatment of paediatric patients in Gauteng; the results are therefore unique and context-bound to the field of radiotherapy and not generalisable to a larger population.

The purpose of qualitative research is to gain familiarity with a particular problem by exploring and highlighting an unexplored and uninterpreted phenomenon (Boru, 2018:3; Creswell & Creswell, 2018:320; Mohajan, 2018:23). There is a paucity of literature on the challenges faced by radiotherapists when treating paediatric patients. Therefore, a qualitative research design was deemed most appropriate to explore the experiences of radiotherapists treating paediatric patients.

2.2.1.2 Phenomenology

Edmund Husserl (Churchill & Wertz; 2015:1; Husserl, 2006:61, 82, 102; Husserl, 1968) first defined phenomenology in the early twentieth century, borne of his epistemological project to find philosophical knowledge upon a concrete and irrefutable basis. He declared that all true and scientific knowledge relies on inner evidence because reality appears in the knower's consciousness, and that is where a phenomenon is to be studied (Neubauer, Witkop & Varpio, 2019:93; Vagle, 2018:30, 31). Therefore, to truly understand reality, one has to attempt to explore and understand the phenomenon as lived by a person (Neubauer, Witkop & Varpio, 2019:93; Vagle, 2018:30). The research therefore focused on describing human behaviour from the participants' perspective. Additionally, phenomenology focuses on multiple realities since each participant will perceive and interpret reality based on their past and present contextual situation (Creswell & Creswell, 2018:320; Dreher & Santos, 2017:385; O Neil & Koekemoer, 2016:4). This perspective aligns with the social constructive paradigm (Gray & Grove, 2021:76-78; Creswell & Creswell, 2018:56). Accordingly, in the current study exploring and understanding

radiotherapists' lived experiences of treating paediatric patients aimed to describe the investigated phenomenon from their perspective by looking for common themes in these multiple realities (Creswell & Creswell, 2018:56; O'Neil & Koekemoer, 2016:4).

The accurate identification of the essence of the phenomenon in a phenomenological study requires continuous assessment of the researcher's preconceptions and biases to avoid informing the participants' descriptions (Gray & Grove, 2021:81, 82; Neubauer, Witkop & Varpio, 2019:93; Vagle, 2018:38). Therefore, the researcher needed to fully understand her perceptions of the researched phenomenon to appropriately bracket her subjectivity during data collection and analysis (Neubauer, Witkop & Varpio, 2019:93; Sundler, Lindberg, Nilsson & Palmer, 2019:735; Vagle, 2018:38). In this view, phenomenology permitted the researcher to see the social world from the participants' perspective, providing a means to understand the investigated phenomenon appropriately and thus resolve the research question (Gray & Grove, 2021:81, 82).

2.2.2 Reasoning strategies

In research, the researcher's reasoning strategies are clearly specified so that they are logical, understandable, confirmable and useful (DePoy & Gitlin, 2019:3). There are three main types of reasoning strategies: inductive, deductive and abductive (Gray & Grove, 2021:5; DePoy & Gitlin, 2019:3). The purpose of the research, the appropriate method applied to answer the research question or test a hypothesis, and whether one is a naturalistic or an experimental type of researcher determines the type of reasoning strategy a researcher should apply (DePoy & Gitlin, 2019:3, 4; Vaismoradi & Snelgrove, 2019:10). This was a qualitative phenomenological research study, and the researcher worked within a naturalistic framework and therefore utilised inductive reasoning during data collection and analysis to identify themes. After that, deductive reasoning was essential to relate the themes to established knowledge to develop the necessary guidelines (Creswell & Creswell, 2018:181, 296).

2.2.2.1 Inductive reasoning

A researcher with a phenomenological perspective often uses inductive processes to generate a better understanding of the unknown phenomenon by reasoning from specific occurrences to overall conclusions, thus building new theory from the ground up or re-affirming and expanding existing theory (Gray & Grove, 2021:5; Creswell &

Creswell, 2018:51, 56; Castleberry & Nolen, 2018:808; Woo, O'Boyle & Spector, 2017:257). The current study utilised inductive reasoning from initiation by holding no assumptions of reality, i.e. “*no a priori acceptance of truth*” (DePoy & Gitlin, 2019:5). This logic involves beginning with an observation, then looking for patterns in the data, thus allowing meaning to emerge (Gray & Grove, 2021:5, DePoy & Gitlin, 2019:3; Woo, O'Boyle & Spector, 2017:257). During the current study's inductive process, data was collected and then analysed by organising it into abstract units of information, allowing for patterns and themes to emerge. The inductive process of theme development required consistent reflection on the emerging data by moving back and forth between the emerging themes and the unstructured data until a condensed set of final themes was established (Bloomberg & Volpe, 2018:314; Creswell & Creswell, 2018:181, 296).

2.2.2.2 Deductive reasoning

Deductive reasoning involves working from the “top-down” and tests *a priori* hypotheses (Gray & Grove, 2021:5; DePoy & Gitlin, 2019:5; Woo, O'Boyle & Spector, 2017:255). Although the qualitative analysis process begins inductively, the application of deductive reasoning is essential as the analysis moves forward (Creswell & Creswell; 2018:181,296). The findings of phenomenological studies necessitate correlation with existing and established research (Sundler *et al.*, 2019:737; Vaismoradi, Jones, Turunen & Snelgrove, 2016:105). Accordingly, by applying deductive reasoning, the researcher developed guidelines by reflecting on the gathered data to deduce whether it was sufficient to support the themes or if additional information was required (Creswell & Creswell, 2018:181, 296). Consequently, emergent themes were related and combined with current literature to develop guidelines (Vaismoradi *et al.*, 2016:106).

2.3 RESEARCH METHOD

The research method provides information about the participants, the instruments used and the actual process and procedures used to collect and analyse the research study data (Gray & Grove, 2021:235, 236; Beins, 2017:87). This qualitative phenomenological study utilised individual, in-depth, telephonic interviews as a data collection technique to explore and describe the lived experiences of radiotherapists treating paediatric patients in Gauteng. Interviews were conducted until data saturation

was reached. A thematic analysis was utilised to deliver a qualitative analysis of data (Gray & Grove, 2021:346-348; Vaismoradi & Snelgrove, 2019:1; Creswell & Creswell, 2018:331, 333). Guidelines were developed by relating and connecting the emergent themes with existing current literature.

2.3.1 Population

A research population is an entire group of individuals demarcated as a useful entity that the researcher is interested in understanding because they possess the individualities and characteristics required and from which a sample is selected (DePoy & Gitlin, 2019:192, 193; Beins, 2017:100). Therefore, the research population differs since it is dependent on the type of research project conducted (DePoy & Gitlin, 2019:193; Beins, 2017:100). The current study's research population included all qualified radiotherapists in Gauteng registered with the HPCSA. Radiotherapists working in both private and public health institutions in Gauteng were included. A purposive sampling method was employed to determine the sample population (Gray & Grove, 2021:429). A sample population is the subset of the entire research population that the researcher can access and observe for the research project (Creswell & Creswell, 2018:247; Beins, 2017:100). The inclusion criteria for the sample population for the current study were radiotherapists who consented to participate in the study, were above the age of 18 and were involved with the treatment planning and treatment delivery procedures on paediatric patients.

2.3.2 Purposive sampling

Sampling is the process of selecting a subset of the research population that is consistent with the desired designated specifications the researcher requires for the study (Creswell & Creswell, 2018:247; Beins, 2017:100). Qualitative research utilises purposeful sampling extensively to accurately identify and select participants described to be information-rich with regard to the phenomenon of interest (Gray & Grove, 2021:429; Vasileiou, Barnett, Thorpe & Young, 2018:149). Studying information-rich participants allows the researcher to gain an in-depth understanding of the researched phenomenon. Information-rich participants in the current study were any radiotherapists involved in the treatment of paediatric patients who were willing to participate in the individual, in-depth telephonic interviews. The sample size was reliant on data saturation.

2.3.3 Data collection

Data collection refers to the process of gathering relevant information from the selected participants of the study (Gray & Grove, 2021:326, 607; DePoy & Gitlin, 2019:219, 220). In a qualitative research study, the initial query and the purpose of the research guide the researcher in selecting the most appropriate method of collecting data (Gray & Grove, 2021:614; DePoy & Gitlin, 2019:219, 220). Therefore, individual, in-depth, telephonic interviews were used as the primary source of data collection for this study (Castleberry & Nolen, 2018:808).

The Faculty of Health Sciences Higher Degrees and Ethics Committee approvals were obtained before data collection (Appendices 8 and 9). The researcher contacted the head of department of the radiotherapy departments to obtain permission to conduct the study (Appendix 10). After permission had been obtained, the researcher contacted radiotherapists and invited those involved in the treatment of paediatric patients to participate in the study. The researcher explained the aim of the study to radiotherapists who wished to participate in the study. The participants were provided with a study information letter, and informed consent was obtained (Appendices 5 and 6). Consent to audio-record the participants was obtained before the interviews (Appendix 1). All ethical consideration was applied during the data collection process. Participants were reminded that their participation was completely voluntary and that they were entitled to withdraw from the study at any time.

Due to the non-contact, social distancing period during the COVID-19 pandemic, face-to-face, individual interviews were not possible. For participants' safety and convenience, they were given the option of being interviewed telephonically or on an alternate computer-based technology such as Skype or Zoom. In this study, all the participants preferred and appreciated the telephonic mode. Most participants worked in extremely busy radiotherapy departments, and telephonic interviews were easier to reschedule to suit the participants. Others were comfortable with the telephonic mode because they were shy and preferred not to have face-to-face encounters or were unfamiliar with Skype or Zoom. Some preferred the telephonic mode because they did not have access to software such as Skype or Zoom, internet connectivity, or data. According to Farooq and De Villiers (2017:295), telephonic interviews provide rich qualitative data. The lack of visual cues intensifies effective listening and clear

articulation of questions and answers, thereby improving the communication process during the interview (Saarijarvi & Bratt, 2021:393; Farooq & De Villiers, 2017:295).

Furthermore, in this study, the researcher found the telephonic mode helped create a rapport by improving the power balance, limiting interviewer bias and promoting a participant-centred approach, thereby allowing the participants to speak freely about their experiences (Drabble *et al.*, 2016:121,123). Consequently, this allowed for longer interviews with rich collected data. The researcher was also free to take field notes without creating any visual distractions for the participants. Conversely, the telephonic mode required a high level of concentration from the researcher to ensure that the participants remain engaged and to maintain a natural flow of conversation (Farooq & De Villiers, 2017:294, 295; Drabble *et al.*, 2016:124, 129).

The interviews were arranged and conducted at times convenient for the participants. The participants were reassured about the confidentiality of their information. They were reminded to be in a private and quiet area for confidentiality reasons. Furthermore, the researcher also occupied a quiet and private venue with no risk of interruption. Before commencing, the researcher obtained verbal consent and also asked the participants if they were comfortable and ready to proceed with the interview.

The in-depth interviews began with a short introduction, including the instructions, confidentiality information and an explanation of what was sought; a lengthy introduction can create the expectation in participants of relying on the interviewer for continuous instructions on what to do (Gray, Grove & Sutherland, 2017:627; Roller & Levrakas, 2015:102; De Vos *et al.*, 2011:371). The researcher observed that a few of the participants sounded nervous at the start of the interview. Therefore, she created a comfortable environment by initiating the interview with easy, familiarising questions, asking the participants to briefly introduce themselves with their names, familiarity level and current and previous role in paediatric radiotherapy. In this way, the interviews began in a relaxed manner, leading up to the central broad question, resulting in the participants eventually opening up and sharing their personal experiences (McGrath, Palmgren & Liljedahl, 2019:1004).

In-depth interviews allow the researcher to perform a thorough exploration of the participants' unique experiences, thereby enabling the researcher to understand how

they perceive the phenomenon of interest in its particular context (Edwards & Holland, 2020:582; McGrath, Palmgren & Liljedahl, 2019:1002). This interviewing approach was appropriate in this study since it fit the researcher's intention to probe and elicit views and opinions from radiotherapists to gain an in-depth understanding of their experiences of treating a paediatric patient in Gauteng (Creswell & Creswell, 2018:302, 379; Rosenthal, 2016:510). A phenomenological study typically involves the approach of conducting in-depth interviews (Creswell & Creswell, 2018:62, 63).

Qualitative, in-depth interviews comprise one or a few predetermined and open-ended questions with follow-up probing questions (Creswell & Creswell, 2018:302, 379; Rosenthal, 2016:510). Accordingly, participants were asked a central question: **How has your experience been treating paediatric patients?** The central question was broad to allow for extensive exploration of the central phenomenon and not limit the enquiry in any way (Creswell & Creswell, 2018:223, 373). Additionally, it allowed the participants to present their diverse perspectives and meanings they held of this study's central phenomenon (McGrath, Palmgren & Liljedahl, 2019:1003). To gather detailed information and explore the phenomenon in greater depth, the researcher used the probing technique to fully explore the participants' experiences and encourage them to elaborate on their answers and provide more data (Gray & Grove, 2021:331, 499; DePoy & Gitlin, 2019:222, 223; Rosenthal, 2016:510). Probing questions and paraphrasing enhanced the value of the data collected from the interviews (Gray & Grove, 2021:166, 331, 499; McGrath, Palmgren & Liljedahl, 2019:1003). Moreover, the interview's unstructured nature strengthened the participants' responses, with participants delving deeply to describe, explain and, through the discussion, explore their lived experiences.

To promote self-disclosure and get a rich and detailed account of the participants' experiences, the researcher built rapport and established comfortable interactions before and during the interviews (McGrath, Palmgren & Liljedahl, 2019:1003; Gray, Grove & Sutherland, 2017:800). She achieved this by facilitating a sense of proximity by maintaining a friendly flow of conversation, approaching the participants with a curious and open attitude and continually reassuring them (McGrath, Palmgren & Liljedahl, 2019:1004). Throughout the interview, the researcher encouraged participation, kept the conversation topic-related and asked probing questions where

relevant without biasing the participants' responses (Gray, Grove & Sutherland, 2017:416, 417; Roller & Levrakas, 2015:356; De Vos *et al.*, 2011:368).

According to Jamshed (2014:87), the duration of in-depth interviews should be 30 to 60 minutes. In line with that, the interviews ranged from 29 to 82 minutes. The researcher ensured that the interview duration did not tire out the participant but also allowed the participants to express their views without feeling rushed. The interviews took place in May 2020. The data collection was initially delayed due to the outbreak of the Coronavirus (COVID-19) pandemic and the nationwide lockdown that followed. However, the telephonic mode allowed the interviews to take place over a shorter period, following the delay in data collection.

A total of 17 participants were interviewed. Data collection continued until data saturation was reached at the twelfth interview. The last five interviews were conducted to confirm data saturation. Data saturation denotes that informational redundancy has been reached since additional data contributes little to the research study (Bloomberg & Volpe, 2018:57; Creswell & Creswell, 2018:301, 381). The occurrence of repetitive themes and patterns indicated that sufficient information was obtained to understand the researched phenomenon, and no further data collection was necessary (Bloomberg & Volpe, 2018:57; Guetterman, 2015:2).

Audio-recording of the telephonic in-depth interviews was the significant data-recording strategy utilised in this study (DePoy & Gitlin, 2019:262, 263; Creswell & Creswell, 2018:305). In addition, to improve rigour, the researcher used a reflective journal and field notes were taken during the interviews (Gray & Grove, 2021:315-319; Creswell & Creswell, 2018:98, 299). The researcher's field notes included descriptive information on the interview dynamics, participants' prominent, striking views and responses, emotional voice tones, pauses and hurried answers (Gray & Grove, 2021:328; DePoy & Gitlin, 2019:262; Farooq & De Villiers, 2017:309). The field notes were recorded during and immediately after the interviews to avoid forgetting important details. The reflective journal included reflective information such as the researcher's immediate thoughts, concerns, questions and other emotive responses during data collection (DePoy & Gitlin, 2019:262, 263; Korstjens & Moser, 2018:121). This allowed the researcher to capture in their raw state her attitudes and responses to the participants' experiences and to reflect and be self-aware of how these interpretations

could affect the study. Using a reflective journal helps develop bracketing skills and simplifies decision-making in a phenomenological study (Gray & Grove, 2021:315-319, 326; Vicary, Young & Hicks, 2017:550,565; Chan, Fung & Chien, 2013:3).

2.3.4 Data analysis

Qualitative analysis involves interpretation of the textual and observed data to determine the patterns of relationship in it, thereby allowing meaning to emerge from the data (Gray & Grove, 2021:343; Castleberry & Nolen, 2018:808). The process is understood to be an inductive, dynamic and ongoing one that converts the collected data into findings (DePoy & Gitlin, 2019:314; Castleberry & Nolen, 2018:808). Data analysis is an iterative, flexible and dynamic activity in qualitative studies because it is interlinked to data collection (DePoy & Gitlin; 2019:314). As data collection continues in a research study, data analysis constantly ensues in response to the new data (Creswell & Creswell, 2018:306, 331, 333).

In the current study, data analysis was initiated during data collection. This tactic adds to the depth and quality of the data analysis process in qualitative research by allowing the researcher to explore additional areas of interest during data collection (Creswell & Creswell, 2018:306, 331, 333). In phenomenological research, the data analysis process requires the researcher to bracket and suspend assumptions and preconceptions regarding the researched phenomenon (Neubauer, Witkop & Varpio, 2019:93; Vagle, 2018:38, 101, 130). This allows for an in-depth description and understanding of the participants' experiences and does not inflict any prior supposition on the experience (DePoy & Gitlin, 2019:5, 6; Vagle, 2018:38, 101, 130). Bracketing of the researcher's personal experience during data analysis allowed the researcher's bias not to influence the generation of themes (Neubauer, Witkop & Varpio, 2019:93; Gray, Grove & Sutherland, 2017:127, 128; Rosenthal, 2016:513). The aim of the data analysis process in this study was to describe the phenomenon of radiotherapists' experiences of treating paediatric patients in Gauteng.

The researcher utilised a thematic analysis process to deliver a qualitative analysis of data (Gray & Grove, 2021:346-348; Vaismoradi & Snelgrove, 2019:1, 9, 11; Creswell & Creswell, 2018:331, 333). This method of analysing condensed a large amount of collected data in a more flexible way (Castleberry & Nolen, 2018:807). This is a logical strategy to identify, analyse and report patterns and themes derived from the collected

data (Gray & Grove, 2021:346-348; Creswell & Creswell, 2018:331, 333; Castleberry & Nolen, 2018:808). In a qualitative study, data analysis comprises preparing and organising the data for analysis by transcribing interviews and typing up field notes, immersing oneself in and gaining familiarity with the data, organising data into initial codes, building and reviewing themes and finally defining and interpreting the themes/descriptions to describe the phenomenon (Vaismoradi & Snelgrove, 2019:2, 3; Creswell & Creswell, 2018:308-310; Nowell *et al.*, 2017:4).

The audio-recordings of the in-depth interviews were transcribed verbatim for further analysis and verified and triangulated against the field notes to determine accuracy (Appendices 2 and 3) (Castleberry & Nolen, 2018:808; Vaismoradi *et al.*, 2016:105). The researcher personally transcribed all the data to know the data intimately, allowing prolonged engagement with it (Castleberry & Nolen, 2018:808; Gray, Grove & Sutherland, 2017:427). During transcription, all non-verbal emotive content was included, and all sensitive data such as participants' names were anonymised by using pseudonyms, e.g. P1, P2. The thematic analysis involved familiarisation with the transcribed data (Gray & Grove, 2021:343, 346-348; Castleberry & Nolen, 2018:808). The researcher open-mindedly read and reread and immersed herself in the data until she acquired a sense of the entirety of the data (Sundler *et al.*, 2019:736). This allowed the researcher to deeply understand the radiotherapists' experiences by opening the researcher's mind to the data and its meaning. Thereafter the data was coded.

Coding involves reading the transcriptions to convert raw data into usable data by identifying connections, recurring ideas and differences in data (Castleberry & Nolen, 2018:808; Gray, Grove & Sutherland, 2017:431, 432). During coding, the researcher analyses the transcribed data by first taking it apart to see what it produces and then placing it back together to allow its true meaning to emerge (Elliot, 2018:2850; Gray, Grove & Sutherland, 2017:431, 432). Qualitative data analysis is understood to be an open and inductive process that allows meaning to emerge from the data (Castleberry & Nolen, 2018:809). Consistently, the application of the open, data-driven coding scheme requires the researcher to begin the analysis with no pre-set codes, but rather let the data suggest the initial codes and their definitions (Castleberry & Nolen, 2018:809; Gray, Grove & Sutherland, 2017:432; Nowell *et al.*, 2017:8). The researcher opted to do the initial coding manually as coding software programs are

incapable of the intellectual, conceptual and judgement processes required to transform the data during analysis (Nowell *et al.*, 2017:7). The coding process was iterative and involved the codes being developed and modified and the data being coded and recoded, thus ensuring that the codes were not redundant, or interchangeable, and could be applied reliably throughout all the data (Castleberry & Nolen, 2018:809; Nowell *et al.*, 2017:8).

An independent coder with extensive experience in coding qualitative data and qualitative research methodology was used to improve the reliability and trustworthiness of the analysis process (Appendix 4) (Creswell & Creswell, 2018:202, 316; Nowell *et al.*, 2017:7). A consensus-based approach was used for agreement between the researcher and independent coder, and various emails were exchanged to guide the process. After that, through manual analysis, the researcher identified patterns in the coding outputs by organising and abstracting related codes and categories to form potential themes (Castleberry & Nolen, 2018:808; Gray, Grove & Sutherland, 2017:432; Rosenthal, 2016:513).

Thematic analysis required the researcher to determine the importance of the theme based on the prevalent information it captured concerning the research question, and not only on quantifiable measures such as how often it appeared (Castleberry & Nolen, 2018:812; Elliot, 2018:2857). Interpretation of data took place by reviewing the themes and checking whether they made sense relative to the code extracts and the complete data collection (Gray & Grove, 2021:343; Castleberry & Nolen, 2018:812). Interpretation did not occur just at the end of the analytical process, but throughout all the steps. The researcher looked for analytical deductions from the data that initially presented as codes and then themes (Castleberry & Nolen, 2018:812). Verbatim quotes have been used in this research study to ensure rigour in the research data (Bloomberg & Volpe, 2018:232; Castleberry & Nolen, 2018:809).

2.4 TRUSTWORTHINESS

In qualitative research, trustworthiness is also referred to as the research study's truth value or rigour (Creswell & Creswell, 2018:320; Connelly, 2016:435; Patton, 2015:276). Trustworthiness is attained once the researcher confidently and accurately denotes the participants' experience of the particular researched phenomenon (Gray & Grove, 2021:343, 540; Connelly, 2016:435; Patton, 2015:276). Trustworthiness is

both the study's goal and a criterion to judge the study's authenticity and quality, thus ensuring that the readers can confidently trust the research findings (Cypress, 2017:245, 255). Accordingly, in the current study, the researcher questioned how the audience could be persuaded that the research findings were worth considering. The answer to this question was based on this aspect of ensuring that the research study was trustworthy. Trustworthiness in this study followed Lincoln and Guba's model (1985:219, 290) describing the four naturalistic criteria, namely credibility, dependability, confirmability and transferability (Gray, Grove & Sutherland, 2017:430, 700, 704).

2.4.1 Credibility

Credibility is confirmed when the participants can recognise the reported research findings as their own experience (Creswell & Creswell, 2018:314; Korstjens & Moser, 2018:121). Accordingly, in this phenomenological study, credibility related to the accurate and truthful depiction of the participants' lived experiences and was achieved by adhering to the following criteria:

- **Prolonged engagement:** Long-lasting engagement in the studied field entails the researcher investing sufficient time to become familiar with the study participant and setting (Korstjens & Moser, 2018:121). This allows the researcher to learn the context in which the phenomenon is embedded and reduces distortion of data (Cypress, 2017:257). The researcher of this study is a radiotherapist and at the time of writing had been in this field for ten years as a qualified radiotherapist. The prolonged engagement allowed the researcher to establish rapport and gain the participants' trust. In this way, rich in-depth data could be gained for this research study (Cypress, 2017:257).
- **Triangulation:** Triangulation refers to cross-checking of at least two related data sources to determine the correctness of the researcher's interpretation, gain an in-depth level of understanding and validate research findings (DePoy & Gitlin, 2019:324; Hadi & Closs, 2016:644). Data collected from interviews and the researcher's reflective notes and descriptive field notes were triangulated to determine accuracy.
- An **independent coder** was used to improve the reliability and trustworthiness of the analysis process results (Creswell & Creswell, 2018:202, 316).

- **Member checking:** This involves confirmation and checking of the study findings and researcher's interpretations by the study participants (Bloomberg & Volpe, 2018:43; Hadi & Closs, 2016:644). Member checking is critical in qualitative research because it offers a high degree of certainty in establishing credibility in qualitative studies (DePoy & Gitlin, 2019:324; Creswell & Creswell, 2018:314, 332). This was accomplished by participants being granted the opportunity to review and comment on the research findings (Appendix 12). The transcriptions were also available to be checked by the participants for an accurate reflection of their experiences.
- **Reflexivity:** Reflexivity relates to the researcher's conscious decision to continuously self-monitor their own beliefs and actions to allow for a reduction in research bias and enhance the study's credibility (DePoy & Gitlin, 2019:324; Sundler *et al.*, 2019:735; Korstjens & Moser, 2018:121). The researcher achieved reflexivity by making detailed field notes throughout the research process and keeping a reflective journal. Reflective notes enabled the researcher to remember, self-examine and question any biased behaviour and bracket out her assumptions. This also confirmed factual and accurate data. Reflexivity allowed the researcher to remain true to the participants' perspectives (Creswell & Creswell, 2018:315). Using a reflective journal helps develop bracketing skills and simplifies decision-making in a phenomenological study (Gray & Grove, 2021:315-319, 326; Vicary, Young & Hicks, 2017:550,565; Chan, Fung & Chien, 2013:3).

2.4.2 Dependability

Dependability relates to the reliability and consistency of the research findings. The researcher concentrates on the process of the inquiry and the responsibility of ensuring that the process is logical, traceable, documented and audited (Korstjens & Moser, 2018:121; Patton, 2015:276). A detailed description of data collection, analysis and interpretation is given to enable the auditor/reader to follow the researcher's decision and associate it with their conclusions and judgements (DePoy & Gitlin, 2019:324, 325; Hadi & Closs, 2016:645). A dependability auditing trail enabled an accurate assessment of the entire research project and increased the research study's truth value (DePoy & Gitlin, 2019:324, 325; Creswell & Creswell, 2018:315). This will

allow for the study to be repeated should other researchers wish to do so. Additionally, audio-recordings prevented distortion of data.

2.4.3 Transferability

Transferability refers to the extent to which the research findings can be applied and transferred to another similar external setting, population and situation (Korstjens & Moser, 2018:121; Hadi & Closs, 2016:646). In this study, transferability was enhanced by providing information about the inclusion criteria and sampling method employed. Sufficient information of the participants and a detailed description of the interview settings are also provided through the rich, thick description to allow for a feeling of shared experience (Creswell & Creswell, 2018:315). This phenomenological study results are unique and context-bound by the time, place and value of participants' experiences (Schneider, Coates & Yarris, 2017:369). The findings are also context-bound to the field of radiotherapy and therefore are not generalisable to a larger population (Schneider, Coates & Yarris, 2017:369). The study findings will also not necessarily apply to all radiotherapists due to the contextual nature of qualitative studies.

2.4.4 Confirmability

Confirmability establishes that the data and its interpretation are true and not created and fabricated by the researcher (Gray, Grove & Sutherland, 2017:542; Patton, 2015:256). Confirmability refers to the agreement between the researchers' interpretations and the actual evidence (Korstjens & Moser, 2018:121). Therefore, to ensure confirmability, the researcher confirmed that the research findings were an outcome of the participants' lived experiences by adhering to the following:

- Reflexivity and bracketing ensured that the researcher was aware of and guarded against biases and assumptions that could be brought to the study. A reflective journal, field notes and audio-recordings confirmed factual and accurate data. The researcher used the process of self-reflection and awareness and documented reflective perceptions in a reflective journal. Pertinent descriptive data beneficial to the study was also documented as field notes (Creswell & Creswell, 2018:315; Korstjens & Moser, 2018:123).
- Auditing established confirmability in the research process. Accuracy of the transcriptions of the raw data and the complete data analysis and interpretation

process could therefore be checked (DePoy & Gitlin, 2019:324, 325; Creswell & Creswell, 2018:315; Korstjens & Moser, 2018:121, 122). The audit trail took the form of documentation that includes the transcriptions, descriptive field notes and the reflective journal. The researcher will keep all this documentation for two years.

- Triangulation was used to confirm accuracy in data by using the two methods of data collection to check data against each other.
- Member checking confirmed accuracy by enabling the participants to check that their experiences were accurately reflected (Appendix 12) (Creswell & Creswell, 2018:314).

2.5 SUMMARY

The qualitative, phenomenological design chosen for this study aimed to develop new knowledge specific to the radiotherapy profession. The researcher provided a comprehensive description, detailed explanation and justification of the research design and methodology used to allow for transferability of the results into a similar context. Conclusively, the research design and methodology selected were essential to aid radiotherapists facing challenges in paediatric radiotherapy, facilitating the patient care practised currently, enhancing their knowledge and thus enabling a better future for radiotherapists. In the next chapter, the research findings will be reported and discussed in detail.

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CHAPTER 3

DISCUSSION OF FINDINGS

3.1 INTRODUCTION

Due to a paucity of literature concerning radiotherapists treating paediatric patients, the purpose of the current phenomenological study was to explore the experiences of radiotherapists treating paediatric patients in Gauteng (Gardling *et al.*, 2015:660, 661). To achieve this, data was collected through individual, in-depth interviews with information-rich participants. During the interviews, participants were asked a broad, central question: **How has your experience been treating paediatric patients?** (Creswell & Creswell, 2018:223, 373). A total of 17 participants were interviewed and the researcher utilised the thematic analysis process to deliver a qualitative analysis of data. Chapter 3 presents the description the study sample, the themes generated from the individual interviews and a discussion of the findings. Participants' verbatim quotes supported by related current literature contextualise the findings.

3.2 DESCRIPTION OF THE SAMPLE

A total of 17 radiotherapists, over the age of 18 years, consented to and participated in interviews. The sample consisted of 16 females and 1 male participant and the participants' experience in radiotherapy ranged from 2.5 years to 42 years as depicted in figure 3.1. Most participants had experience in both the private and public sectors. At the time of the interviews, 10 participants worked in private radiotherapy practices, and the other 7 in public radiotherapy departments. Participants interviewed were from 5 different radiotherapy departments in Gauteng. All the participants were qualified, practising radiotherapists registered with the HPCSA and had experience in paediatric treatment planning and/or treatment delivery procedures. Their qualifications included a national diploma, bachelor (radiotherapy) and master's degrees in Radiography. According to the HPCSA, 229 radiotherapists are registered in Gauteng (Daffue, 2021).

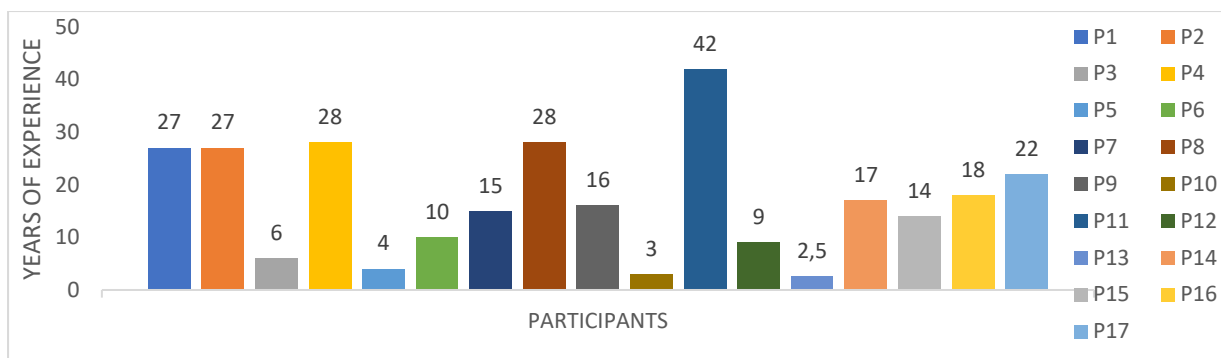


FIGURE 3.1 Participants’ years of experience

3.3 THE CENTRAL STORY

The lived experiences of radiotherapists tell a story of a group of radiotherapists working in proximate contact with paediatric patients, their patients’ illness and their patients’ parents. They relayed their painful and difficult emotional experiences, inspirational and hopeful experiences, as well as their insights into paediatric radiotherapy. Their accounts were vivid and intense, displaying sadness, empathy and compassion. They shared their intimate response and commitment to the patients, their patients’ families and illness. As the interviews ensued, a need to mediate blurring of their therapeutic role and personal lives and to enhance the radiotherapy system and environment they worked in became evident.

The radiotherapists discussed and described their multifaceted roles and the clinical procedure and concerns about them. Their stories displayed the intense stress and pressure they worked under when treating a paediatric patient; having to do so much more quickly, accurately and precisely. They were simply required to “get on” with the job in understaffed radiotherapy departments. Even though treating paediatric patients is stressful, they expressed their commitment to and emotions for the children and parents and focused on fulfilling a therapeutic role. The importance of professionalism and multidisciplinary teamwork when treating a paediatric patient were also evident. Their stories showed the pivotal requirement of creativity of actions, playfulness and distraction techniques in paediatric radiotherapy. The researcher was astonished at how deeply they reached inwardly and outwardly for resources to help the paediatric patients and family, even going the extra mile to offer emotional support. Their central story highlights that being a radiotherapist is not just a job or career, but “*a calling*” (P17).

3.4 PRESENTATION AND DISCUSSION OF FINDINGS

In qualitative studies, the researcher interconnects themes into a narrative, also known as the storyline. The narrative offers a holistic view and an overall account that the identified themes reveal about the studied phenomenon (Creswell & Creswell, 2018:309, 318; Nowell *et al.*, 2017:11). Therefore, the thematic analysis results of the current study are presented in the narrative form, containing a thorough description of each theme and category (Gray & Grove, 2021:346-348; Vaismoradi & Snelgrove, 2019:1, 9, 11; Creswell & Creswell, 2018:331, 333). The themes derived from the thematic analysis are data-driven and therefore grounded in the participants' data and experiences (Sundler *et al.*, 2019:735). The themes of the current study are supported by the participants' verbatim quotes and contextualised in current literature to facilitate a fuller understanding of the studied phenomenon (Nowell *et al.*, 2017:11). A summary of the themes and categories is presented below in table 3.1.

TABLE 3.1: THEMES AND CATEGORIES DEVELOPED

Theme	Category
1. Emotional context in which radiotherapists work when treating paediatric patients	1.1 Painful and difficult emotional experiences 1.2 Inspirational and hopeful experiences
2. Radiotherapists' familiarity affects their experience of treating paediatric patients	2.1 The importance of familiarity and experience 2.2 Familiarity and emotional capabilities
3. Close contact with the patient, parent and family influences radiotherapists' experiences	3.1 Radiotherapists' specific experiences and influences regarding paediatric patients 3.2 Radiotherapists' specific experiences and influences regarding parent and family
4. Facilitating an improvement in paediatric radiotherapy	4.1 Striving for enhanced professionalism and an improved radiotherapy system 4.2 Advancing the practical infrastructural areas of the radiotherapy system

3.4.1 THEME 1: Emotional context in which radiotherapists work when treating paediatric patients

This theme addresses the research question regarding both the negative and positive emotional experiences of radiotherapists treating paediatric patients and how these affect their professional and personal well-being. From the participants' stories, it was apparent that the radiotherapy profession is highly emotional, to the level of being traumatic and life-altering. This finding is balanced by the participants' sense of inspiring hope, staying committed, working professionally and doing their best to heal or provide palliative care appropriately. Humanity and empathy towards the paediatric patients and parents were strongly expressed. The participants delved into the patients' treatment and their interpersonal resources to help and emotionally support the paediatric patient and the family. Paediatric patients seemed to be both the source of the participants' inspiration and of their pain, despair and, sometimes, helplessness. The participants' vivid memories and stories portrayed the multiplicity and the intensity of emotions they experienced when treating paediatric patients. They relayed their painful and difficult emotional experiences and the inspirational and hopeful experiences as described in the categories below.

3.4.1.1 Painful and difficult emotional experiences

There was a multiplicity of negative emotional responses, with the participants expressing feelings of mostly sadness, panic, fear, anxiety, helplessness and many emotionally difficult and painful experiences. A few of the negative emotional responses are quoted below:

P3: "... it's difficult to see anybody uh, going through illness and you know uh, not being in a good state of health but it's even-even more so difficult with young children and- and so of course it's emotionally challenging..."

P10: "...But in cases, where let's say, you know the child is not really going to have a good prognosis or outcome of treatment then it, then it- yeah, that kind of destroys sort of you. Yes." (Voice sounds emotional, sad)

P7: "at that time I was very scared, I panicked that's why I said to you I had to phone my manager to come in and see because I could see that child was getting blue."

Participants in the current study expressed more sadness with minimal anger in their responses. Similarly, Gardling (2017:44) and Gardling *et al.* (2015:660) describe

radiotherapy staff's experiences of caring for paediatric patients and patients' families as containing varied emotions and feelings of sadness, grief, challenge, stress and worry. This is congruent with the study conducted by Smith, Hamilton and Grimard (2014:276, 279) where the majority of the radiotherapists described having higher anxiety levels when treating paediatric patients than when treating adults. Radiotherapists experiencing sadness due to being emotionally affected by the paediatric patient's reaction to treatment and the severity of the child's condition are also evident in the literature (Angstrom-Brannstrom, Lindh, Nyholm, Lindh & Engvall, 2019:E11).

Participants openly shared their emotionally difficult life-changing experiences, including debilitating trauma. Traumatizing paediatric radiotherapy experiences resulted in P8 moving to a department where paediatric patients were not treated; moreover, P14 took a break from radiotherapy because she treated a little boy who reminded her of her son, as quoted below:

P8: "...Actually, one of the reasons why I-I had to... I thought like moving was- I wasn't able to carry on dealing with paediatric patients, you know, in the-where I was. It got to a point where one of the doctors had to sit me down and say, look try and not take this personally you know, try and put your emotions aside and um, deal with you know, what you have. Which I would treat those patients, but I still carried all the emotional scars back home every day you know. So, it-it was a really difficult time for me to see."

P14: "... My main reason why I left therapy for a couple of years. I treated a little boy that was exactly the same age as my son. He had blonde hair, blue eyes, just like my son and I- I just felt I couldn't handle it. I was totally... and my son was also sick from birth and he himself, was doing very badly... (sounds emotional) ... And I said to myself I can't do this anymore; I have got to- I've got to change. Every time I look at a child, I see my children. And uh, I decided but I wanted to spend more time with my children. So, I went where I could get a half-day job, and I had to get away from therapy. And I did that till my kids, my youngest is now in grade 11..."

Furthermore, emotional bonding resulted in life-changing experiences, including debilitating trauma. These descriptions are reflected in the following quotes:

P10: "Uhm (sighs) it's actually- it creates a traumatising situation. Because you could see, like a parent wants to help their child, but they don't exactly know how to help their child. And now this whole thing off, I am going to remove the trust I have in helping my

child and give that trust to you, you know. So, it's a kind of like, it's an emotional attachment, you know ... you should also be there for the parents, you know and the family ... they also going through a lot of trauma with the whole situation.” (Voice sounds emotional, sad)

P6: “... what does bother me is when you get a broken parent. The ones that are just coming for the sake of coming and that are dealing badly with their child’s diagnosis...”

P1: “...So, I can imagine, just how traumatized that poor mum was...”

For most participants, attachment to the patient and the family seemed to be the basis of the painful emotions and experiences they conveyed:

P8: “... there is also that emotional bond, that you get to know them, you get to- to you know, play with them and all that sort of things you know...”

P10: “... we do have those attachments where you actually feel like you just want to go to the other room and cry it out, because actually you don't want to cry in front of a child, you know. But there's that or you just have a child that reminds you of your child, you know and you just think of that. So, that's actually- that's why you get that emotional attachment sort of, but of course it's your job. You're not allowed to have this, you kind of side it away (laughs).”

The intensity of the emotional labour required of them was evident in the responses, as displayed above in P10’s response of how she had to manage and suppress her painful emotions when treating a paediatric patient. Emotional labour is defined as the effort involved in managing one’s feelings and expressions due to the profession’s requirements to display only certain positive emotions and withhold negative ones (Kinman & Leggetter, 2016:90). Most public-facing professions such as nursing and radiotherapy require some degree of emotional labour (Kinman & Leggetter, 2016:90). Emotional labour can lead to emotional dissonance in radiotherapists (Pace, Sciotto & Foddai, 2019:1).

Emotional dissonance is referred to as a negative feeling that occurs due to the conflict between one’s original emotion and the professionally appropriate emotion one has to display (Kinman & Leggetter, 2016:90). The literature mentions emotional dissonance as a job demand and a source of strain that can threaten the well-being of radiotherapists and other healthcare employees by leading to emotional exhaustion and burnout (Hunter, Wright & Pearson, 2019:140; Kinman & Leggetter, 2016:90).

Emotional labour, along with the sadness and helplessness prevalent in the participants' responses are also risk factors for developing burnout and compassion fatigue (Chen, Chow & Tang, 2018:104-107).

Although participants' responses were suggestive of the emotional labour required of them, and some displayed emotional dissonance due to the mismatch of emotions, the phenomenon of emotional exhaustion, burnout and compassion fatigue was not a prominent finding in the current study. However, participants' responses did indicate that emotional support is necessary.

P4: "...I think it would be nice if there is emotional support for radiation therapists..."

P9: "...I would think like for new- new parents, they would need some sort of emotional support that if you treating the baby there and you have got a new born baby at home..."

P8: "...if you are really battling with certain cases, you do need to go and speak to someone, you know. Um so that the next day you can wake up and not dread seeing you know..."

The emotional difficulty experienced by young radiotherapists is explained by how they relate to and over-identify with the patients, as they might have a child or a family member of a similar age. Additionally, being constantly exposed to children with dire prognoses reveals a frightening reality most young radiotherapists might not be able to cope with emotionally as their sense of safety and expectations of what life should be like are challenged (Sarra & Feuz, 2018:50, 53). The literature and the current study thus emphasise the necessity to support radiotherapists with their emotional well-being. However, in the participants' responses there were minimal references to professional counselling services.

P8: "I don't think we've actually got; we've got avenues where you can sit down as a radiation therapist and say that you know, I have got these emotional scars..."

Participants seemed to use their own means, personal strategies and support systems to cope. Attempts to distance themselves in order to cope emotionally were exposed. Some participants made efforts to gain more knowledge and learn to communicate and handle paediatric patients to better deal with the painful experience they had been through. Participants coped through debriefing with colleagues, engaging in relaxing and destressing activities in their private life, talking with family members and

incorporating humour into stressful and painful situations. The quote below confirms this finding:

P16: “...I spent time on my own and just relax and stuff. Um, I also go running and stuff. I have to. I can't do any uhh, practical way at work, of dealing with it. So, I have to deal with it in my private life. So, I make sure I have got things in place at home, in my personal life to-to kind of counteract it...”

In essence, participants' efforts to cope with the painful and difficult emotions and experiences brought light to the combined heightened emotional intensity faced by radiotherapists treating paediatric patients. When referring to their emotions, some participants shared how they deflected their emotions and focused on fulfilling their therapeutic and professional roles; thus they were not themselves when treating children. Others mentioned “splitting” themselves and compartmentalising their emotions to deal with the emotional demands.

P7: “... you have to be careful with what you are saying, you have to act strong and you have to give them the confidence to say, you know what your child is in good hands. Your emotions as a therapist is- you are not yourself because now you know that you are treating a delicate child so, it's all- like I said it's not easy, but as a professional you have to do the right thing.”

P6: “So, you as a therapist are going between calming the child that you're treating, calming the parent that you're dealing with and still focusing enough to treat accurately. So, it's almost splitting yourself and compartmentalizing your emotions, in dealing with each person each factor individually.”

P10: “...you get that emotional attachment, sort of, but of course it's your job. You're not allowed to have this, you kind of side it away (laughs).”

Most participants found it emotionally difficult, with some displaying feelings of helplessness when treating children palliatively due to being exposed to their suffering, dire prognosis and knowing that they could not prolong their lives. The quotes below display this emotional difficulty:

P8: “...you thought like you, you should be able to take everything away, you know from this child. Which was obviously you know, impossible ... (pause) you are not in a situation, you-you do not have those capabilities to take those things. So, you also felt, you felt like you're not doing much, you know.”

P14: “So, you know you have to try and comfort the mother as well, where at the back of your mind, you know what you were doing now was (pause) prolonging the end actually... But not prolonging life...”

The radiotherapists’ experiences added emotional difficulty and challenges in treating children with a palliative intent compared to curative radiotherapy, as they had to confront the patient’s imminent, potential death and suffering due to the severe radiotherapy side effects (Angstrom-Brannstrom *et al.*, 2019:E11; Smith, Hamilton & Grimard, 2014:277, 279).

Some participants’ stories displayed the conflict in their feelings of treating palliatively since they questioned prolonging the child’s painful and suffering end and being hopeful and inspiring hope in parents when the child’s prognosis was severe and death was inevitable.

P14: “... If it’s for pain, I don’t have a problem with that. But I- I think sometimes the kids are treated, when they actually know, there is nothing they can do for them. And to put them through all of that, when they are already at stage 4 or something like that, is it worth it?”

The literature mentions that caring for their patients is considered a key role for radiotherapists; however, providing palliative care for children with a life-threatening illness can be intense and can lead to compassion fatigue and burnout (Clarkson, Heads, Hodgson & Probst, 2019:5; Sarra & Feuz, 2018:50, 53; Lazarescu, Dubray, Joulakian, Blanchard, Chauvet, Mahé, Mornex, Rocher & Thureau, 2018:784). What is more concerning is that many healthcare professionals do not recognise the signs of compassion fatigue and burnout in themselves because they simply are too focused on caring for others (Crowe, 2016:1, 2).

In the current study, participants expressed the emotional difficulty and stress of addressing the paediatric patients’ prognosis with parents who presented with a lack of information. They felt that the discussion of prognosis and death should be appropriately discussed between the patient and the oncologist during consultations, as they felt this did not fall under their domain.

P13: “... because it’s very easy to just say something that either shocks them, because they didn’t know or they didn’t understand and now you said it in a way, where now

they're even more stressed. So um, yeah, it's important that whatever you say is going to ease their burden, not just like increase it."

P14: "... he said to me, what does it mean, when it's a stage 4? ... because the doctor said he is stage 4, but he doesn't know what it means ... Now I mean... that's- that's something the doctor should explain to them."

The literature reveals that during oncology consultations, oncologists focus primarily on positive topics such as further treatment options and appreciation of how treatment has prolonged the patients' lives, and discussions on prognosis and dying are often bypassed or rare (Cortez, Maynard & Campbell, 2019:216, 222; Pino & Parry, 2019:186; Singh, Cortez, Maynard, Cleary, DuBenske & Campbell, 2017:E231). Patients and their caregivers' opportunities to inquire about prognosis during oncology consultations are thus reduced, and they present for treatment with deficient information (Pino & Parry, 2019:186). The findings of the current study support Angstrom-Brannstrom *et al.* (2019:E12, E13) and Smith, Hamilton and Grimard (2014:279), who draw attention to the fact that radiotherapists feel unprepared and experience emotional difficulty when parents inquire about their child's prognosis as they are not the appropriate health personnel for this discussion. Therefore, the literature is consistent with the current study's finding relating to the emotional difficulty radiotherapists experience when patients and caregivers present with deficient prognostic information from oncologists.

Participants' responses about stressful situations were evident but limited in the current study. Instead, the participants expressed their responses through emotions for the children and the parents and the sadness they felt was very evident.

P8: "...they have got a life-threatening disease. And then um, besides the emotional side, they had to battle with this physical pain and-and all sorts of things. So as a radiographer you are aware of all this and you also wanted to give support..."

P3: "Um, I think-I think again sadness. Um... uh. I'm trying to-to find the right words to put it into words (laughs)..."

The nuances were away from the stress and rather towards the focus of their work in fulfilling their therapeutic role and being professional. This finding is similar to the study by Angstrom-Brannstrom *et al.* (2019:E14, E15), where radiotherapy staff reported on

having a great deal of energy to focus on in providing compassionate care for paediatric patients and rarely expressed exhaustion and burnout.

The emotional state of patients' parents influenced participants' emotions and experiences in the current study. Participants held mixed views regarding the parents' presence for radiotherapy treatment. Although most participants found the parents' presence helpful, others expressed feelings of anxiety as parents anxiously watched their every move. They therefore feared making mistakes. The fact that radiotherapists are human and can err was expressed in their responses:

P13: "... when you in the room you automatically on edge because the parent is watching your every single move ... and you scared to make one wrong mistake..."

P7: "...It's difficult because of now, you feel that they are looking at everything that you doing, so obviously you are human being ... but if they are not there your mind is more relaxed, you work efficiently inside..."

Similarly, Smith, Hamilton and Grimard (2014:277) found in their study that 75% of the radiotherapists felt that the parents' emotional state influenced their emotions and anxiety levels. Although most radiotherapists said that the parents played an important role in explaining and helping the child with the treatment, some radiotherapists did say that parents' presence made the delivery of treatment more difficult. They preferred the parent not to be present in the treatment bunker (Smith, Hamilton & Grimard, 2014:279). In the literature, as well as in the current study, it is apparent that radiotherapists are emotionally affected by the parents of paediatric patients and display anxiety and feelings of sadness for them (Angstrom Brannstrom *et al.*, 2019:E11; Gardling, 2017:44; Gardling *et al.*, 2015:660; Smith, Hamilton & Grimard, 2014:277).

The painful and difficult experiences were also expressed by participants sharing their persisting, resonating painful emotions of treating paediatric patients and how their work spilled over into their personal lives:

P1: "... But when I went to sleep at night these little babies and little kiddies, always, I'd, I'd see their faces again at night before I slept. So, it had a huge impact on my own personal life and the babies..."

P8: "...you never get used to um, the pain that you experience when it's a child that you are treating. That- that does not go away. That, that every child brings their own pain to you, as a radiation therapist, when you are treating them..."

Working with paediatric cancer patients means dealing with organisational issues, distraught parents and combined existential concerns relating to the patient's vulnerability and illness (Angstrom-Brannstrom *et al.*, 2019:E11; Smith, Hamilton & Grimard, 2014:277). Gardling (2017:44) and Smith, Hamilton and Grimard (2014:277) mention that radiotherapy staff treating paediatric patients can be challenged psychologically and emotionally and experience overwhelming emotional distress.

3.4.1.2 Inspirational and hopeful experiences

Participants in the current study shared their emotionally rewarding, inspirational and hopeful experiences of treating paediatric patients.

P1: "...my lived experiences with children undergoing treatment are very special, in the sense that it does, as much as we apply empathy, it gets into one's heart and soul..."

P17: "... It takes all your energy to treat them. But I love it, I really, really love it, and I do fall in love with the kids."

Similarly, Angstrom-Brannstrom *et al.* (2019:E12, E13) and Gardling *et al.* (2015:663) describe radiotherapy staff's enriching meetings and positive experiences with paediatric patients and how they view their work as rewarding, joyful, hopeful and meaningful when working with paediatrics and the paediatric patients' parents.

There was laughter, humour and optimism, which balanced the sadness the participants in this current study experienced and described. Participants shared positive experiences of instances when radiotherapy improved the paediatric patients' condition and how good this made them feel.

P15: "it made me happy to see that I have- that the patient is happy to see me. And to see that I'm actually doing something good and to see that the work that we are doing for this patient is actually making her feel better, and it's very satisfying."

P14: "Um, look it's a fantastic feeling when the child finishes treatment and you know if the child is going towards getting better, and that is a fantastic feeling."

P12: "... there was once a little girl that actually she couldn't walk when we started her treatment and then while we were giving her the treatment somewhere in the- in that period, she did start walking, so that was amazing."

Some participants viewed treating children as an honour. Others described a sense of achievement once they successfully treated a paediatric patient, as paediatric patients are infrequent compared to adults, and the process is generally more difficult.

P5: "... for me I think um, it's been quite an honour to be able to treat the children. Um, like you know not all the facilities treat paediatric patients. So, I feel it's truly an honour to be able to treat these patients..."

P7: "... when you finish you feel like you know, you've achieved something because now you have done such a big treatment, a child is not an adult that- that experience we know that."

Others viewed their work as a calling and the stress as part of their daily job and therefore possessed more patience and could face challenging and stressful experiences effectively.

P17: "... it is emotional draining, it is, it is. But you know what, that kid didn't ask to have cancer ... it is your career; it is your calling and you have to give your best. And all you have to do is, you just have to be patient."

Participants told stories of how they found hope, inspiration and encouragement from the paediatric patients and parents' strength, endurance and positivity by focusing on how they overcome the difficult and intense radiotherapy period.

P3: "... it still goes down to the fact that they are having these experiences that-that are not fun for any child or any adult or anybody to-to go through and yet they're still able to find it, that-that positivity and that and also smiles and stuff. So um, that inspiration I think we can learn from that and hopefulness yeah, I think. So that's the feelings or emotions I remember experiencing."

Seeing the child improving and the positive outcome of the treatment justified their work and gave them the strength to continue doing their best.

P6: "... And I know I'm going to be helping you, I know that you going to be walking out of my department at the end of this. I know that you're going to be pain-free or have no swelling or whatever the case may be and it's the end that justifies my means... Yes, so I know, in that moment this is not nice. When you are able to walk out of here or when

you are graduating high school and getting married and going through all of the phases of your life and then I'm going to know I had a hand in that and that's good enough for me.” (Voice sounds content and happy)

P15: “And having them recovered and bringing through, it helps me to have the strength to do the next patient again. To go back to all that, for the next patient you know what you are working towards. You are working towards a child being healthy and walking out of the department at the end of the treatment.”

A few participants regarded the difficult and emotionally challenging experiences as positive. They made them better humans and better radiotherapists by gaining experience and resilience and becoming empathetic and compassionate.

P2: “You become a better radiographer, and I think it makes you a better person in the sense also that it gives you empathy. It gives you some insight into other people's lives because you get home you have your two children- they are healthy, they are doing- they do their sports at school. Um, it makes you experience or be more appreciative of what you've got.”

The literature illustrates that the emotional distress experienced by radiotherapists treating paediatric patients is balanced by positive feelings, job satisfaction and emotionally rewarding experiences (Angstrom-Brannstrom *et al.*, 2019:E14; Gardling, 2017:44; Gardling *et al.*, 2015:663; Smith, Hamilton & Grimard, 2014, 279).

Participants' responses in the current study indicated that gaining mutual respect and allowing the child to be involved and in control of the treatment aided in gaining their trust and cooperation, thus making it a positive experience. Caring through a holistic perspective, and having empathy and compassion for the patients were evident throughout the participants' responses.

P15: “Talk to them and not just try to get through the setup and everything as fast as possible. You need to show some patient care and empathy as well.”

P11: “But giving that empathy towards a patient is- is really rewarding.”

P2: “... it's like it's all for the greater good. It doesn't matter how stressful, how hectic it can be treating paediatric patients. We-we do get to the end, we helping, even if it's the worst experience of the child's life and it's effecting you badly, emotionally, or physically or whatever. I think the point in the end is we helping this child.”

Empathy, compassion and respecting the child's integrity and autonomy are identified by Angstrom-Brannstrom *et al.* (2019:E13) and Jacques (2014:12) as prerequisites to have positive experiences when treating paediatric patients.

Some participants described how their personalities, such as being perfectionists, helpful, humorous and pragmatic, and their emotional intelligence, maturity, acceptance of fate, hopefulness, religion and beliefs assisted them in their challenges faced in paediatric radiotherapy. These positive characteristics and personality traits made their experience of treating paediatric patients positive and emotionally rewarding.

P1: "I am sort of a perfectionist to admit it but in my career ... So, I approach my situation with a child with extreme precision."

P11: "I try to make it, a bit of fun. Um, I, I know it's serious work that we are doing. Um, but to bring in a little bit of humour uh, helps for me personally."

P12: "Um so it's just easier for me ... I am a planning radiographer. so, I mostly operate and think on a practical level..."

P11: "But giving that empathy towards a patient is- is really rewarding."

P1: "... we have to accept ... all different religious beliefs out there... bring us to the acceptance of the ultimate whatever happens in the child's life."

Similarly, Hunter, Wright and Pearson (2019:140) and Probst, Boylan, Nelson and Martin (2014:396) identify the positive personal resources and traits of a radiotherapist that can increase resilience, help them attain their work goals and assist them in developing professionally and personally. As confirmed by the current study, possessing hope, optimism, low neuroticism, intrinsic motivation, extraversion, efficacy and mental and emotional competency are some of the identified positive traits (Hunter, Wright & Pearson, 2019:140). Being patient, confident, perceptive, reflective, empathetic, accepting, unsusceptible, determined and having a purpose are also identified as characteristics that are advantageous in developing and possessing resilience (Probst *et al.*, 2014:396).

Participants in the current study who displayed resilience in their responses reported coping better in emotional and stressful situations and experienced more inspirational and positive experiences when treating paediatric patients.

P5: "...make sure the treatment can go ahead that the planning is perfect and that um, we manage to do this child um, and to get the trust from them. To know that after this time, it's not going to be a problem...because we did counsel them, we did everything. Then I think you don't feel sad anymore, because you know you are actually going to help this child."

P7: "...when we work at the hospital, anxiety is always there. The only thing that makes you to do well is to work well under pressure. We are trained in a way that if you don't work well under pressure obviously, we won't do the right thing. So, to be- to work with anxiety, to be scared it's a normal thing... you want to make sure that everything is done the right way and the child is out of the department as soon as possible..."

P4: "...it's really important as a radiation therapist for us to be there for the child and the parents, to be strong."

The literature describes resilience as an individual characteristic as well as a protective factor possessed by an individual to cope effectively during stressful events and also the ability to overcome and bounce back from challenges and adverse experiences, thus eluding compassion fatigue and burnout (Clarkson *et al.*, 2019:5; Probst *et al.*, 2014:391; Yilmaz, 2017:9). Resilience is a developmental process and can be learned and improved on (Yilmaz, 2017:9, 11). For healthcare professions, such as nursing and radiography, the desire to care for patients is high, and in doing so, the emotional effort required can lead to stress, depression and emotional exhaustion (Yilmaz, 2017:10; Roopnarain, 2015:1). The importance of developing resilience and using it as a protective factor to cope with the ongoing stresses faced daily by health professionals is thus highlighted in the literature (Yilmaz, 2017:10).

The findings of the current study are in line with the literature. Studies by Smith, Hamilton and Grimard (2014) and Angstrom-Brannstrom *et al.* (2019) suggest that the painful and difficult emotions experienced by radiotherapists when treating children are balanced by their inspirational and hopeful experiences. Resilience is a personal strategy that both the literature and the findings of the current study suggest can aid radiotherapists in experiencing more positive emotions and cope with the painful and challenging experiences of treating paediatric patients (Yilmaz, 2017:10; Probst *et al.*, 2014:391).

3.4.2 THEME 2: Radiotherapists' familiarity affects their experience of treating paediatric patients

Human experience, as a philosophical concept, is holistic and complex, denoting living, feeling and undergoing a phenomenon (occurrence or event) that may affect a person's emotions (DePoy & Gitlin, 2019:47; Tirkkonen, 2019:447, Vagle, 2018:31). Experience also refers to the process of acquiring skill and knowledge from a period of practical contact, involvement, or observation with a task, situation, or event, especially that gained in a particular profession (*Cambridge English Dictionary*, [n.d.]; Tirkkonen, 2019:447). Consequently, familiarity with a phenomenon is gained through direct experiences and repeated exposures to situations and environments (Mackovichova, 2020:3-5; Craig, Conniff & Galan-Diaz, 2012:1).

Participants indicated varying levels of familiarity with treating paediatric patients and explained the challenges faced due to lower levels of familiarity, as well as the advantages and positive experiences of being very familiar with paediatric radiotherapy. In essence, the participants' responses expressed the importance of being exposed to paediatric patients and gaining familiarity with paediatric radiotherapy to enhance their experiences. This theme addresses the research problem that the rarity of paediatric patients in radiotherapy departments limits radiotherapists' exposure to and experience of the paediatric patient population. These findings are explained further in the categories below.

3.4.2.1 The importance of familiarity and experience

All the participants in the current study were familiar with paediatric radiotherapy, but to varying levels. Factors contributing to the differing levels of familiarity were their level of exposure to children, radiation oncologists' patient preferences and whether their previous and current workplaces were suitable and equipped to treat paediatric patients. Participants' responses revealed that most participants gained experience with paediatric radiotherapy over the years they had worked and gaining familiarity therefore required time. The quote below shows this:

P4: "I think it's like, lots of things in life, that the more experience or familiarity with something, the easier it is. So, I've been for quite a few years in this profession and I worked with a lot of children especially in my earlier days. Um, and I think you-you, over the years you learn how to treat these patients, how to handle them and um, I think it

makes me- the more familiar you with it, you more confident, you more relaxed, you more- you more um, certain about yourself about the treatment and handling of the child. And I think that also gives the parents and the child that re-assurance that you know what you are doing...

The common notion expressed by all participants was that being familiar with paediatric radiotherapy was extremely important. Gaining familiarity helped participants to improve how they managed and attended to the patient's parents and gained the patient's cooperation. Furthermore, through gaining experience and becoming familiar with paediatric radiotherapy, radiotherapists improved their assessment of the individual patient situations. They thus had realistic expectations of whether treatment without sedation or general anaesthesia was possible. This is shown in the following direct quotation:

P9: "...experience does help, because then you know what works, what doesn't work to get them to cooperate with you, and you able to see okay this is not going to work the child needs general anaesthetics... You know instead of dragging it on, for hours (laughing) you can immediately see, okay this is not going to work."

Participants who were familiar with paediatric radiotherapy also reported fewer challenges and handled difficult situations effectively. They indicated that familiarity made them better, knowledgeable and experienced radiotherapists, as reflected in the following participants' quotes:

P2: "... all these experiences tend to make you a better radiographer. You can take the good out of it and you can actually become better at doing the jobs that you choose to do (stutter) if you include checking on these little ones. So, I think all these experiences add on to get a solution on how to treat them well and to treat them good and get it quickly and over and done, but still be accurate... But like I said, all these experiences add on and it makes you more knowledgeable on how to get better at treating patients.."

P8: "... But you have experience. So, in situations like where you...you have got a child under GA, you are very efficient in what you do, you- you- because you have treated a lot of patients and some were very fearful and all that, you are able to deal with the paediatric patient, without having uh, you know without having- you know what to do. You are able to approach this child from all the different angles that you can, from the experience that you have gained by treating so many of the young ones..."

Participants with less experience and low familiarity due to being junior radiotherapists or not having worked with paediatric patients for some time reported more challenges, feelings of forgetting the process and lower confidence levels:

P3: “Um, well as it is evident from the number of times I actually have to tell you that I need to think back and I need to remember (laughs) that just shows that um, you know by not having treated paediatric patients for a few years obviously makes me feel like I'm- I'm losing what information I did have ...”

Similarly, Mackovichova (2020:3-5) and Craig, Conniff and Galan-Diaz (2012:1) indicate that familiarity with a phenomenon is gained through direct experiences and repeated exposures to situations and environments. The literature points out that the rarity of paediatric cancers and limited exposure to the paediatric population results in radiotherapists developing an unfamiliarity with paediatric radiotherapy and oncology (Angstrom-Brannstrom *et al.*, 2019:E11; Jacques, 2014:4; Jacques *et al.*, 2014:270; Woodman, 2013:311).

Participants who were more experienced and familiar with the process reported feeling competent and confident, and some managed to take on the lead role in challenging situations. In addition, some participants reported that they felt that only senior and experienced radiotherapists were capable of treating paediatric patients and not the juniors, due to the higher level of familiarity, experience and competency required.

P7: “...Without that experience, without knowing what you are doing, you will waste time, you will put the child in danger and also, you make everyone panic but if you are an efficient therapist who knows what he is doing, you will be fine. Hence, I say senior therapists should do the treatment not the juniors...”

The study by Couto, McFadden, McClure, Bezzina and Hughes (2020:83) identified the competencies of radiotherapists. The current study confirms their study that gaining familiarity and experience directs radiotherapists to become dedicated, confident and competent. Additionally, a competent radiotherapist is identified by the high level of patient care they offer (Couto *et al.*, 2020:88). The patient care aspect should include the care offered to the patients' parents and family. Acquiring experience and thus becoming familiar with paediatric care will enhance such competencies in radiotherapists, enabling them to be prepared, committed and skilful

when meeting, interacting and communicating with the paediatric patients and their parents so that they can ease their radiotherapy experience (Couto *et al.*, 2020:88).

The importance of gaining familiarity in paediatric radiotherapy to become dedicated and competent radiotherapists is therefore evident in both the participants' responses as well as current literature. The study participants felt that this could be done by training students in paediatric care, and teaching and learning from one another's experiences. Increasing personal knowledge of the available evidence and research related to paediatric care would also be beneficial.

3.4.2.2 Familiarity and emotional capabilities

In the current study, gaining familiarity and experience in paediatric radiotherapy assisted most participants in coping with their own emotions and with the emotional complexities that arise when dealing with the paediatric patients and family.

P4: "But it's getting better, over the years I don't want to say you get hard or anything emotionally, but I think you just learn how to cope with this."

In the literature, the level of experience gained in paediatric radiotherapy is considered a significant factor to determine how well radiotherapists cope emotionally when treating children (Angstrom-Brannstrom *et al.*, 2019:E11; Gardling *et al.*, 2015:660; Smith, Hamilton & Grimard, 2014:278, 279).

However, a few participants in the current study reported that gaining experience and thus being familiar did not assist them with the pain and emotions that accumulated over the years of treating sick children. The pain they felt then persisted. This was evident in their voices as they paused and sighed deeply while sharing intense vivid memories of their past emotional experiences with paediatric patients:

P8: "...you never get used to um, the pain that you experience when it's a child that you are treating. That- that does not go away. That, that every child brings their own pain to you, as a radiation therapist, when you are treating them..."

In the current study some participants felt that younger radiotherapists were not emotionally mature and could not handle the emotional challenges in paediatric radiotherapy. This concern is evident in the following quotes:

P17: “... I can see the younger kids, I called them kids, the younger staff that works, they can't deal with it the same way. Because it's different for them, they haven't experienced it like we do, to be honest. And also, just, just be grateful (laughing).”

P12: “... then also another challenge on the emotional level is to - because, I don't know if I am very good with children (laughing), I don't have children of my own...”

P2: “Um, being a young radiographer, it was quite a challenge because, um, usually putting a paediatric patient on either at the scan or making a mask, the whole process of putting on the machine, treating the patient was quite stressful because you're new in the field. So it was stressful for me as a young radiographer...”

Notably, Smith, Hamilton and Grimard (2014:278, 279) studied the emotional and psychological impact on radiotherapists of treating children and found that for 44% of the participating radiotherapists, a combination of their age and experience influenced how they coped emotionally.

Therefore, in line with the literature, the participants' experiences revealed the importance of radiotherapists gaining familiarity in paediatric radiotherapy to enhance their emotional capabilities. This will assist them to deal effectively with the emotional challenges faced in caring for paediatric patients.

3.4.3 THEME 3: Close contact with the patient, parent and family influences radiotherapists' experiences

Discussions on this theme focused on how radiotherapists, by the nature of their scope of practice, work in close proximity to the paediatric patient, parent and family ecology and how this impacts their experiences. The participants' responses made it clear that proximate contact with the patient and parents was essential in fulfilling their therapeutic role and the success of the therapy. Participants' stories explained how procedural closeness was required for physical support and accurately positioning and immobilising the paediatric patients for treatment. Social closeness was necessary to provide emotional support, comfort and trust essential for gaining treatment cooperation and compliance and to build the required interpersonal relations with both the paediatric patient and the parents. Due to the long duration of radiotherapy treatment, the frequent encounters and closeness of their work resulted in radiotherapists developing a strong emotional commitment to and bond with the child and the parents. Although participants' attempts to emotionally distance themselves

were reported, physical and social closeness was necessary and perceived as essential for their work. Tactile emotional contact was also reported as part of the participants' responses, as participants reported how they offered comfort and care to distressed patients and parents through physical gestures such as hugging and carrying the child.

P17: "...You have to treat them as a person before uh, actually as a child, before you treat them as a patient. Because they are afraid and they need that love and they need hugs and they need...and even for the parents as well, we sort of shake hands with them, such things, give them a hug, tell them, 'Good job' that is all part of patient care."

The tactile contact with the patients and parents also seemed to create an emotional attachment. From the participants' relayed experiences, it was clear that the closeness of contact could be used to the best advantage of the treatment procedure by providing the participants with the privilege of understanding the patient, parents and family dynamics, and using this to fulfil their therapeutic role efficiently. However, the negative implications of proximity were also evident in the participants' responses, such as the spillover of the closeness of contact to the emotional and interpersonal levels that extended into their family and personal lives. The proximity that develops by radiotherapists working within the patient, parent and family ecology and how it influences radiotherapists will now be described in terms of the two categories below.

3.4.3.1 Radiotherapists' specific experiences and influences regarding paediatric patients

Participants shared their experiences of closeness of contact when treating paediatric patients. This finding is explicitly expressed in the direct quote below:

P6: "I am also someone that's very attached to children. So, when they- if they don't do well then, I feel like a failure and when they do well and they leave then I cry, because then I'm going to miss them (laughs)..."

A paediatric patient's experience of radiotherapy treatment is dependent on their age, developmental stage, comprehending and interpreting capability and coping skills (Angstrom-Brannstrom *et al.*, 2019:E11). Radiotherapy is a non-invasive and painless procedure, but children experience fear, stress and anxiety. The paediatric patient is in an unfamiliar environment and does not understand the treatment process. The highly technological, large radiotherapy machine is also daunting. Moreover,

interacting with radiotherapy staff that they are not familiar with adds to their fear, stress and anxiety (Engvall *et al.*, 2018:9). The participants' roles as parents led them to identify strongly with the paediatric patients.

P1: "...a mum is a warrior, you would want to protect your child. So, you see through the eyes of a mum. That you know what you deal with in becoming a mother, it does have an impact in the way you handle the child. Other people's children are also very special."

P11: "I have two children of my own, they have grown up now. But still I feel very close to children and I think children are very special. Um, all patients are special but children are-a bit more special."

P17: "... So, these kids reminded me of my brother again... I got very, very involved with these kids. So um, that was- it was tough for me."

In the current study, being a mother and possessing motherly feelings and affection for children heavily influenced how emotionally challenging most participants found paediatric radiotherapy.

P10: "Um, basically it is kind of like, more of an emotional thing, because I am a mum..."

Participants who did not have children also felt strong emotions when treating children.

P7: "...And even if they are not a mum- before I had a child, there is something about being a therapist and treating a child, you become a different person when you treat a child... So, the emotions are more off- they are very sympathetic and empathetic at the same time. At the same time, you have to be a loving person to the child."

Participants also expressed their feelings of appreciation and gratitude for their children being safe and healthy.

P17: "It actually makes me so grateful for having healthy kids, that is what I... that is really what brings me hope. If I go and I say thank you Lord for my healthy kids, that is how I cope. It gives me new energy, to help another mum, who is not as safe as I am in the situation. Um, in my life I have learned, if you are grateful, it is impossible to be depressed..."

In the current study, P6 indicated that treating children made her terrified of having children due to her fear that she might go through a similar painful fate with her own child:

P6: "...I can tell you that paediatric care has influenced me personally in the sense of- I am very terrified to have children ... Because I'm very terrified if I have a baby and then I have to go through that with my child ... Having been on the other end for so many years and if God forbid, if the roles were reversed and we came as the parent."

On the contrary, Smith, Hamilton and Grimard (2014:277) report that treating paediatric patients had no significant impact on most radiotherapists' perceptions of becoming parents.

There were many incidences conveyed where participants associated the experiences they had with paediatric patients with their own family members or children. Their responses displayed their affection for children.

P10: "Yes um, I think as a mum it's like you know when a child cries, your first instinct is to hold the child and eliminate whatever the child is experiencing that's making them like cry or be angry or be sad... Yes, we do have those attachments where you actually feel like you just want to go to the other room and cry it out, because actually you don't want to cry in front of a child, you know. But there's that or you just have a child that reminds you of your child, you know and you just think of that. So, that's actually- that's why you get that emotional attachment..."

P1: "... So, I really treasure children, at that time and I wondered so much why did God in my opinion allow little kids to suffer like they did ..."

Tactile contact was reported as part of their emotional responses towards paediatric patients, as participants reported on the procedural closeness required to accurately position the patient as well as how they hugged, carried and comforted the patient.

P11: "... that's a part of being radiotherapist. It's-it's the showing the patient in- like you would have shown a family member, or even a child- your um, how you feel. Just taking their hand, giving them a hug when you see that they need something like that..."

Participants indicated that their social and physical closeness resulted in an emotional bond that was required to form a trusting relationship and gain the patient's cooperation and compliance.

P8: "yeah so there is also that emotional bond, that you get to know them, you get to- to you know, play with them and all that sort of things you know. You get to carry them..."

P11: "...getting that- that patient um... to trust you ...then getting through the treatment. Um, and with that specific patient there was a quite strong bond between us in the end."

Participants shared the anxiety and fear faced by a paediatric patient.

P4: "...um, the little ones can be very scared. Um, they don't know what to expect um, the parents can't be with them in the room so for them it's really traumatic..."

P13: "... the thought of also being tied down onto the bed sort of by their head, or being clipped onto the bed by their head, is for them like a daunting process."

Participants articulated how the paediatric patients' anxiety and fear could be reduced and resilience enhanced due to parental presence.

P1: "That when the parent is there with the child, the child is actually more confident and cooperates with the treatment. I am meaning that they will lay still and they can be calm when we are doing the actual treatment and lots of time the masks or the casts are restraining, but these kids lie like sweet little angels when we treating because they know that their parents are with them..."

To ensure that radiation is delivered accurately, the radiotherapy treatment process requires the paediatric patient to lie motionless and alone in the treatment room (Engvall *et al.*, 2018:9). Immobilisation devices such as masks are therefore used and sometimes being strapped to the treatment bed may even be necessary (Gaze, 2019:140; Angstrom-Brannstrom, Lindh, Mullaney, Nilsson, Wickart-Johansson, Svard, Nyholm, Lindh & Engvall, 2018:132; Jacques, 2014:7). For younger and anxious children, anaesthesia and sedation are generally used when cooperation is unachievable (Engvall *et al.*, 2018:9; Angstrom-Brannstrom *et al.*, 2015:2). The participants in the current study relayed the negative effects of sedation and general anaesthesia (GA) experienced by paediatric patients.

P12: "...giving the sedatives and the anaesthetic, I think it's also a challenge in that, I al-always feel bad because now the child is sleeping the whole day. They end up not eating properly, they lose weight and all that..."

Sedation and anaesthesia can disturb the child's life by altering their sleep patterns and can negatively affect the quality of life of the paediatric patients and family due to the increased time they have to spend in the radiotherapy department (Holt, Hiniker, Kalapurakal, Breneman, Shiao, Boik, Cooper, Dorn, Hall, Logie & Lucas, 2021:505). Psychological effects such as nightmares and increased fear of medical

procedures are also mentioned in the literature (O'Connor & Halkett, 2019:276). The requirement of daily fasting for general anaesthetic procedures increases the risk of dehydration and negatively affects the diet and nutrition of paediatric patients (O'Connor & Halkett, 2019:276). Risks of decreased attention and cognitive functioning, adverse long-term neurocognitive outcomes, intellectual dysfunction, gastric content aspiration, airway oedema and swelling due to subglottic stenosis, as well as other medical complications are increased with the use of general anaesthesia and sedation (Jacola, Anghelescu, Hall, Russell, Zhang, Wang, Peters, Rossi, Schreiber & Gajjar, 2020:141; Mistry & Oswald, 2020:5). In addition, the use of general anaesthesia can be costly and quite time-consuming (Engvall *et al.*, 2018:9).

In the current study, the participants' stories echoed the negative emotions and challenges faced by the paediatric patients.

P8: "...And then came in the teenager, who would actually understand that they have got this fatal disease.... besides the emotional side, they had to battle with this physical pain and-and all sorts of things. So as a radiographer you are aware of all this..."

P2: "... they had to inject her on her bum for her sedation and I just said if she sees that doctors coming, she started crying and that was like the worst thing for me. Um, this little girl, scre- not screaming, crying like heartbroken, like so sad..."

P3: ... "But with the retinoblastoma ... it would be physically obvious ... I think that also gives a whole range of challenges for the child themselves so besides just having the disease to deal with it adds on to their emotions ..."

Paediatric patients have described radiotherapy as "tough and tiring" due to their negative experiences of undergoing associated treatment side effects, discomfort, suffering, disease-related pain, fear, communication, social and emotional problems (Van Schoors, De Mol, Verhofstadt, Goubert & Van Parys, 2020:2; Engvall *et al.*, 2016:1, 4; Angstrom-Brannstrom *et al.*, 2015:2). The literature highlights that paediatric patients require extra support from radiotherapy staff and parents, more distraction strategies, better emotion coping methods, an initial exploratory visit to gain familiarity with the process, improved communication and provision of more information (Engvall *et al.*, 2016:4).

Participants in the current study also mentioned their attempts to improve the patients' and their own experiences by using distraction techniques and strategies to aid cooperation.

P13: "... with the kids, you try and make it like seem in a way, like a fun procedure. Like you tell them this is your Spider-Man mask and you can put it on now and all that sort of stuff and a lot of them cooperate... maybe ask the mother, like, to play some songs in her phone ...we leave the phone inside the treatment room, on the treatment table and ... so that the child doesn't feel completely like alone afraid during this process and they sort of distracted."

The literature highlights the importance of using distraction techniques during radiotherapy, but most studies focus on children younger than 12 years, as older children have enhanced coping, cognitive and comprehending skills and display less separation anxiety (Engvall *et al.*, 2018:9; Gardling, 2017:18; Engvall *et al.*, 2016:2). Participants in the current study also expressed experiencing a smoother radiotherapy treatment process when older paediatric patients were treated. Engvall *et al.* (2018:9) highlight that although older children cope better, they still require more individualised information, strategies and support for radiotherapy procedures. Paediatric patients want to be involved in treatment-related decisions, receive information and be heard, as they feel more prepared and less anxious when they feel included (Engvall *et al.*, 2018:9; Gardling, 2017:18, 19). Therefore, radiotherapists should involve the child in the care provided. Radiotherapists require proper knowledge of distraction techniques, child development and psychology so that adequate child-centred care can be provided (Engvall *et al.*, 2018:9; Engvall *et al.*, 2016:2). Similarly, the participants in the current study expressed the need to know more about paediatric care and mentioned central and critical child-centric approaches.

Issues such as the importance of peer support for paediatric patients, knowing how to handle children and maintaining the patient's privacy and dignity during treatment were also mentioned. They discussed critical child-centric approaches and stressed the importance of involving the child in the radiotherapy treatment by respecting them, giving them autonomy and taking their views and needs into account. Their direct quotes below refer to the critical child-centric approaches discussed:

P6: “So- where they went from getting bad news, having no control, coming to us and being treated with respect even if they are 4 and 6 years old, to being told that if you say no that's ok...but if I'm going to listen to you, you need to listen to me.”

P3: “...their needs from us are different and so you just need to remind yourself that you know, okay I need to take my time and- and give this child what they need in order to make this experience for them as un-traumatic or you know as easy as possible ...”

P11: “They must not lose sight of the little person that they're treating. I know we all um, trying to focus on the treatment, delivering the exact treatment, delivering it in the correct way. Um, that is part of our structure as a radiotherapist and yes, it's still very important because we are dealing with children and, and you cannot treat incorrectly... realizing that it's a little person with emotions um, with feelings, um which might range from being frightened to- to you sometimes even get children that are a bit too, too overconfident (laughing) ...Just dealing with the person you have in front of you and accept- accepting that person, for what and who he or she is.”

P3: “...try and in-cooperate some amount of continuity so that the child feels comfortable and to build a rapport with them. I think this is important because during the treatment delivery process the child has to be separated from the parents so, this can leave them feeling vulnerable and more anxious and more sad, more frightened. So, if they are with someone, they become used to them...you are still there most of the time... you can speak to them over the intercom for example when they are familiar with your voice and you become somebody that they trust...”

Child-centred care occurs in the family context; however, depending on the maturity and age of the child, the child's views, opinions and needs are considered central and thus the child is given the right to be included in their healthcare decisions (Gardling, 2017:18, 19). Consistently, in a study by Angstrom-Brannstrom *et al.* (2019:E11), radiotherapy staff considered the paediatric patient as central to the care they provided. Although the parents were also taken care of, radiotherapy staff focused on making the extra effort to form a trust relationship with the paediatric patient, listening to their views and opinions and providing the best patient care possible. These aspects of patient care were also evident in the participants' stories in this current study.

The participants also made extra efforts for paediatric patients and delved deeply into the treatment and their interpersonal resources to assist them. The important requirement of investing extra effort and time is reflected in the quote below:

P3: "... I think it's important for us as therapists to realise that um, you know treating these children requires extra from us as therapist and you know bit more time, more creative ways of counselling etc. I think we shouldn't forget that there is that um, difference in understanding and communication. We used to a certain standard but we should try and adapt ourselves to push the needs of the child."

According to the literature, paediatric care requires the extra effort of healthcare workers to build trust on a deeper level compared to adult patients, as compliance and cooperation for treatment can easily be achieved from a child when a trusting, social relationship is formed (Sheehan & Fealy, 2020:4289; Thompson, 2015:461-464). Social relationships and closeness are important and required in paediatric care to establish a therapeutic relationship. Moreover, providing comfort to a paediatric patient through physical touch such as hugging, rewarding them with gifts and encouraging them are all part of paediatric care (Thompson, 2015:461-464). In the current study, this necessary tactile contact and social and physical closeness to the paediatric patients was also evident. This highly immediate tactile contact with the paediatric patient appeared to bring the radiotherapist into an immediate emotional contact situation. Thus, the participants' stories relayed the intense emotions they felt and the close and strongly bonded commitment they formed with the child.

Participants' insights and concerns regarding their difficulties in communicating with children were raised and also how the younger patients were not able to express themselves appropriately.

P10: "Yeah it is difficult for paediatric patients to actually communicate all of these um, problems that they have. Because I mean, if you're treating a 3-year-old and you put the three-year-old in a mask, I mean obviously all they're doing is screaming. You don't know whether it's because the child is claustrophobic or what is the problem exactly..."

P3: "...I think communication is a major aspect, communicating with these children requires awareness of their level of understanding in communication so you can't use your normal words to explain the procedure or whatever it may be to this child uh, you would do that for the parent but depending on the age of the child you need to adapt your explanations and your methods so that it's at the level that they can understand..."

Furthermore, the stories of some participants in the current study related the challenge of meeting and interacting with the paediatric patients and parents, due to departmental time constraints, as indicated in the following direct quote:

P13: “... So, it's difficult to try and focus on the parents and, and helping them in a way and also helping the kid at the same time. So, I think it does become a bit of a challenging situation ...We don't actually get the time to sit down and talk to this patient, about things that they might have not either heard from the doctors or that they heard from the doctors but they don't remember...”

Similarly, in the literature, meeting and interacting with paediatric patients and their parents to ease their radiotherapy experience is described as a challenge for most radiotherapists (Couto *et al.*, 2020:88; Angstrom-Brannstrom *et al.*, 2019:E15; Smith, Hamilton & Grimard, 2014:278).

3.4.3.2 Radiotherapists' specific experiences and influences regarding parent and family

The importance of understanding the impact that a paediatric cancer diagnosis and treatment can have on the patient's whole family has been highlighted in the literature (Van Schoors *et al.*, 2020:5; Conway, Pantaleao & Popp, 2017:427; Van Schoors, Caes, Verhofstadt, Goubert & Alderfer, 2015:857). Modern paediatric cancer treatments are quite long and intensive and include hospitalisation, surgery, chemotherapy and radiotherapy (Van Schoors *et al.*, 2020:5). The paediatric patient also suffers from painful and invasive procedures, symptoms from illness and the side effects of the treatment (Angstrom-Brannstrom *et al.*, 2018:132).

During the interviews, participants indicated that when working closely with the patients, parents and families, they constantly reflected on their own families and they mentioned their awareness of how working in the family ecology influenced their work, the patients and the parents.

P3: “... But I think if it makes sense, it would sometimes be more difficult for me to interact with the parents than with the child because- because like I said the child doesn't always understand what's going on... I mean as a parent you- you know you'd rather go through a difficulty yourself then have your child go through that difficulty. It would be really difficult to, to see you know their suffering and their anxiety and their worries for their child so that again was also quite saddening, quite heart-breaking.”

P2: “... But, um, the anguish that you experience, of this, the stress of the mummy and the patient. That, that's quite...I could feel that more as- after I became a mum myself.”

Their responses indicated how their care went beyond just caring for the paediatric patients, as they perceived the care they offered to the parents and siblings as essential as well.

P6: "... it's that people don't generally understand that paediatric care is uh, not just a child, it's a family. Because you cannot treat a minor without a parent present..."

The impact of childhood cancer and its associated complex treatment affects the family physically, psychologically and emotionally, and also their relationships with each other and the entire family functioning dynamics (Conway, Pantaleao & Popp, 2017:427; Angstrom-Brannstrom *et al.*, 2015:1). As the diagnosed child is often part of a family, with parents and siblings, all the family members are affected.

Participants in the present study showed concern for the distress experienced by the siblings of the paediatric patients as well.

P17: "...Because I can only imagine how it feels, because this one kid gets all the attention. I have two boys and I always try and be fair (laughing)..."

Van Schoors *et al.* (2020:3) state that siblings of paediatric cancer patients may suffer from high post-traumatic stress symptoms, enhanced negative emotions and a poor quality of life compared to siblings of healthy children. The importance of radiotherapists and other healthcare workers acknowledging the patient's family and ensuring their well-being is emphasised in the literature since the paediatric cancer patient is embedded in a family, and they therefore play an important role in emotionally supporting the child (Couto *et al.*, 2020:88; Van Schoors *et al.*, 2020:2; Gardling, 2017:18, 19; Engvall *et al.*, 2016:2). When facing paediatric cancer, family members interpersonally find emotional support in each other through being together and present for each other, communicating to each other about the cancer experience and emotions, and working together as a team (Van Schoors *et al.*, 2020:1). Resilience in a family increases when family members support each other, work cohesively, communicate their emotions and cancer experiences, and adapt and function according to the life changes brought about by the child's cancer diagnosis (Van Schoors *et al.*, 2015:859-863). In the current study, participants indicated that paediatric patients, parents and siblings are distressed and generally not functioning well as a family when they lack family support.

P16: "...the parent is... you know a lot of the time they come in and they themselves are exhausted ... So, it does - it does obviously influence the situation very much ... It can definitely be made worse if a parent is not themselves coping."

P1: "I learned a lot about the emotional impact on the parents ... it has a huge impact on their marriages or on their personal lives, having to sustain a child through treatment."

P2: "...because a tired mummy or daddy can't look after a sick child..."

Many families experience difficulty in finding the internal and external means to face the constant challenges suffered throughout the paediatric patient's cancer treatment (Conway, Pantaleao & Popp, 2017:427). Therefore, consistent with the participants' responses, a need for expert emotional and psychological support for the family members of paediatric patients is apparent. Participants also indicated that sometimes the support they could offer was not enough, and distraught parents and other family members required greater levels of emotional and psychological support.

P8: "... And also, you had to refer the-the family members, sometimes to social workers or someone who could help them even further than yourself as a radiation therapist. So, you saw this pain you know, there as-as a mother, a father..."

P13: "... just the emotional side of things as well. I don't feel like um enough attention is paid on um providing the parents themselves with emotional support...sometimes they carry more stress than the child..."

P8: "... I-I thought that the mum definitely needed some sort of guidance and support so that she can support this child, the right way, not shouting at her..."

P4: "... it's the parents that's going through a lot of stress it's emotionally, it's financially, it's a lot of things that the parents are going through."

Through working so closely with patients and parents, participants understood the positive impact they could make by inspiring parents' hope, listening to their concerns, enhancing their knowledge regarding the child's treatment and offering emotional and practical assistance.

P10: "... You kind of also have to sit down and inform them, and also take them through what they feeling. You know as much as you are there for the patient, you should also be there for the parents, you know and the family..."

P4: “ I try just to listen most of the time. Just let them talk and I will try to be very calm and-and support them and you can't really tell someone that you understand what they are going through because you can't. So, I try to stay calm, to make them also calm and also get them to trust you so that they know that you'd do everything that you can in your power to help them and their child...”

P6: “... So, you have to almost create the support structure in the parent to ensure that your patient is supported adequately.”

Their stories included their concerns for the parents and their emotionally painful and difficult communications with parents regarding the seriousness of the child's illness and prognosis. In the current study, deficiencies in the parent's knowledge about the child's condition and treatment process were also evident.

P13: “... Because a lot of the parents will bring the children for the treatment for the first day and they will be there but afterwards they will actually ask you, like so what is actually happening, like what is this radiation for?”

Similarly, Ozawa, Fukuzawa and Furuya (2021:274) and Angstrom-Brannstrom *et al.* (2019:E11) mention that some parents find it difficult to understand the radiotherapy treatment process and associated side effects.

Some participants in the current study expressed the emotional difficulty experienced when parents are not aware of the severity of the child's disease and prognosis and thus come for treatment with the hope and expectation of getting their child cured.

P12: “Yeah, so with the parents and such things, they even more of the challenge, then the children because they think that we cure their child.”

This expectation is impossible to fulfil in most cases as many paediatric radiotherapy cases are palliative (Janssens *et al.*, 2019:52; Smith, Hamilton & Grimard, 2014:277). Even though the participants experienced feelings of helplessness and despair about the patient's severe prognosis, they felt that as part of their therapeutic role, they must display and inspire hope in parents and not take it away, no matter how grave the child's prognosis. In the current study, supporting the feeling of hope was also evident in the participants' responses.

P17: “So, um, it's very important to... You actually have to put your own emotions aside when you treat these kid patients because you need to give them hope. You really need to give them hope.”

Hopelessness manifests in parents of paediatric cancer patients (Conway, Pantaleao & Popp, 2017:427). Hope is regarded as life-sustaining, as it protects the parents and child's well-being, enhances the care parents provide to their child and promotes family functioning (Conway, Pantaleao & Popp, 2017:427). Thus, the importance of healthcare workers inspiring hope in parents is evident in the literature (Conway, Pantaleao & Popp, 2017:428). Additionally, radiotherapists with empathy, compassion and the ability to form very close trusting relationships with patients, patients' parents and family members were evident in the literature and the current study (Sarraf & Feuz, 2018:50).

In the current study, the proximate social contact with the parents brought the participants close to the parents' emotions, as participants strongly identified with and related the distress experienced by these parents to their own parental roles and emotions. Therefore, painful and difficult experiences and emotions relating to the parents and family members were evident in the participants' responses. Nevertheless, inspirational and hopeful experiences from forming close, trusting relationships with parents were also part of the participants' responses, and these are shared in the direct quotes below:

P5: "... Even after the treatment the mum came and visited us one day and he was doing very good ... even if it was emotional but it was very rewarding and it was so nice to know that we could help the child."

P15: "...you get to know the parents. And you even sort of form a bond with them, so you see them afterwards, the follow-up and, it's like you talk to them and you chat with them, you make a connection with them."

Although the literature emphasises the importance of professional boundaries and maintaining the right social and emotional distance, for these radiotherapists proximity was seen as integral to the success of their therapy (Petosa, 2018:154; Woodman, 2013:312).

In the current study, many participants emphasised the importance of reducing parents' distress by inspiring hope in them to emotionally support them.

P17: "... it's important to bring hope. Because I see with parents, we are kind of the only hope that they have, to be honest."

P2: "... I have seen without hope (sigh), the children die and I think to keep the parent's hopeful will keep them good parents..."

P17: "...I will sometimes try and bring hope and say uh, 'we treated another little girl and she is doing well' and it will be, it will be the truth..."

After a child is diagnosed with cancer, parents experience fear, anxiety, depression, losing control, hopelessness, uncertainty and symptoms related to posttraumatic stress (Van Schoors *et al.*, 2020:3; Conway, Pantaleao & Popp, 2017:427). Radiotherapy treatment augments these negative emotions as parents confront the sense of abandonment when they leave their emotionally distressed child alone in the treatment room and see their child experiencing the physical symptoms of the illness and the radiotherapy-induced side effects (Ozawa, Fukuzawa & Furuya 2021:274; Angstrom-Brannstrom *et al.*, 2018:132). In the study performed by Angstrom-Brannstrom *et al.* (2019:E11), radiotherapy staff reported that although the child was central to their care, they knew the strain radiotherapy could put on the family, and the auxiliary care they offered to the family was therefore perceived as very important. Engvall *et al.* (2018:9) and Gardling (2017:18) define family-centred care as the respectful and responsive care that is planned around the paediatric patient's whole family, thereby enhancing the healthcare experience and developing a mutual confidential relationship between the paediatric patient, family and healthcare staff.

In the current study, family involvement and parents' presence were seen as beneficial for the paediatric patients' resilience and well-being, as they are the primary caregivers and can emotionally support the child, and this aids in gaining their cooperation.

P15: " We let the mums speak to them through the intercom from outside to calm them down, to tell them how far we are to motivate them... it's good to have the parents there."

P2: "...For sure there's a lot of pros of having the parents there, talking to the parents, how the child is feeling, how the child was behaving afterwards or if the child's feeling sick or - (stutter) there's a lot of information you can gain from the parents..."

P5 : "... So, I do feel that the parents' participation makes a big difference especially on how the child will behave during treatment and how the treatment will develop and fall into play. I think that without the parents support it's very difficult."

Similarly, the research study by Engvall *et al.* (2018:9) emphasises the importance of family-centred preparation when a child undergoes radiotherapy. Parents and siblings

take an active role and are involved throughout the paediatric patient's treatment process, thus allowing them to interact with each other as a family and understand and be a part of what the paediatric patient is going through. Parental involvement during the radiotherapy procedure is encouraged in the literature since parents encourage, emotionally support, explain information and prepare the child for radiotherapy treatment, reducing the child's anxiety and personal distress as they feel actively involved in their child's care (Ozawa, Fukuzawa & Furuya 2021:274; Engvall *et al.*, 2018:9; Angstrom-Brannstrom *et al.*, 2018:133).

The closeness of contact allowed the participants in the current study to form a mutually beneficial, comfortable and trusting relationship with the patient's parents and other family members.

P5: "... when the children come to our department, the first time, they don't know what to expect, the parents also don't know what to expect and then just to um, show them. I mean explain everything and then help them through the treatment and see them improving and seeing how they learn to trust us every day more and more..."

Some participants discussed how they emotionally coped through talking to the patient's family members and their own family members.

P4: "...I will talk about my emotions and feelings with my husband maybe."

P5: "I think it makes it much easier for us. Um, uh, if the parent is there the parents know what we are doing and we can speak to the parents all about it on a daily basis..."

The participants thus acknowledged the benefits of the family system in which they worked.

3.4.4 THEME 4: Facilitating an improvement in paediatric radiotherapy

The participants' stories revealed the genuine love they had for their profession, their intense focus on fulfilling their therapeutic and professional role and their resilient approach in confronting the challenges of paediatric radiotherapy. Although there was minimal criticism of the system, their responses did indicate some serious failures in the current radiotherapy system and the intense pressure they work under, having to do so much quickly, accurately and precisely. Additionally, paediatric radiotherapy was described as challenging and emotionally demanding, as its success requires participants' added efforts and the harnessing of internal and external resources. The

painful emotions and practical challenges the participants experienced pointed towards the necessity to improve radiotherapists' experiences of treating paediatric patients. Insights into and suggestions on how the current radiotherapy system can be enhanced to facilitate paediatric radiotherapy were provided. Their responses indicated the importance of always striving for professionalism in their work. As they discussed their current lived realities of treating paediatric patients, the need to advance in the practical infrastructural areas of radiotherapy was also evident at both clinical and interpersonal level. Participants' views on facilitating an improvement in paediatric radiotherapy are indicated in the categories below:

3.4.4.1 Striving for enhanced professionalism and an improved radiotherapy system

Participants in the current study described their experiences of practising radiotherapy professionally and what a professional radiotherapist experiences are within the scope of work for the radiotherapy profession. The participants' responses showed how their emotions, personal factors and clinical components influenced their professional role. Some participants revealed how a pragmatic approach and focusing on fulfilling their professional role helped them face the challenges, stress and painful emotions they experienced when treating paediatric patients.

P2: "it's part of my job ... some days are just going to be more stressful than others."

P12: "I tend to rather distance myself a little bit emotionally and just focus on the work that needs to be done ... it's just easier for me just to take one step back ... I mostly operate and think on a practical level and not an emotional level."

Participants stories revealed the use of professional traits and behaviours to provide adequate care to the paediatric patient and the family.

P7: "... you have to be professional and at the same time be empathetic to the parents and at the same time be fast because now you are treating a child."

P17: "...patient care is very important ... you need to be patient..."

P2: "... So, I'm a firm believer of do it quick, do it accurate."

P11: "...they little people. So, you have to have a little bit of-of more of compassion..."

Participants revealed how their professional roles were also affected by personal attributes such as their age, personality, character, emotional maturity, experience, communication abilities, knowledge and the level of competency and familiarity with paediatric radiotherapy.

P1: "I am sort of a perfectionist to admit it but in my career ... So, I approach my situation with a child with extreme precision."

P2: "... and um, I think as I became older and being longer in this profession, I have started building like more walls around my emotions. I don't get - I think you... If I get anxious, it's normal because it's stressful the child is screaming, we must be quick..."

P6: "...I am a relational person so it works for my personality..."

Participants revealed how they strived to achieve professionalism when treating paediatric patients by being empathetic, humane, respecting the child's privacy and dignity and fulfilling their therapeutic roles of providing emotional support. Additionally, their endeavours to focus on the patient and apply critical child-centric approaches, increase their clinical knowledge, apply delicacy and be accurate and hypervigilant also displayed how they fulfilled their professional role.

P1: "So, I do go around treating children with utmost care..."

P7: "... Once you do your counselling in a way that it's professional, it's truthful and, and also to- to assure them that their child is in good hands, then you will see that they are more relaxed... Those kinds of things are things I think the more you explain efficiently, they become more relaxed and they trust you."

P1: "... paediatric treatment for cancer has to be handled with delicacy..."

P7: "... this child is still growing, so you want to make sure that when you give the treatment, you give the right treatment, and the accurate treatment. So, you work with the mind, okay, of telling yourself that since you know that this is a child, this is a baby, you thinking about kids, or your child, to say if I treat wrong and the treatment is not efficient, obviously you are messing up his life. So, you act as a therapist but at the same time, you work as a parent or a sister or a human being, that's how it is."

The participants also emphasised clinical components, guidelines and strategies that are integral to achieving professionalism in paediatric radiotherapy and becoming competent radiotherapists.

P3: “... provide your staff members, radiation therapist with more tools, more information on how best to deal with children.... Because if you are more equipped then you are able to do your job better and I think in a personal or professional capacity your experience would be improved.”

The participants' stories in the current study described the challenging process of paediatric radiotherapy and how the acquired knowledge and skills assisted radiotherapists in performing their work responsibly and professionally.

P7: “The most important thing that I can say about treating a paediatric is, you have to know what you're doing. You can't go there not being sure of what you doing, you have to know your job as a therapist, from this point I am doing this and from this point I'm doing this. Without that experience, without knowing what you are doing, you will waste time, you will put the child in danger and also, you make everyone panic but if you are an efficient therapist who knows what he is doing, you will be fine...”

Professionalism is defined in the literature as the skills, values, attitudes and behaviour that support the relationship and trust that patients have in healthcare professionals (Khan, 2020:3; Bwanga, 2019:12). Integrity, fairness, respect, communication skills, service attitude, technical competency and ethical and professional conduct are essential to achieve professionalism in healthcare professions (Khan, 2020:3; Felipe-Valera, 2019:2). The essential humanistic element of medical professionalism encompasses empathy, compassion, patient care, altruism and humanism. This encourages healthcare professionals to involve the patient in the care provided and focus on the patient as the individual human being they are and not as a symptom, condition, or pathology (Khan, 2020:3; Felipe-Valera, 2019:2). Professionalism and the related attributes are viewed as a core competency to be mastered in the radiographic profession (Bwanga, 2019:12).

In a study conducted by Berry, Smoke, Ho, Arif and Hayward (2018:7) on the perceptions of professionalism in radiotherapy, radiotherapists and patients both identified the professional traits and behaviours of radiotherapists as important to professionalism. The patients ascribed more significance to radiotherapist traits linked to empathy, compassion, communication, optimism and confidentiality. Notably, competence was the most important issue related to professionalism. In contrast, Felipe-Valera (2019:9) distinctly mentions a concerning issue of deficient professionalism in radiography, which has led to poor morale, low patient satisfaction

and little patient safety. Bwanga (2019:15) also mentions the need to enhance the teaching of professionalism in the radiography profession.

Competency is the capability to use the acquired knowledge, skills, individual, social and organisational abilities in one's working situations for professional and personal development (Couto *et al.*, 2020:83). Professionalism is contextually dependant that requires establishing and maintaining adequate social conditions (Owens, Singh & Cribb, 2019:157,162). Relatedly, in the current study, strategies to improve the current radiotherapy system were found to be integral to enhance professionalism.

In the current study, gaining professional attributes through experience was evident in the participants' responses. The participants expressed their love for their profession, regarded it as a calling, and strived to enhance professionalism in their field of radiotherapy.

P2: "like I said I've been working 27 years in my profession and I love radiation therapy."

P17: "I really feel that my career is a calling to me."

The radiographers in the study by Britton, Pieterse and Lawrence (2017:31) showed love for their career and were concerned for the future of the radiography profession because the radiography students and newly qualified radiographers did not display the same level of professionalism and pride that they had had at the start of their careers. In the nursing profession, nurses become increasingly professional over time as they advance and become more experienced in their careers and regard nursing as their calling (Wynd, 2003:251).

In the current study, participants focused on strategies to gain paediatric patients' cooperation and to increase their own knowledge concerning paediatric procedures. In addition, participants expressed thoughts on how innovations in paediatric radiotherapy, specialist paediatric radiotherapists and paediatric-focused specialised training may improve the radiotherapy system and their professional roles.

P10: "... there's new things I am learning. I am learning VMAT, and I am learning all of this, Align RT, new technologies. So, there is always something new to learn ... we are actually able to conform more to the target then previously... because we have Align RT, it helps us a lot to see if there's any movement within the treatment...Because with paediatric you know... they move around a lot... it helps us having the Align RT..."

P13: "...role extension will also help a lot ... if we had opportunities for role extension in South Africa, for paediatric oncology."

P3: "... abroad there is a role of a specialist paediatric radiotherapist and that is a dedicated person, who you know sort of specialises in treating kids...I think we can draw from that by maybe looking into making a program..."

P13: "... I just think that some form of additional training in terms of emergency care and stuff like that is necessary for all health-related professions. So, I think it would be more valuable to educate students already from tertiary education on how to handle an emergency procedure but like physically and also on an emotional side of things. How to remain calm during the procedure and what to do. Whether it's talking to the family, or helping the doctor or anything like that."

Holt *et al.* (2021:511, 513) report that radiotherapists lack awareness about the interventions available to enhance paediatric patients' experiences of radiotherapy, which can become an obstacle in implementing strategies to assist paediatric patients. The desire for professional growth, role extension, additional training and achieving a level of autonomy was also expressed by diagnostic radiographers in Gauteng (Britton, Pieterse & Lawrence, 2017:31).

Participants indicated the inadequacies in radiotherapists' training and scope of practice, failures of paediatric treatment and radiotherapy systems, highlighting the need to improve the current radiotherapy system.

P13: "...the doctor who was resus-resuscitating the patient, was asking me to get an adrenaline vial, and I didn't know what an adrenaline vial looked like or how it must be opened or anything like that" ... "I don't see myself resuscitating" ...

P2: "The big thing is when we trained to do anything really, we must call for help. As radiographers it's not in our scope of practice to do. We can resus, but giving any medicines, intubating or you know all the stuff that you need to do to uh, a with patient that collapsed, what must be there, adrenaline or whatever. We are not equipped to do that- we are not allowed to do that..."

P9: "And you know, how you going to make the mask. Now I wasn't taught all of that, where the tubes come out of the mask (laughing nervously)."

The participants in the present study expressed how they strived and struggled to deliver a vital child-centric approach in the care they provided to paediatric patients.

They mentioned this is due to the staff shortage in their respective departments and how the role of a specialist paediatric radiotherapist would alleviate this issue.

P8: "...we need to have enough radiation therapists ... if there are a lot of children that are coming to the mould room obviously, the time is limited that the staff member can have with each child... And if that- this staff member needs to go ... they've got other duties in the department. Um, obviously you cannot put enough time to-to help this child um, you know, get used to the environment."

P13: "...But if you have a dedicated person it's sort of eases of the rest of your staff members to carry on with the rest of the workflow. Without everybody having to um, maybe be slowed down or that sounds bad (nervous laugh). But it helps if everyone else is just carrying on with their regular workflow and then you have somebody dedicated who can help make the department also a bit more efficient."

The need for radiotherapists treating paediatric patients to be skilled and highly focused on providing child-centric care is evident in the literature (Gardling, 2017:18; Angstrom-Brannstrom *et al.*, 2015:11). Radiographers have expressed the limited human resources in their profession and thus the immense workload they have to carry (Britton, Pieterse & Lawrence, 2017:31).

In the current study, some participants revealed their concerns and the challenges related to providing paediatric care, as well as the resultant issue of reduced quality of patient care.

P14: "...we not equipped- equipped to be able to handle children with their emotions."

P11: "...you sort of forget um the, um the patient behind this treatment. Um, I have seen with my younger colleagues that they so set up on-on the setup being a 100% correct, that they might take quite long with setting up a patient um, with the verifications and so. And forgetting that there is a little person lying, there on the bed ... half an hour to get the setup right and the poor patient is-is lying in a mask or with something on, on the bed. Um, just take that into consideration, also..."

P12: "...I think because it's so difficult for me to actually be involved with children ... so because um I don't really understand what they're thinking or what they're feeling."

Similarly, the literature reveals that radiotherapists are not specialised in paediatric care and paediatric nursing, yet they are required to provide effective paediatric care and interact with paediatric patients (Gardling, 2017:17; Gardling *et al.*, 2015:660).

The role of a specialist paediatric radiotherapist is scarcely discussed in the literature; however, they fulfil the requisite and unique position of delivering the expert care and support required by paediatric patients and their families and reduces staff anxieties (Gaze, 2019:140; Woodman, 2013:314). The role of the paediatric radiotherapist requires integration with the paediatric oncology multidisciplinary team and taking principal responsibility for the paediatric patient's entire course of radiotherapy treatment (Woodman, 2013:313). They also provide comfort, support and information to the paediatric patient and the parents since they are their key point of contact and resource during radiotherapy treatment, thus providing much-needed continuity of care (Woodman, 2013:313). This role requires the radiotherapist to be comfortable managing paediatric patients and possessing knowledge of standard psychosocial child development, efficient age-appropriate communication skills and excellent interpersonal skills (Gaze, 2019:140; Woodman, 2013:314).

Participants in the current study stressed the importance of achieving accuracy and precision in all aspects of paediatric radiotherapy procedures as well. They further mentioned how innovations in paediatric radiotherapy have improved the radiotherapy system and profession and how they have to be competent and up to date with the new techniques and equipment to fulfil their professional roles.

P6: "Accuracy is always important radiotherapy but it goes to a special level when it comes to paediatrics because children are still growing."

P10: "Technology, ways of doing things. I mean we always discover. Oh, you could have done the crania this way, instead of this way, there's always a change you know. ... the department I was studying at, we used blocks, and then when I came to hospital G ...That's all phasing away and there's new things I am learning. I am learning VMAT ...So, there is always something new to learn...it creates a gap where you can actually change certain things. Change how you treat certain things because now you have a better technology, to allow you to do certain things that you couldn't have done..."

Gaze (2019:140) mentions the requirement of excellent immobilisation and image guidance in paediatric radiotherapy to increase treatment accuracy. The requirement to strive towards enhanced professionalism and an improved radiotherapy system in paediatric care is emphasised in both the literature and the current study.

3.4.4.2 Advancing the practical infrastructural areas of the radiotherapy system

Participants' responses highlighted the significant practical and functional infrastructural areas of paediatric radiotherapy. This discussion therefore centres on the participants' patient care, relational and technical skills and their everyday lived realities in the current radiotherapy system. They emphasised that improving certain interpersonal and clinical aspects was the key to making the systems work. Acquiring appropriate communication skills to assist the different audiences and situations faced in paediatric care was highlighted. Additionally, benefiting from forming good interpersonal relationships with other health practitioners, teamwork and acquiring a multidisciplinary approach were also evident in their responses.

P16: "...Because I feel, like I mean you know, the best thing to help in a paediatric situation I'd say is time and communication... I think as health care workers, if you can communicate properly and sensitively..."

P6: "Paediatric care is so different because there's multidisciplinary action that's always used... there's always this interaction between the anaesthetist or theatre, or a paediatric specialist, or your paediatric doctor and your oncologist..."

P10: "...we experience it together as a team, we talk about it together as a team..."

The literature emphasises the importance of regular communication and discussions between healthcare professionals who are part of the paediatric oncology multidisciplinary team (Gaze, 2019:140). Ball, Kirby, Ketterer, Mullen, Howard and Bridge (2021:187) and Gaze (2019:140) see radiotherapists and oncologists as core members of the multidisciplinary team who should work as a team to deliver patient-centred care by supporting the paediatric patient through their radiotherapy journey. Gardling (2017:44) mentions that radiotherapy treatment is easier when radiotherapists, the anaesthetic team, the parents and the paediatric patient work together as a team. South African radiotherapists have exposed a need to develop close interpersonal connections with colleagues as this is important to strengthen the teamwork required to deliver good service and patient care (Britton, Pieterse & Lawrence, 2017:31; Lawrence, Poggenpoel & Myburgh, 2011:1-7).

The participants in the current study indicated the difficulties experienced during paediatric clinical procedures. They discussed the shortage of staff, time constraints and intense pressure they worked under when treating paediatric patients. However,

even under these conditions, they were determined to do their best in fulfilling their professional and therapeutic roles.

P10: “We are understaffed. We like to do all of these things, but- but the problem also comes to being understaffed. We can't focus more attention. I mean, if we had more staff, we could focus more attention on the paediatric patients, you know. Like get the patient more used to the machine, more used to the process, while the others are probably still able to continue the other work, you know.”

Paediatric radiotherapy requires a sufficient number of experienced and trained radiotherapy staff to achieve the high standard of care required (Gaze, 2019:140). Haste in delivering radiotherapy treatment to paediatric patients is not encouraged, as safety and accuracy are a paramount consideration (Gaze, 2019:139). Radiotherapists' competency, interprofessional teamwork and provision of good and holistic patient care can be negatively affected when there is a shortage of staff and tight time schedules in radiotherapy departments (Angstrom-Brannstrom *et al.*, 2019:E16; Gaze, 2019:139, 140).

Furthermore, participants also raised concerns regarding paediatric general anaesthesia and sedation procedures.

P16: “Okay so there was an example of a child who um, would have needed sedation... the-the doctor had prescribed something, two-two different sets of prescriptions, So, if one never worked, there would be the backup of the other. Um, and the child just wouldn't sleep. So, so the radiographers were giving a little bit more, a little bit more and a little bit more, and um, it was actually, it was terrifying because the doctor was not there. We are of course - it is not our scope, as far as I'm concerned, necessarily.”

Participants found general anaesthesia and sedation-related clinical procedures difficult and emotionally overwhelming.

P1: “Which does impact on the treatment in the room because GA takes a longer time. So, it affects our numbers and treatments.”

P8: “Yeah, under the GA and that was an extremely unpleasant um, situation for the child, you know and also very difficult for us. You don't want to see a child under GA every single day, you know. Not only that it meant that there was a lot of work, a lot of preparation, to make sure that uh, you know, the bunkers can accommodate, you know, the personnel that needs to come through, you know...”

P17: “I feel medication is not my field ... what if I give the wrong dose? What if this child never wakes up? You know what I'm saying?”

Sedation and general anaesthesia are commonly used in paediatric radiotherapy to facilitate the patient’s immobilisation and achieve the precision and accuracy required (Mistry & Oswald, 2020:1). Many radiotherapy departments routinely use sedation and general anaesthesia for paediatric patients and in some paediatric cases, general anaesthesia is administered daily for approximately 30 treatments to complete a curative radiotherapy treatment course (O’Connor & Halkett, 2019:276). However, the general anaesthesia clinical procedure is complex and presents many challenges for the radiotherapist and associated risks for the paediatric patients (Holt *et al.*, 2021:505; Mistry & Oswald, 2020:1). Clinical implementation challenges include longer treatment time, treatment scheduling constraints, the requirement of a paediatric anaesthesia and recovery team and provision of space for setting up general anaesthetic equipment (O’Connor & Halkett, 2019:276).

In the current study, participants’ attempts to minimise the use of anaesthesia and sedation to the last resort option were evident in their responses.

P1: “...we would firstly start with some kind of play therapy and doing stuff so that the child can firstly accept it, but if not, our last resort is the general anaesthetic.”

Placing paediatric radiotherapy on a continuum puts sedation and general anaesthesia on the more risky and difficult side of paediatric treatment (Mistry & Oswald, 2020:5; O’Connor & Halkett, 2019:276). Reconsidering the use of general anaesthesia and sedation to when it truly is a must is indicated in the literature (Jacola *et al.*, 2020:141).

Participants reported alarming accounts of serious and dramatic failures of radiotherapy treatment using general anaesthesia and sedation. They also indicated how the radiotherapy system was not geared for these failures and emergencies and how they were not adequately trained to manage the paediatric emergency procedures. Although some advantages were mentioned regarding these practices, mostly negative and stressful experiences were reported, including two stories of children becoming brain damaged due to general anaesthesia and sedation interventions failing.

P14: "... and we kind of looked at the child, and we said, why is his chest not rising? you know (mumbling.) And when I felt, there was- there was no pulse, and the child was not breathing... But I mean, they resuscitated that child for 8 minutes... and the brain damage was terrible."

P13: "... but I think the most stressful experiences that I have had in terms of treating these kids is when this drug was administered um, there wasn't proper control or monitoring of these patients, in terms of their vitals and things like that, from the doctors and nurses' side. So, um we did have an incident in the end where one of our children, which we were treating, they were positioned with a head and neck mask and obviously with that mask being clipped down, the child cannot move. So, um during the one treatment procedure, the one child happened to aspirate. So, they, they vomited in that supine position and obviously with them being unable to move or cough or anything like that. The child ended up having a hypoxic brain injury..."

P13: "... the patient ended up basically becoming brain dead, in a way. Because of the lack of oxygen to the brain. So that was traumatizing... Also, the whole re-resuscitation situation that occurred when that happened. That was also quite um, unfamiliar to me."

Gaze (2019:139) mentions that support from the experienced anaesthetic and paediatric resuscitation teams and medical and nursing staff needs to be readily available in a radiotherapy department treating paediatric patients.

The participants' experiences of paediatric clinical procedures differed on some levels due to their different roles and level of experience. A few radiotherapists viewed paediatric treatment as no different from treating other patients on the treatment planning and patient care aspects. However, for the majority, treating a paediatric patient required more patient care, emotional involvement and strategising of radiotherapy techniques and procedures to make them child-friendly. Many participants said how they learned from the range of experiences and clinical encounters of treating paediatric patients and imparted their knowledge of what helps to gain the patients' cooperation during treatment. They felt that consistency in staff and procedures is an essential clinical aspect requiring improvement when treating paediatric patients since constancy aids in gaining the patients' cooperation and compliance for treatment.

P3: "...So, if there is a dedicated paediatric therapist, there is this person who is interacting with the child and parents from the start until the end so from for example

your simulation until the last treatment to try and in-cooperate some amount of continuity so that the child feels comfortable and to build a rapport with them ... But if you have a dedicated person it's sort of eases of the rest of your staff members to carry on with the rest of the workflow. Without everybody having to um, maybe be slowed down or that sounds bad (nervous laugh).

P10: "... basically the problem I have is the changing of anaesthetic doctors every day. I don't recommend that, because I feel like, as much as we, um get used to the patient. Like we know this is the pattern that the patient will follow during treatment, the anaesthetic doctor should also have that, you know, this is the pattern, you know... Because I mean, now you introducing a different way of working every single time to the child."

P10: "And also, with us we do a proper hand over...If we swapping around, rotating, someone is always going to be there who knows all the patients. So that is how we work... It helps, because I mean you know how this patient, you know, reacts. What they need emotionally and you know all of that, you know. So that helps a lot."

When staff and procedures were constant, by being consistent, unchanging and enduring, it created a sense of security in the child, parents and the participants, as they knew what to expect. Consistently, the literature points out that radiotherapists regard continuity of routine and healthcare professionals as an important patient care aspect since it provides the child with a sense of security and comfort (Gardling, 2017:44; Gardling *et al.*, 2015:664). Through their continuity and constancy in caring for patients, radiotherapists can build and maintain the connection with the paediatric patient required for treatment cooperation (Angstrom-Brannstrom *et al.*, 2019:E13). Parents of paediatric patients also prefer and regard the continuity of staff, clinical procedures and routines as an essential aspect of the care provided to their child during radiotherapy treatment (Gardling, Tornqvist, Mansson & Hallström, 2018:E56).

The participants in the current study supported and encouraged radiotherapy departments to be more child friendly.

P8: "... So, in hospital J where they treat paediatric patients, definitely if they - the bunker that they use, has got friendly characters that kids can relate to, that could make the environment a little bit better."

The participants also advocated an innovative private space for paediatric families in the form of a comfortable room that gives them a 'safe space' to balance the emotionally charged situations they face in the hospital.

P9: “Um, I think also um, the kids must be given their own space, not with adults, I think so. In the radiation units, I know most radiation units a very small but I think the kids need a bit of privacy and the parents. Because now you have other radiation patients coming through and staring at the child, who doesn't have hair already, you know, it makes them feel uncomfortable. So, like here we do have toys and books and whatever but it's in the space of the adults, I think they need their own space. Where they can calm down and settle down especially if they a child.”

Radiotherapy departments should strive to be more child-friendly by having décor that is colourful and creative and age and developmentally appropriate entertainment facilities for all the different age groups of the paediatric patients (Angstrom-Brannstrom *et al.*, 2019:E16; Gaze, 2019:140). A separate waiting area for paediatric patients and their families, with toys and child- and family-friendly activities, where families can socialise and participate, is encouraged in the literature (Angstrom-Brannstrom *et al.*, 2019:E16; Gaze, 2019:140). Other important aspects that the literature highlights are the importance of utilising distraction techniques and incorporating creativity and play in the paediatric radiotherapy clinical environment (Angstrom-Brannstrom *et al.*, 2019:E16; Gaze, 2019:140).

Participants emphasised the central role of imagination, play, creativity and distraction for paediatric patients.

P6: “So, the child's going to think what's this. So, you say, ‘Oh, it's an aeroplane, so your plane needs to go in the air’.”

P15: “Okay sometimes we will try play therapy before we try general anaesthesia to see if we can get the child to cooperate and if the child will be able to lie in the room and to get the child familiar with us...”

P8: “...So, it was uh - we started off with the play therapy, you know. If it's a - we need to make a mask, we needed to make sure that the little one understands the mask and is not afraid of the mask and all that. So that is all with the play therapy, okay.”

P2: "...We do a lot of play therapy with our children, we get them in the room, we drive around with the bed, we go up and down, we make them comfortable in the room, we give them a soft toy to bring, a friend to bring in with them."

Play preparation, particularly radiotherapy procedural preparation via play, is highly encouraged since therapeutic play reduces the paediatric patient's anxiety, increases compliance and thus reduces the requirement of sedation and general anaesthesia (Boik & Hall, 2020:31; Angstrom-Brannstrom *et al.*, 2019:E16; O'Connor & Halkett, 2019:282). Consistent with the current study, in the study performed by Angstrom-Brannstrom *et al.* (2019:E11) radiotherapy staff reported that paediatric patients were better prepared for treatment and showed lower levels of fear when play was incorporated into their treatment.

Interesting ideas to support paediatric patients are role playing and peer groups, where paediatric patients already on treatment help paediatric patients starting treatment.

P1: "...And then peers - in that, we call the children one after each other so that they feel good about one going and then the next one because they tend to become brave when they see that other one is still there... So that kind of peers does help in getting a child to lie still and co-operate."

Numerous other interventions mentioned in the literature can be used in the radiotherapy clinical setting to reduce the anxiety the paediatric patient faces and thus enhance the experience for the patient and the radiotherapists. The interventions include psycho-education, behavioural training, movie making, augmented reality or virtual reality preparation, video-based distraction therapy and child life specialist preparation (Holt *et al.*, 2021:506; O'Connor & Halkett, 2019:276).

Some participants in the current study mentioned the importance of exposing the paediatric patient to the environment and staff before starting their actual treatment to help them become familiar, adapt and accept the new environment.

P7: "... we bring a child maybe two or three days before to see what is happening. We will be working with the child, maybe having like snacks, and showing them about the machine, moving the bed up and down, when they are sitting on it so that they don't get scared, trying to put the mask on, you know so that they get used to the mask. Turn the machine, so that they can see that the machine is not hitting them, showing them the monitor, to say you see we can see you from outside so you're not alone, mummy"

will be here, daddy will be here and all of us will be here. Okay, so the child gets more familiar with the phase, get more familiar with us...

In the literature, this preparation strategy is known as pre-exposure therapy used for paediatric patient acclimation and usually requires a departmental tour, meeting the treatment team and becoming familiar with the environment and staff (Holt *et al.*, 2021:506; O'Connor & Halkett, 2019:276).

Participants in the current study mentioned that they utilised music and art to support paediatric patients.

P4: "...we played music for them over the loudspeaker intercom or on the iPod. People put on the music that they like and we played that for them and it's like to support."

The role and efficacy of music therapy to assist paediatric radiotherapy patients has also been mentioned in the literature (Nardone, Vinciguerra, Correale, Guida, Tini, Reginelli & Cappabianca 2020:3, O'Connor & Halkett, 2019:276). Studies have revealed that music therapy is beneficial for stress relief, physical and psychosocial assistance, enables clinical communication and is considered enjoyable, supportive and helpful for paediatric patients and families (Nardone *et al.*, 2020:3). P10 mentioned how art is used for mask acclimation in paediatric radiotherapy.

P10: "... an ex-colleague, was actually more involved in this whole art therapy ... So, she would like um, let's say paint the mask, which is a great idea. She would ask the children what sort of uh, like superhero they love and then painted superheroes on the mask, and every time the child came, he would be so happy to put the mask on... That was actually nice, because we see that it was actually working."

The utilisation of art therapy has also been mentioned in the literature to enhance the paediatric patient's well-being and quality of life (Golubowski, 2020:2). Mask art is used by radiotherapists for patient mask acclimation. Masks used to immobilise the paediatric patient during treatment are decorated with the patient's favourite characters (Holt *et al.*, 2021:510). Many creative approaches to solving problems are mentioned in the literature. Mask modification for comfort, utilising topical anaesthetics for tattoos, presenting a soft toy or a comfort object as a treatment companion, utilising a two-way audio system between the parents and the child, storytelling, role playing and peer support are some of the approaches mentioned (Holt *et al.*, 2021:510). However, the literature also specifies the barriers radiotherapists face in implementing

these strategies, such as lack of knowledge concerning these strategies, time pressures, staff shortage, deficient leadership and financial support (Holt *et al.*, 2021:511).

Some participants indicated that they were not adequately trained in paediatric radiotherapy as students due to minimal real-life clinical exposure to paediatric patients. Therefore, once qualified, they felt incompetent about paediatric care, faced challenges and felt that “they were thrown in the deep end” when they had to treat paediatric patients.

P3: “... Um, okay so in terms of treatment uh, I would say it's- because on the whole childhood- all paediatric radiotherapy is relatively rare compared to adult therapy and so you are in this mode where you are treating adults or interacting with adult patients throughout most of your day ... so there is a slight challenge of switching between treating an adult and treating a child because of course they are special considerations and special attention that need to be uh paid to children ... and then also I think I never had any formal training for- for specifically dealing with children ...”

P9: “I feel like we need that extra training, because even-even with the play therapy and so forth, you're not shown in your training when you are a student...you just learn... Now you have to be trained, you can't be thrown in the deep end to work with children.”

In South Africa, radiotherapy education incorporates work-integrated learning; therefore student radiotherapists begin clinical placement in their first year of study (University of Johannesburg, 2020). Clinical placements form an essential part of radiotherapy students' training as it provides the opportunity to learn through applying theoretical knowledge to their real-life experiences in the clinical environment (Walls, Hanna & McAleer, 2020:1; Higgins, Hogg & Robinson, 2017:227). Radiotherapists start gaining familiarity through direct experiences as soon as they begin their training. Furthermore, it allows for the learning and development of the critical reasoning and psychomotor skills that enable them to become dedicated, compassionate, cautious and thus competent radiotherapists (McPake, 2021:37).

3.5 SUMMARY

The lived experiences of radiotherapists treating paediatric patients involve compounded heightened emotional intensity accompanying the required social and procedural proximity with the paediatric patient, as well as the closeness to life and

death situations. Congruent with the literature, the participants' stories relayed their intense emotions due to the close and strongly bonded commitment formed with the child and the family. Sadness was the main emotion displayed, and many painful and difficult experiences were shared. Yet, there seemed to be very little in place to mediate the intensity of emotions experienced. Thus, the current study and the literature emphasise the necessity to support radiotherapists with their emotional well-being. The importance of gaining familiarity in paediatric radiotherapy to become a competent radiotherapist was also emphasised. The requirement to strive towards enhanced professionalism, improved practical infrastructure and radiotherapy systems in paediatric care is emphasised in the literature and the current study. Guidelines and recommendations to enhance the radiotherapists' experiences of treating paediatric patients by addressing these issues will be discussed in chapter 4.



CHAPTER 4

GUIDELINES, RECOMMENDATIONS AND CONCLUSION

4.1 INTRODUCTION

This chapter focuses on aspects to support and enhance the radiotherapist's experience of treating paediatric patients. Thus, in line with the second objective of the research study, guidelines have been developed by combining the research study findings with current literature. In addition, recommendations are made for practice and education, future research is identified, study limitations are pointed out and a personal reflection is presented.

4.2 OVERVIEW

The study findings confirm that radiotherapists treating paediatric patients work within a highly intense emotional context. While the participants' stories portrayed the multiplicity of the emotions experienced, sadness was the primary negative emotion and was expressed as persisting and resonating. By the nature of their scope of practice, radiotherapists work in proximate contact with paediatric patients, the patients' illness and parents. The negative implications of proximity include emotional and interpersonal impacts extending into family and personal lives. However, there is little evidence of professional counselling services or strategies to mediate the emotional intensity. Nevertheless, proximity with the patient is beneficial for the treatment process and necessary to fulfil participants' therapeutic roles. The importance of gaining familiarity in paediatric radiotherapy to become efficient and competent was highlighted. Participants reported many traumatic incidences and challenging experiences due to treatment and systems failures and inadequacies in their training or scope of practice. The difficult realities of paediatric radiotherapy clinical procedures and organisational issues were exposed. The importance of striving for professionalism and improving the practical infrastructure and paediatric radiotherapy procedure was expressed. The necessity to develop guidelines to assist radiotherapists in treating paediatric patients was thus emphasised.

4.3 GUIDELINES

Guidelines in a clinical practice refer to systematically developed statements that offer concise instructions informing clinical healthcare programmes and policies, thereby

aiding healthcare workers to provide appropriate healthcare for the concerned clinical circumstance (Flemming *et al.*, 2019:1). Guidelines therefore allow for the development of evidence-based recommendations that may be implemented (Florez *et al.*, 2018:2). The current study was a qualitative phenomenological study, requiring a naturalistic framework. Therefore, the researcher utilised inductive reasoning during data collection and analysis to identify themes. The study's findings necessitated correlation with existing and established research to formulate guidelines (Sundler *et al.*, 2019:737; Vaismoradi *et al.*, 2016:105). Accordingly, the application of deductive reasoning became essential as the analysis moved forward to relate and combine the emergent themes with current literature in order to develop the necessary guidelines, summarised in table 4.1 below (Creswell & Creswell; 2018:181, 296).

TABLE 4.1: GUIDELINES BASED ON RESEARCH FINDINGS

Themes	Guidelines
<p>Theme 1: Emotional context in which radiotherapists work when treating paediatric patients</p>	<p>Guideline 1: Support radiotherapists' emotional well-being</p> <ul style="list-style-type: none"> ● Identifying needs and increasing awareness of stressors ● Mitigating sadness through finding meaning in the profession ● Mitigating helplessness through self-compassion ● Self-regulation to mediate emotional intensity and emotional labour ● Debriefing sessions to provide emotional support ● Professional support for trauma
<p>Theme 2: Radiotherapists' familiarity affects their experience of treating paediatric patients</p>	<p>Guideline 2: Enhance radiotherapists' knowledge and skills</p> <ul style="list-style-type: none"> ● Training for advancements in paediatric radiotherapy treatment ● Training in emergency paediatric procedures ● Age-appropriate psychological paediatric care
<p>Theme 3: Close contact with the patient, parent</p>	<p>Guideline 3: Leverage proximity to the best advantage of the treatment procedure</p>

and family influences radiotherapists' experiences	<ul style="list-style-type: none"> ● Maintaining effective boundaries ● Promoting psychological flexibility training ● Encouraging parental involvement
Theme 4: Facilitating an improvement in paediatric radiotherapy	<p>Guideline 4: Enhancing professionalism and practical infrastructure</p> <ul style="list-style-type: none"> ● Developing professionalism through education ● Promoting teamwork and team culture ● Creating a child and family-friendly environment ● Providing continuity of care ● Dedicating sufficient time and staff

4.3.1 GUIDELINE 1: Support radiotherapists' emotional well-being

Theme 1 addresses both the negative and positive emotional experiences of radiotherapists treating paediatric patients and how these affect their professional and personal well-being. Negative experiences included several painful and difficult emotions that persisted and resonated for many, such as sadness, helplessness and debilitating trauma. The concerning presence of emotional labour and emotional dissonance was also evident. Consequently, the necessity to provide radiotherapists with emotional support, build resilience and mediate the intensity of emotions experienced was emphasised. The following strategies are suggested:

4.3.1.1 Identifying needs and increasing awareness of stressors

Building resilience and improving radiotherapists' well-being in any particular organisation should begin by identifying the factors that diminish their well-being and recognising their needs to consequently develop appropriate support programmes, strategies and interventions (Slater & Edwards, 2018:56). Staff interviews, observation and analysis of radiotherapists' paediatric-focused tasks may help identify stressors and needs. Radiotherapy management should be informed and mindful of the possibility of radiotherapists requiring emotional and psychological support due to the intense emotional job demands and must fully support the strategies in place to offer this type of support for effective implementation (Wentzel, Collins & Brysiewicz, 2019:a1279; Boyle & Bush, 2018:68).

Firstly, increasing awareness of work-related stressors by educating radiotherapists about the characteristics, management and effects of burnout, compassion fatigue and grief is vital since this will allow them to self-examine, identify and seek prompt help and amelioration (Boyle & Bush, 2018:69; Lawrence, 2012:15-17; Lawrence, 2007:2). The literature mentions that providing palliative care for children with a life-threatening illness can be intense and can lead to compassion fatigue and burnout (Clarkson *et al.*, 2019:5; Sarra & Feuz, 2018:50, 53; Lazarescu *et al.*, 2018:784). Participants in the current study mentioned many negative emotions, such as sadness, helplessness, emotional dissonance and emotional labour, which are risk factors for developing compassion fatigue and burnout (Chen, Chow & Tang, 2018:104-107).

Education through seminars, workshops and short courses should be encouraged to enhance radiotherapists' awareness of work-related stressors encountered when treating paediatric patients. Radiotherapists working together need to look out for one another, in case their colleague develops a negative emotional response to caring that affects their well-being. The affected radiotherapist could then be referred to the department manager to provide appropriate emotional and psychological support (Roney & Acri, 2018:78). The communication line between radiotherapists and managers should always remain open to ensure that they receive the support required to adequately care for patients (Roney & Acri, 2018:78). Debriefing and catch-up sessions might assist in creating the open communication required.

4.3.1.2 Mitigating sadness through finding meaning in the profession

Sadness was a prominent emotion amongst the participants. Chen, Chow and Tang (2018:106) mention that the most common emotional reaction of bereavement displayed by professional caregivers is sadness expressed as grief, especially after a patient's death. The current study and the literature indicate that radiotherapists form close emotional bonds and lengthy relationships with paediatric patients, becoming participants in their patients' debilitating illness trajectory. They witness the patients' traumatic experience with cancer, accompanying pain, suffering and sometimes imminent death, intensifying the sense of loss and grief when patients die (Angstrom-Brannstrom *et al.*, 2019:E15; Boyle & Bush, 2018:67). Work-related sadness or grief can result in feelings of meaninglessness, depression, helplessness, powerlessness, failure, doubting and questioning of their profession and religion (Boyle & Bush,

2018:64; Chen, Chow & Tang, 2018:104, 106, 107). In the current study, most of these feelings resonated in the participants' responses.

Finding meaning in the profession is a valuable strategy to overcome grief and sadness faced by healthcare workers treating palliative and paediatric patients (Sarraf & Feuz, 2018:54). Healthcare workers can find meaning in their profession and develop personal and professional satisfaction from caring for their patients (Boyle & Bush, 2018:68; Sarraf & Feuz, 2018:54; Singh, Wright, Knight, Baird, Akroyd, Adams & Schneider, 2017:220). Implementation of this strategy will require promoting personal enrichment and satisfaction. Making radiotherapists concentrate on their profession's significance and positive effects, such as compassion satisfaction gained through caring and helping patients and their families, can accomplish this (Duarte & Pinto-Gouveia, 2017:115; Boyle & Bush, 2018:68). Additionally, in the context of the current study, making radiotherapists recognise and acknowledge their personal growth learned from difficult emotional experiences, being grateful, appreciating life and not focusing on trivial aspects will assist (Duarte & Pinto-Gouveia, 2017:115; Sarraf & Feuz 2018:54). The researcher therefore suggests that radiotherapy management should regularly organise motivational talks and presentations by appropriate qualified professionals, highlighting positive topics such as self-compassion, personal growth and the positive aspects of the radiotherapy profession to assist radiotherapists emotionally.

4.3.1.3 Mitigating helplessness through self-compassion

Wentzel, Collins and Brysiewicz (2019:a1279) mention that promoting self-compassion and self-kindness can help paediatric nurses overcome negative emotions such as helplessness. Implementing a self-compassion intervention programme adapted and suitable for radiotherapists who work in high time and pressure demands might assist them. Neff, Knox, Long and Gregory (2020:1543) mention a programme, Self-Compassion for Health Care Communities, that may be useful as it accommodates time constraints of radiotherapists and has proven to increase self-compassion and well-being and reduce negative emotions, stress and burnout. This is a six-week programme with only one-hour weekly sessions (Neff *et al.*, 2020:1543). In addition, to resolve radiotherapists' feelings of helplessness and

grief caused by the death of a paediatric patient, implementation of strategies such as debriefing sessions will allow the expression of these emotions.

4.3.1.4 Self-regulation to mediate emotional intensity and emotional labour

Participants also suggested the emotional labour required of them. Feelings of emotional dissonance due to the mismatch of emotions were also evident. However, there seemed to be very little in place to reduce the negative impacts of emotional labour and mediate the intensity of emotions experienced. Emotional labour in healthcare workers manifests as an external display of competency and confidence while internal feelings of suffering, pain and sadness exist; consequently, it can lead to emotional exhaustion and burnout (Hunter, Wright & Pearson, 2019:140; Kinman & Leggetter, 2016:90). Rolston and Lloyd-Richardson (2017:1, 2) suggest engaging in healthy emotional regulation strategies to overcome the negative impacts of emotional labour. Emotion regulation, defined as the ability to effectively manage one's emotions and response to an emotional experience, is a core component of self-regulation (Housman, 2017:4; Rolston & Lloyd-Richardson, 2017:1, 2; Jain & Singh, 2016:79). In the context of the current study and taking cost, time and staffing limitations influencing radiotherapists' participation into consideration, the implementation of subsequent strategies to mediate emotional intensity and combat emotional labour is suggested.

Strategies such as being attentive to one's negative thoughts after having a negative emotional experience, meditation, exercising, talking to peers, writing one's emotions in a journal and taking a self-regulatory break can easily be utilised by radiotherapists (Rolston & Lloyd-Richardson, 2017:1, 2). Emotional self-regulatory breaks allow one to manage and control one's emotions, thoughts and behaviour, especially after emotionally charged interactions, and should be endorsed in radiotherapy departments (Housman, 2017:4; Kinman & Leggetter, 2016:95). Journalling is a cost-effective emotional writing intervention that radiotherapists can use as a guided therapeutic measure to gain emotional insight, facilitate emotional expression and improve understanding of painful emotional experiences to effectively manage and ameliorate negative emotions (Kinman & Leggetter, 2016:96).

4.3.1.5 Debriefing sessions to provide emotional support

Another effective intervention that may be routinely utilised in radiotherapy departments to support radiotherapists emotionally is debriefing sessions. Debriefings

are structured interdisciplinary routine events led by trained facilitators that allow healthcare professionals to effectively communicate issues that arise before, during, or after delivering care to a patient (Buljac-Samardzic, Doekhie & Van Wijngaarden 2020:32). Boyle and Bush (2018:69) recommend that paediatric oncology nurses use debriefings after unusual incidences, challenging situations and emotional experiences such as patient death. This may assist with expressing painful, difficult emotions by those affected and the analysis of negative emotions such as guilt, sadness and helplessness, thereby enhancing understanding teamwork and support.

4.3.1.6 Professional support for trauma

Some participants in the current study indicated traumatic experiences with paediatric treatments that may necessitate professional emotional support by qualified personnel. However, there was minimal reference to professional counselling services. Instead, participants used personal strategies and support systems to cope. Hence the requirement for emotional and professional support, especially for radiotherapists who have experienced trauma and feel persisting negative emotions, was evident. According to Boyle and Bush (2018:66), proximity, intensity and duration are three defining criteria of a traumatic experience. At the same time, the participants revealed how they were socially, physically and emotionally proximate to the child and their suffering and pain during the radiotherapy treatment process. In addition, the intensity of emotions experienced due to the extreme nature of their work which comprises treating children with a dire prognosis was very obvious in their responses. The long duration of radiotherapy treatments results in frequent encounters and cumulative exposure to the patients' suffering, added to the painful, difficult and traumatic experiences they described. Based on this finding in the current study, a few suggestions to provide radiotherapists with professional emotional support are made.

Spiritual care interventions might emotionally assist radiotherapists. However, radiotherapists' level of spirituality and belief systems should be considered before implementation. Visits from pastoral care staff to radiotherapy departments are a type of spiritual care intervention that can help radiotherapists maintain emotional balance and reduce trauma's harmful effects. Pastoral care is a well-known method used to provide the necessary holistic, mental and spiritual care required by oncology healthcare workers (Boyle & Bush, 2018:69; Taylor, Hodgson, Kolobova, Lamson &

Sira, 2015:91-107). Professional types of emotional and psychological support by counsellors, social workers and psychologists will assist affected radiotherapists and those at risk of being impacted by trauma (Beresford, Gibson, Bayliss & Mukherjee, 2018:1).

4.3.2 GUIDELINE 2: Enhance radiotherapists' knowledge and skills

In the current study, the second theme revealed that paediatric care familiarity and competency were gained mainly through experience acquired over time. Participants also indicated how gaining familiarity enhanced their emotional capabilities. They expressed the concern that they were not specialised in paediatric care, as paediatric patients present as a minority group, yet they had to interact with paediatric patients and provide care effectively. Their stories exposed the challenges they faced when treating paediatric patients due to the limited exposure during their training as students or scope of practice. Some participants felt that only experienced radiotherapists should treat paediatric patients. The importance of gaining familiarity and experience in paediatric radiotherapy to become competent radiotherapists was therefore evident. The researcher realised the need for paediatric-focused, specialised education and training. Guidelines have therefore been developed for the acquisition of this knowledge and skills. Suggestions on how to implement this guideline are provided.

4.3.2.1 Training for advancements in paediatric radiotherapy treatment

In the radiotherapy profession, rapidly advancing technology requires radiotherapists to constantly challenge and develop their mental alertness regarding the latest radiotherapy treatment and planning techniques (Singh *et al.*, 2017:220). Likewise, the current study highlighted the recent innovations in paediatric radiotherapy and how radiotherapists have to be competent and up to date with the new techniques and equipment to fulfil their professional roles. The importance of achieving accuracy and precision in all aspects of paediatric radiotherapy treatment and procedures through excellent immobilisation and image guidance is evident in the literature and the current study (Gaze, 2019:140). However, radiotherapists face challenges keeping up to date with the advancing technologies, and working in time-constrained departments allows little time and opportunity for efficient learning and training (Singh *et al.*, 2017:220). The quality of work provided to paediatric patients is therefore impacted. Within the

study context, the researcher suggests that radiotherapy managers encourage a culture of upskilling, allowing radiotherapists to seek, share and apply new knowledge and skills. Radiotherapists should take the initiative to familiarise themselves and keep up to date with current techniques. Monthly departmental journal clubs reviewing current evidence-based practices are encouraged to enhance radiotherapists' knowledge and decide on the best new clinical practice to implement for the particular department. Radiotherapists can then receive training in paediatric radiotherapy innovations before implementation to learn and manage new technologies efficiently and deliver treatment accurately.

4.3.2.2 Training in emergency paediatric procedures

Participants' stories indicated inadequacies in their scope of practice and training for emergency paediatric procedures and how they require the support and knowledge of other health professions in these aspects. Their stories contained concerning accounts of serious, dramatic failures of radiotherapy treatment procedures using general anaesthesia and sedation, resulting in brain damage to paediatric patients. In the South African context, radiology staff, including radiographers in public hospitals in Cape Town, have reported low confidence and competence levels in providing basic life support (BLS), thus highlighting the need for regular and refresher BLS training courses (Vorster & Beningfield, 2019:1, 5). In the context of the current study, participants expressed minimal exposure to emergency paediatric procedures such as cardiac arrests, respiratory depression and aspiration. This lack of exposure may lead to low confidence levels amongst staff, and they might feel unprepared when an emergency arises (Vorster & Beningfield, 2019:4). This issue can be alleviated by regular BLS training and advanced paediatric life support training to assist radiotherapists who are first responders to an emergency and when they need to help anaesthetists, oncologists and emergency teams. Departmental training can be arranged between quiet periods and machine services to minimise service impact.

4.3.2.3 Age-appropriate psychological paediatric care

The requirement to enhance radiotherapists' knowledge of providing age-appropriate psychological care to paediatric patients was revealed in the current study. The participants believed that offering this type of care will achieve a smoother treatment process by forming a trust relationship with the paediatric patients. To offer this type

of care, radiotherapists need to be comfortable managing paediatric patients, possess standard psychosocial child development and child psychology knowledge, efficient age-appropriate communication skills and excellent interpersonal skills (Gaze, 2019:140; Engvall *et al.*, 2016:2; Woodman, 2013:314).

In paediatric care, good social and communication skills help radiographers understand how children of different ages communicate, enhance their counselling role and increase their confidence in providing effective paediatric care and forming a beneficial relationship with their patients (Arnold, Girgis, Dhillon, Descallar & Halkett, 2021: in press; Saron, 2020:198; Martin, Rich, Jones & Dharmarajan, 2019:293). Thus, allowing them to fulfil the patients' psychological and emotional needs efficiently (Saron, 2020:198; Gaze, 2019:140). Similarly, in the current study, effective age-appropriate communication was seen as a requirement to increase the paediatric patients' awareness of the treatment process and procedure, thus reducing the anxiety of both patient and parents. Additionally, good communication skills assisted the participants in dealing with emotionally painful conversations with patients and parents. Radiotherapists offer emotional and psychological support as part of their professional and therapeutic roles; efficient communication skills are therefore essential in paediatric oncology due to these affective implications of caring for patients (Martin *et al.*, 2019:293; Sarra & Feuz, 2018:52).

In the literature, radiotherapists have indicated the requirement for communication skills training (CST) to improve their emotional conversations with patients by enhancing their communication skills and psychosocial supportive skills to help patients deal with their emotional distress (Arnold *et al.*, 2021: in press; Van Beusekom *et al.*, 2019:1, 9). In the current study and radiotherapy departments, successful implementation of communication skills training workshops would require support from radiotherapy managers. In addition, they should suit the time schedule of the particular department. Van Beusekom *et al.* (2019:9) suggest staff involvement when designing a communication skills training workshop to incorporate their needs and preferences. This suggestion would be beneficial in addressing the specific needs and requirements of radiotherapists treating paediatric patients.

4.3.3 GUIDELINE 3: Leverage proximity to the best advantage of the treatment procedure

The third theme focuses on how radiotherapists' closeness of contact with the patient, parent and family dimensions influences their experiences. By the nature of their scope of practice, radiotherapists work in close proximity to the paediatric patient, parent and family ecology. Participants indicated how proximity with the paediatric patient is necessary to enable them to fulfil their therapeutic role efficiently, yet this closeness also negatively influenced their emotions and spilled over into their personal lives. One of the main issues highlighted by the participants was the emotional and professional boundary issues that arose due to their work's procedural and emotional closeness with the paediatric patients and parents. Guidelines are therefore provided to enhance radiotherapists' knowledge and skills to improve their emotional capabilities, counteract the negative effects of proximity and use proximity with the patient and parents advantageously.

4.3.3.1 Maintaining effective boundaries

Boundary issues emerged in the form of participants either blurring, crossing, or building boundaries. Consequently, the need to assist radiotherapists involved in paediatric care with maintaining effective emotional and professional boundaries became evident. Blurring of emotional boundaries occurs when oncology workers find it difficult to disconnect their personal and professional selves and consequently their lives because the perimeters demarcating the boundaries have become obscured (Wentzel, Collins & Brysiewicz, 2019:a1279; Boyle & Bush, 2018:64, 65). This results in over-identification with the paediatric patient and their parents, causing over-involvement and shared experiences and emotions (Boyle & Bush, 2018:65). In the current study, participants constantly over-identified with patients and parents and shared their emotions.

The blurring of boundaries sometimes causes boundary crossings (Boyle & Bush, 2018:64). Boundary crossing is typical in paediatric care and is defined as the harmless, reasonable, purposeful, intentional, or unintentional action that momentarily transgresses professional behaviour in an attempt to fulfil a patient's therapeutic need (Boyle & Bush, 2018:64, 65; Thompson, 2015:461-464). In the current study, this was seen as the participants delved deeply into the paediatric patients' treatment, willingly

going the extra mile to offer emotional support. However, Boyle and Bush (2018:64) caution that although crossing boundaries may be therapeutic in one instance, it may be detrimental in another. The inability to set personal and professional boundaries may result in personal lives and relationships being affected (Wentzel, Collins & Brysiewicz, 2019:a1279). In the current study, this was evident as the participants experienced the patients' and family's painful experiences and emotions, suffered spill-over effects into their personal lives and experienced existential issues.

The researcher suggests applying the advice of Thompson (2015:461-464), who advises that healthcare workers learn to correctly balance their role between the paediatric patients' and families' therapeutic and social needs. They must also realise that boundary crossing must only occur when needed and in service of the patient. Sometimes their roles need reverting and clarification of their professional boundaries when treating children for the child's and their own benefit. Every patient has different needs, and some do not benefit from a social and more personal therapeutic relationship; boundary crossing is therefore neither required nor beneficial in that circumstance. Perhaps educating radiotherapists through interactive workshops on how to maintain efficient professional and emotional boundaries might assist. The focus should be on how radiotherapists can effectively maintain and build therapeutic relationships with paediatric patients and parents. Through the inclusion of interactive, high fidelity simulated scenarios, radiotherapists can identify individual triggers of emotional distress and recognise when boundary issues occur (Shiner & Pantic, 2019: 6; Boyle & Bush, 2018:69). The skill of recognising and negotiating boundaries grows with experience; experienced radiotherapists could help the newly qualified acquire this skill (Boyle & Bush, 2018:69).

4.3.3.2 Promoting psychological flexibility training

In line with boundary issues, instead of crossing boundaries, some participants built emotional boundaries by being emotionally distant and avoiding or deflecting their emotions towards the focus of their professional roles. The literature describes emotional boundaries built by emotional disconnection, detachment, suppression, distraction, avoidance, or escapism from the negative experience (Wentzel, Collins & Brysiewicz, 2019:a1279; Chen, Chow & Tang, 2018:107-109). These coping responses, also known as psychological inflexibility, are usually employed by oncology

healthcare workers who find it challenging to regulate their negative emotions. Psychological inflexibility only provides short-term relief and could result in psychological maladaptation, burnout, decreased empathy and compassion fatigue (Wentzel, Collins & Brysiewicz, 2019:a1279; Duarte & Pinto-Gouveia, 2017:115, 119; Kinman & Leggetter, 2016:90). Consequently, this has negative implications for well-being and affects the quality of patient care delivered. The need to assist radiotherapists with their emotional well-being by promoting the learning of effective coping mechanisms instead of emotionally distancing themselves is thus evident.

Implementing Duarte and Pinto-Gouveia's suggestion (2017:119) of organising training programmes that teach radiotherapists how to employ self-compassion and psychological flexibility effectively could enhance their professional and emotional well-being. Psychological flexibility will allow radiotherapists to encompass and manage the negative emotional experiences associated with the paediatric patient and parents' distress and to display empathy and concern for their patients suffering (Wentzel, Collins & Brysiewicz, 2019:a1279). Self-compassion is related to psychological flexibility and is particularly important for healthcare workers, as it builds internal emotional support and resilience by creating the desire to alleviate personal suffering and heal with kindness, thus alleviating compassion fatigue and burnout (Neff *et al.*, 2020:1547; Duarte & Pinto-Gouveia, 2017:119).

4.3.3.3 Encouraging parental involvement

The advantages of parental involvement during the radiotherapy procedure are encouraged in literature and were evident in some participants' responses in the current study (Engvall *et al.*, 2018:9). Parental involvement allows parents to encourage and emotionally support the child, explain information and prepare the child for radiotherapy treatment. By doing so, they reduce the child's anxiety and their own distress as they no longer feel helpless but actively involved in their child's care (Angstrom-Brannstrom *et al.*, 2018:133; Engvall *et al.*, 2018:9; Angstrom-Brannstrom *et al.*, 2015:2). Parental participation during radiotherapy procedures allows the parents to be close to their child and reduces the feeling of abandonment, thus assisting parents who are struggling with thoughts of their child's survival, providing them with the opportunity to provide comfort and reduce the child's suffering (Angstrom-Brannstrom *et al.*, 2019: E16; Gardling, 2017:59). Children themselves

express the need to have their parents close during radiotherapy. Gardling (2017:59) and Wallwork (2017:1) mention a "safety string technique" or "magic string" that can easily be implemented in many radiotherapy departments to allow parents and children to feel close and minimise separation anxiety and the feeling of abandonment. The intervention has proven to be a useful, simple but effective technique utilised in radiotherapy departments in the UK. The safety string intervention works by forming a connection between the child in the treatment room and the parent in the waiting area by each holding either side of the string and tugging to show close presence and connection.

4.3.4 GUIDELINE 4: Enhancing professionalism and practical infrastructure

The fourth theme focuses on the need to facilitate an improvement in paediatric radiotherapy. The participants' discussions exposed organisational concerns and challenges they experienced when performing paediatric radiotherapy. Their working conditions included the intense pressure of working accurately and precisely in the time-constrained clinical environment. Their stories included failures of treatment and systems, resulting in traumatic incidences. The requirement to improve the radiotherapy procedure and practical infrastructure was emphasised at both clinical and interpersonal levels. The need to enhance the teaching of professionalism was also evident in the literature and in the findings of the current study. The researcher therefore suggests the following methods:

4.3.4.1 Developing professionalism through education

The participants in the current study expressed their love for their profession and strived to enhance professionalism in radiotherapy. When treating paediatric patients, professionalism was displayed by being empathetic, humane, respecting the child's privacy and dignity and fulfilling their therapeutic role of providing emotional support. Participants also explained how professional attributes and skills were acquired through their years and experience in the radiotherapy field. Accordingly, they showed concern for students and newly qualified radiotherapists treating paediatric patients. They felt that experience was a crucial requirement when treating a paediatric patient to face the challenges and emotions effectively. A lack of professionalism in radiography can result in poor morale, low patient satisfaction and reduced patient safety (Felipe-Valera, 2019:9). Therefore, developing professionalism through proper

incorporation into the formal education curriculum and clinical training of radiotherapy students will help counteract this issue, as it will improve the service and quality of patient care provided (Bwanga, 2019:15).

Role modelling and integrating professionalism into the clinical education curriculum are the two current teaching professionalism methods in radiography (Bwanga, 2019:12, 13). Role modelling refers to teaching by example, as the student learns by observing, reflecting on and duplicating behaviour (Bwanga, 2019:12, 13). Qualified radiotherapists play an essential and critical role in teaching students professional behaviour during clinical placements (McPake, 2021:37). Felipe-Valera (2019:96) mentions the disconnection between the professional behaviours that radiography students learn formally in their classrooms and the behaviours displayed within the clinical environment by qualified radiotherapists. In the current study, participants mentioned the shortage of staff, intense pressure and time constraints of the clinical environment. These factors can negatively affect their emotions and behaviours (Bwanga, 2019:13; Felipe-Valera, 2019:6-8; Gaze, 2019:139, 140). McPake (2021:37) suggests that radiographers should be made aware of the potential detrimental effects that their negative behaviour can have on the student's placement learning.

Within the context of the current study, educating clinical instructors and other qualified radiotherapists through talks and presentations on how to model professional behaviour might help raise radiotherapists' awareness and make them more mindful of their behaviour with students, co-workers and patients. Radiotherapists can become positive role models by constantly reflecting upon their practices and professional behaviours (Felipe-Valera, 2019:97).

4.3.4.2 Promoting teamwork and team culture

Improvement of the interpersonal aspect of the current radiotherapy system would require teamwork and team culture promotion. In the nursing profession, a solid and supportive team culture helps nurses cope with the emotional challenges they face, thus protecting them from stress and burnout (Kinman & Leggetter, 2016:95). Similarly, the current study participants indicated the importance of forming good interpersonal work relations and how teamwork made their experience of treating paediatric patients more positive. Teamwork and a positive team culture are also vital to provide quality patient care (Buljac-Samardzic, Doekhie & Van Wijngaarden

2020:2). Reduced teamwork and culture can lead to interpersonal conflicts between co-workers competing for control and power, resulting in decreased job satisfaction amongst healthcare staff and a diminished quality of patient care provided (Singh *et al.*, 2017:220).

The significance of improving teamwork and promoting a positive team culture in radiotherapy is therefore clear. Team interventions may be utilised, as they have proven to enhance team competencies, effectiveness and performance within many healthcare settings (Buljac-Samardzic, Doekhie & Van Wijngaarden, 2020:2). For the radiotherapy setting, interventions such as team building and team debriefing will allow team members to build strong internal dynamics and reflect and improve on shared experiences (Lacerenza, Marlow, Tannenbaum & Salas, 2018:517). Additionally, interventions such as simulation training allow for skill development so that team members can cope effectively in complex real-life situations (Lacerenza *et al.*, 2018:517).

4.3.4.3 Creating a child and family-friendly environment

The need for radiotherapy departments to be more child- and family-friendly was also evident in the current study. Waiting areas and treatment rooms where paediatric patients are treated should be creative, colourful, comfortable and designed to create a child-friendly atmosphere (Angstrom-Brannstrom *et al.*, 2019:E16; Gaze, 2019:140). Furthermore, to balance the emotionally charged situation a paediatric patient and their parents face in the radiotherapy departments, the researcher recommends having an innovative private and safe space in the form of a comfortable room, provided space and resources are available. The participants also made this recommendation. Preparation and information meetings with the paediatric patient and their family could also take place in these rooms (Angstrom-Brannstrom *et al.*, 2019:E14). Implementation of pre-exposure therapy to allow paediatric patient acclimation to the radiotherapy environment and staff is also suggested. This preparation strategy should ideally occur before the paediatric patient starts the actual radiotherapy treatment to be effective and requires a departmental tour, meeting the treatment team and becoming familiar with the environment and staff (Holt *et al.*, 2021:506; O'Connor & Halkett, 2019:276).

4.3.4.4 Providing continuity of care

The participants also highlighted the necessity for continuity of care by having constancy in staff and procedures to gain the paediatric patient's cooperation for treatment. When staff and procedures were constant, consistent, unchanging and enduring, it created a sense of security in the child, parents and the participants, as they knew what to expect. Other benefits experienced by radiotherapists, parents and patients, such as the increase in comfort levels, a sense of control, compliance with treatment and reduction of anxiety, are also mentioned in the literature (Angstrom-Brannstrom *et al.*, 2019:E15; Gardling, 2017:44, 55; Gardling *et al.*, 2015:664). Dedicating a special team in the radiotherapy unit responsible for attending to paediatric patients would be beneficial to provide this much-needed continuity of care. Continuity of healthcare professionals would require the same individuals seeing to the paediatric patient throughout their course of treatment. Radiotherapy treatment routine procedures and strategies should be constant, planned and performed in the same way. Any changes should be communicated to the patient and parents so that they know what to expect.

4.3.4.5 Dedicating sufficient time and staff

The participants' stories in the current study indicated the intense pressure experienced due to staff shortage, tight time schedules, high patient load and the fast-paced radiotherapy clinical environment they work in when treating paediatric patients. As mentioned before, paediatric radiotherapy requires a sufficient number of experienced and trained radiotherapy staff to achieve the required high standard of care (Gaze, 2019:140). Scheduling paediatric radiotherapy treatments earlier in the day when a full complement of staff is available would be beneficial. Rushed delivery of radiotherapy treatment to paediatric patients is not encouraged, as safety and accuracy are paramount considerations (Gaze, 2019:139). Radiotherapists require adequate time to experience the positive impact of delivering empathy and providing support and holistic care to paediatric patients and their parents (Slater & Edwards, 2018:63). Making other patients in the waiting room aware of the extra time required when a paediatric patient is being treated would increase their consideration and they might become more accommodating. Scheduling paediatric patients early in the mornings would also ensure that radiotherapists have sufficient time throughout the

rest of the day to catch up with any time delays and adjust any patient appointments if required.

4.4 RECOMMENDATIONS

Bloomberg and Volpe (2018:314,322) define recommendations as significant suggestions grounded on the findings and conclusions of the research study and proposed actions to be taken. Recommendations are practical, logical, content- and context-specific for appropriate implementation. The process of developing guidelines based on the study's findings and personal reflection aided the researcher in making the following recommendations for practice, education and research:

4.4.1 Recommendations for radiotherapy education and training

Education and training in the following aspects of paediatric care in radiotherapy are recommended:

- Regular refresher training courses for emergency paediatric procedures (BLS training and advanced paediatric life support training).
- More simulated scenarios in education on providing age-appropriate psychological paediatric care.
- Workshops educating radiotherapists on work-related stressors such as burnout and compassion fatigue, allowing them to self-examine, identify and seek help in good time.
- Interactive workshops focusing on maintaining effective professional and emotional boundaries with patients.
- Self-compassion intervention programme for radiotherapists to help increase self-compassion and emotional well-being.

4.4.2 Recommendations for radiotherapy practice

- Radiotherapy management should acknowledge radiotherapists' needs and identify the factors that diminish their emotional well-being. This will assist in planning and implementing practical support programmes, strategies and interventions.
- Interventions that promote teamwork and team culture, such as team debriefings and team buildings, are encouraged to enhance radiotherapy team competencies, effectiveness and performance.

- Radiotherapists are encouraged to participate in emotional regulation and self-regulation strategies to mediate emotional intensity and combat emotional labour.
- Radiotherapy team-building activities and annual retreats should include interventions that foster emotional support, self-care, stress reduction, anxiety management and resolving grief.
- Structured, interdisciplinary debriefing sessions led by trained facilitators may help express radiotherapists' painful and difficult emotions.
- For radiotherapists impacted by trauma, professional types of emotional and psychological support should be provided.
- Parental involvement should be encouraged as parents reassure and emotionally support the child, explain information and prepare the child for radiotherapy treatment.
- A child- and family-friendly radiotherapy environment should be created.
- Continuity of care through having constancy of staff and procedures will be beneficial.
- Sufficient time and staff for paediatric radiotherapy are required for accuracy and precision.

4.4.3 Recommendations for further research

Although the painful and difficult experiences of treating paediatric patients were clearly evident amongst the participants, it was apparent that radiotherapists are too focused on caring, like other healthcare workers. As a result, they may not be able to recognise the signs of compassion fatigue and burnout in themselves (Boyle & Bush, 2018:70; Crowe, 2016:1, 2). A study to determine how radiotherapists treating paediatric patients could increase awareness of identifying these constructs in themselves should therefore be performed.

One central assertion of the current study is the evident reduction of the proximity gap in paediatric radiotherapy from a professional point of view due to the required immediacy of contact with the child and the closeness to life and death issues that occur in caring for paediatric oncology patients. Their lived experiences have compounded, heightened emotional intensity, proximity and immediacy from a phenomenological level. The current study offers suggestions for further research in areas that determine the implications of this reduced proximity gap on radiotherapists'

well-being over time. Research is also required on the types of emotional regulation strategies currently available to assist radiotherapists in mediating the intensity of emotions experienced. This type of research may aid in developing interventions to effectively manage the emotional interactions that result from the proximity required in paediatric care. In addition, further research is needed to look at means and ways of increasing radiotherapists' familiarity with and competency in paediatric radiotherapy treatment, procedures and care at undergraduate level due to their low exposure to paediatric patients during their training.

4.5 LIMITATIONS OF THE STUDY

The only limitation is that the researcher was known to some of the participants, as the researcher herself is a radiotherapist. This may have influenced some of the participants to provide socially acceptable answers. The researcher experienced no other challenges.

4.6 PERSONAL REFLECTION

Embarking on this research journey has been a challenging yet positive, invaluable, fulfilling and exhilarating learning experience. The researcher learned that exploring and understanding a phenomenon requires immense patience and discipline due to the iterative and cyclical nature of qualitative research. Also, this research topic was emotional. As a mother and a radiotherapist, the researcher could relate to many experiences and both the rewarding and overwhelming emotions the participants relayed. The constant divorcing of personal perceptions from the reality that the participants experienced was a skill that had to be mastered. The researcher learned to reflect on her thoughts, emotions, experiences and opinions to ensure that she bracketed them from the participants' reality.

Undertaking this research journey has also influenced the researcher's thoughts and behaviour as a radiotherapist treating paediatric patients, as a mother and as a colleague. She now has a greater understanding of the emotions other radiotherapists, paediatric patients and their parents experience. Seeing the positive difference, a radiotherapist can make in their patients' lives has enhanced the researcher's hope and faith in and love for radiotherapy. The participants' responses also made her realise that as radiotherapists working in our profession, our experiences and emotions are very similar, but how we deal with these emotions and what we learn

from our experiences differs. We rely a great deal on each other for emotional support as well. The researcher also feels motivated to increase her compassion and empathy levels and provide the best possible care to paediatric patients and their parents.

The data collection and coding process was emotionally intensive and revealed some relatable experiences. However, it also was an eye-opener to many thought-provoking experiences that left the researcher awed. She was surprised at how vivid the accounts were in the participants' stories, how deeply a radiotherapist bonds with a child and the extent to which they support the child. In assisting and caring for patients, they deflect their personal feelings and emotions to focus on their professional roles. The researcher's commitment to the topic, the important contribution she feels it can make and a supportive home and research environment are what carried her through. This research has also heightened the researcher's awareness of the challenges radiotherapists face when treating paediatric patients and what interventions are available currently to assist them. This research study has increased her respect and affection for her profession and fellow radiotherapists, who are so resilient working in these challenging, intense and emotional circumstances they face when treating paediatric patients. This research also made the researcher realise that greater emphasis needs to be placed on providing emotional support. In addition, the significance was highlighted of making radiotherapists aware that by taking care of themselves and their emotional well-being, the patient they care for benefits too.

4.7 SUMMARY

The researcher succeeded in achieving this study's objectives by exploring and describing the lived experiences of radiotherapists treating paediatric patients and providing possible guidelines and recommendations to support and enhance radiotherapists' experiences. The research study was conducted using a qualitative, phenomenological approach that utilised individual, in-depth, telephonic interviews with information-rich participants to collect data. A qualitative thematic analysis of data was conducted. The findings were presented in the form of four main themes. The challenges faced and the emotions experienced pointed towards the crucial requirement to recognise and enhance their experiences. Potential contextually appropriate guidelines were developed and recommendations for practice, education and further research were made.

Hopefully this research contributes to an enhanced understanding of radiotherapists' experiences of treating paediatric patients. The study findings, guidelines and recommendations can serve as a basis for providing radiotherapists with appropriate emotional support, improving their experiences and their level of paediatric patient care and motivating future research projects. This research might help formulate interventions and policies that contribute to making the process of treating paediatric patients less traumatic and challenging and a more positive experience.



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Appendix 1: Research consent form for interviews to be audio-recorded



DEPARTMENT OF MEDICAL IMAGING AND RADIATION SCIENCES

RESEARCH CONSENT FORM FOR INTERVIEWS TO BE AUDIO-TAPED

The lived experiences of radiotherapists treating paediatric patients

Please initial each box below:

I hereby give consent for my interview, conducted as part of the above study, to be audio-taped.

I understand that my personal details and identifying data will be changed in order to protect my identity. The audio tapes used for recording my interview will be destroyed two years after publication of the research.

I have read this consent form and have been given the opportunity to ask questions.

Name of Participant

Signature of Participant

Date

Name of Researcher

Signature of Researcher

Date

If you agree to participate, please email me the signed consent form: sidra.sid234@gmail.com

Appendix 2: Field notes

Participant 1 (P1)

Interview 1		07/05/2020	56k hospital 17 years experience BA, clinical tutor, researcher
Logistics:			
- Telephonic interview (was participants preference) - all consent form signed before			
- Private venue - Participant was in her office at work, this was convenient for her			
- Had 2 small interruptions / interferences, due to knocks on door.			
Personal notes / Reflective	Descriptive notes		
<p>It was the first interview, so I was very nervous before phoning. I relaxed as the interview progressed.</p> <p>I felt emotions of shock at (parents abandoning child), sad (to hear all the sad experiences). It was very interesting to hear the participant's experiences and opinions.</p> <p>I let her speak, to allow for elaboration. When she seemed a bit quiet, I tried to probe, by asking her questions on the information she provided me with.</p> <p>• Due to the 2 interruptions I felt a bit rushed for time</p> <p>I felt that the participant was needed somewhere else.</p> <p>• I understood, she was very busy and was grateful for the time she made for this interview and thanked her at the end.</p> <p>I asked that when I responded to her by "yes" at "yes, I hear" showing agreement & acceptance of what she says. Made her elaborate more.</p>	<p>The participant seemed confident, approachable and friendly.</p> <p>• she seemed to display emotions in her voice, in the following instances:</p> <ul style="list-style-type: none"> - speaking about children that die during the course of treatment. sad. - when she spoke about her worst experience and the experience of treating a child the same age as her son. That patient passed away. She sounded astonished and bewildered when she spoke about parents that abandon their sick children in hospital during treatment. <p>• overall participant seemed very comfortable in discussing personal experiences openly.</p> <p>• participant seemed a little bit in a hurry due to the 2 interruptions, I guess she was needed somewhere else due to the busy work environment.</p> <p>Was very polite.</p>		
	Typo		

Main Ideas - P1

- emotionally challenging and taxing on RTs - ^{parent of} paediatric radiotherapy.
- Religious - Christian belief helps her to deal with the help. Emotions involved. "pray for the child"
"bring the child's need/life to God" "pray over her"
"overcome their emotions" "made to be accurate."
- Personal issue - "Infertility was huge" mentioned twice have 2 children now.
- extreme precision / ^{utmost} accuracy - utmost importance.
in paed RT. - Start with paediatric case when doing QA because mind is fresh and can concentrate.
- The life of a child is so important, they have their whole lives ahead of them.
- Careful - cautiousness / carefulness required in approaching delivery. a child, don't want to furnish their mind still young. will have to come to hospital so many times "don't give fully experience"
communication - adults ^{patients} can communicate, children can't communicate difficulty. feelings.
- Parents not more ^{absent} - ^{recovery} ^{help} for clingy child help.
- Peer group formed in playrooms helps RTs - child re-operates, ^{and they still} "child called in one after the other" show how brave they are to each other.
- reward one child, other also wants it.
- QA - concerned about long term side-effect in kids. -ve
- but required for accuracy +ve.
- her opinion "additional drugs should be avoided at all costs"
- Time consuming / challenge.

Participant 3 (P3)

Participant 3	20/05/2020	6 years exp; currently, private practice
<p>Logistics</p> <p>Telephonic Interview (initially preferred zoom platform, but two days before, phoned me to rather have it done telephonically, did not have proper internet connection) consent signed before interview</p> <p>Privacy was maintained, as participant was in her room at home for the duration of the interview</p> <p>Interruptions: Just one (short), from participant's side.</p>		
<p>Personal / Reflective notes</p> <p>I felt confident for this interview. I knew this participant from when she worked in a state hospital she was very friendly. She was a bit nervous, so I tried my best to ease her into the process of the interview. When she could not answer a question, I either re-phrased it or asked it later, when she seemed confident. For her age and being a young ^{RT}, she possessed a lot of knowledge about the topic, and she managed to portray that in her answers once she was less nervous. She explained the concept of emotionally challenging and rewarding in terms of her experiences, very nicely, good quotation noted. I think the telephone mode was good for this participant because it allowed a more balanced distribution of power between P3 and J.</p>		<p>Descriptive notes</p> <p>Participant was friendly, seemed a little nervous here and there. She gave a nervous laugh when I asked about her familiarity of treating paediatric patients and said it's a tough question, but answered it correctly and appropriately. She gave very thoughtful answers. If she couldn't answer something, she asked to come back to it so she can answer it accurately. She did not let about her nervousness to affect her answers. She felt unsure about answering the 'parity of post cancer, affecting her experience' question, ^{which she was at home} but she answered it accordingly. She gave a nervous laugh when she explained that having a dedicated radiotherapy unit will help with not slowing down due to post tx. Sounded a bit emotional (voice) when she told me her experience of treating pts under GA, due to her helplessness.</p>
		Typo

Appendix 3: Transcribed notes

Participant 1 (P1)

P1: Yes, so I think in conclusion paediatric treatment, of-of, (stuttering) paediatric treatment in oncology are very challenging and also very emotionally taxing on, I think on the radiotherapists.

INT: Okay, I would just like to ask you, you know when you speak about emotions P1, um, when you spoke, like you explained the patient dying and everything, how do you as radiotherapist succeed in dealing with this emotions involved?

P1: um, me personally, I would, I would refer to my Christian belief, to pray for the child.

INT: pray?

P1: I find that I'm strong in that because it brings me close to God and I feel that I take the child's needs closer to God. And a very special thing that I do with my own two special kids because like I said my infertility was huge, and I do have two children. When we pray, we pray over my hands so that when I touch the children or their files, I would be able to be accurate, to do the best for the child. That is how I seem to overcome their emotions...

INT: Yes.

P1: And it brings calm to me and acceptance likewise, of what the child has been through.

INT: Okay, thank you P1 for sharing something so lovely, um P1 another thing that you mentioned is about the challenges and the difficulty that is experienced especially during simulation and tackling the child. Uh, please let me know a little bit more about how these challenges that you experience, um, like for example right now you doing QA and you see the setups and everything. So, let me know how these challenges you experience, uh, in the different treatment procedure you involved in, which is QA, um, tell, elaborate on it a bit more.

P1: I have something about myself as a person.

INT: Yes

P1: Where I, um, I am sort of a perfectionist to admit it but in my career, I know that precision is of the utmost importance. So, I approach my situation with a child with extreme precision. Meaning that when I have to tattoo the child I will try and calm them or give them a balloon or look at the situation that I might get the parents, the sister, if need be, next to the child but if it has to be to that extreme that we have to restrain the child in order for the precision and the accuracy I would, I would do it. Knowing that if I'm going to hurt this child to tattoo, I am going to do it once and never again. So, uh, no matter what it takes I will do it to the utmost, just so that the setup is correct. So that we get a better outcome for the treatment. Likewise, when I need to do any stack of files, I would start with the paediatric case because my brain my mind is all fresh, and I want to concentrate on that file before I do any other file. Not saying that the other treatment is less important but to exercise the extreme precision yet again and likewise if I'm not happy with anything. Like we never when we doing QA see the masks and the setup, I go to the machine to check the first

Participant 3 (P3)

P3: Yes, yes, I did.

INT: And how did you... how would you explain that experience for you?

P3: Um so... sorry, I just need to go back awhile (laughs).

INT: No problem, whatever you remember, like how you experienced it?

P3: I think, so on the whole these patients under GA- if it was under GA obviously it made them more cooperative, it made it easier to carry out the physical aspects of- of what you need to do as a therapist, you know the physical. So, the child is now out for treatment because now they're not able to move or anything so you can get your procedure done quickly and accurately because you know that, that they are laying still um, and that they're immobilized etc. Uh, in that way it was a-a good thing. Like also knowing that, you know that with the course of radiotherapy it's not once in a while, it's daily treatment over several weeks and daily dose of sedation and taking this over several weeks isn't physiologically good for the patient either. So, knowing that- you know in some cases it's unavoidable if the sedation will really knock them out later or they won't co-operate without it and so it becomes necessary, but knowing that it may not be the best thing for-for their bodies could also be a bit disheartening. And I think that on a more emotional level just seeing them lying so helplessly you know under the effect of the anaesthetic is also a bit disheartening because usually they full of life and energy and to just see them just lying there for... we understand the reasons why it's necessary but it's not easy to witness (voice sounds emotional).

INT: Okay, no thank you for explaining that. P3, you also mentioned something like uh, like at the state hospital you saw quite a few paediatric patients. But in a private for example you said that there's hardly any and you even said that uh, like paediatric patients are relatively rare. So, on that, on that I wanted to ask you, how did this rarity of paediatric cancers how would you say it affects your experience of treating paediatric patients?

P3: Um, well as it is evident from the number of times I actually have to tell you that I need to think back and I need to remember (laughs) that just shows that um, you know by not having treated paediatric patients for a few years obviously makes me feel like I'm- I'm losing what information I did have, you know from the time when I did treat them or the experiences or you know um... Sorry just to go back on I mentioned that the private practice that I'm working in we don't see paediatric patients that's actually the choice of the oncologist of the practice who prefers not to see paediatric patients. So, they would refer them to other oncologist in a private practice who do treat paediatric patients. So, I think that's a bit isolated. So, it's not

Appendix 4: Independent coder - experience summary



Dr Charmaine Williamson has been in Research Development (PhD and Masters Development, and Research Funding) for 22 years where she has worked with all universities of South Africa and selected universities in African countries as well as Europe and the UK

Charmaine specialises and offers 1-on-1 support online around:

- **Independent/2nd Coding of qualitative data using ATLAS.ti 8** (hand's on experience with 150 national and international researchers who require extended rigour for their coding)
- **Qualitative Research Methodology** (hand's on experience with 1500 PhD and M studies within various modes of consultation)

Researchers' References available upon request

Contact Charmaine at 0027 (0) 82 448 1195 or on charmwilliam@gmail.com

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Appendix 5: Study information letter



DEPARTMENT OF MEDICAL IMAGING AND RADIATION SCIENCES RESEARCH STUDY INFORMATION LETTER

26 August 2019

Good Day

My name is Sidra Siddique. I am currently enrolled for a Master's Degree in Radiography (Therapy) at the University of Johannesburg. I would like to invite you to participate in a research study on **“The lived experiences of radiotherapists treating paediatric patients”**.

Before you decide on whether to participate, I would like to explain to you why the research is being done and what it will involve for you. **I will go through the information letter with you and answer any questions you have.** This should take about 10 to 20 minutes. The study is part of a research project being completed as a requirement for a Master's Degree in Radiography (Therapy) through the University of Johannesburg. You may email/call me should you have any further queries.

The purpose of this study is to explore and describe the lived experiences of radiotherapists treating paediatric patients.

Below, I have compiled a set of questions and answers that I believe will assist you in understanding the relevant details of participation in this research study. Please read through these. If you have any further questions, I will be happy to answer them for you.

1. DO I HAVE TO TAKE PART? No, you don't have to. It is up to you to decide to participate in the study. I will describe the study and go through this information sheet. If you agree to take part, I will then ask you to sign a consent form.

For one-on-one interviews: You may read the information sheet and should you have questions please contact me. If you agree to take part, please email me the signed consent form.

2. WHAT EXACTLY WILL I BE EXPECTED TO DO IF I AGREE TO PARTICIPATE? If you agree to participate in this study, you would participate in a focus group interview of 5-6 people or

in a one-on-one interview. The duration of the interview will be 1 hour. For the focus groups, you will be interviewed in your respective department at a time that is convenient for you and other participants from your department. The one-on-one interview will be conducted via zoom/skype or telephonically at a time convenient for you.

- 3. WHAT WILL HAPPEN IF I WANT TO WITHDRAW FROM THE STUDY?** If you decide to participate, you are free to withdraw your consent at any time without giving a reason and without any consequences. If you wish to withdraw your consent, you should inform me as soon as possible. The data obtained before withdrawal will be reserved by the researcher as the researcher is unable to remove this information from the audio recordings. However, during the process of transcription, when audio recordings are converted to written data, your personal information will be removed. If you participated in one-on-one interviews, the information can be removed.
- 4. IF I CHOOSE TO PARTICIPATE, WILL THERE BE ANY EXPENSES FOR ME, OR PAYMENT DUE TO ME?** You will not be paid to participate in this study and you will not bear any expenses.
- 5. IF I CHOOSE TO PARTICIPATE, WHAT ARE THE RISKS INVOLVED?** We do not envision significant risks related to participation in this study. If you feel that you will need to speak to a psychologist, access to this service will be provided. To maintain confidentiality of information, for one-on-one interviews only the researcher can record sessions. Online interviews will require you to have access to the internet and sufficient data for the duration of the interview. If you do have a challenge with internet or data, let me know so we can do a telephonic interview.
- 6. IF I CHOOSE TO PARTICIPATE, WHAT ARE THE BENEFITS INVOLVED?** Participating in this study may not benefit you immediately but it will be beneficial to the radiographic profession.
- 7. WILL MY PARTICIPATION IN THIS STUDY BE KEPT CONFIDENTIAL?**

The researcher will take every precaution to maintain complete confidentiality of the data obtained from the focus group interviews. Offering complete confidentiality in a qualitative focus group study is not guaranteed since focus groups create a process of sharing and comparing information amongst participants. Participants will be asked to respect each other's privacy and anonymity by not using any names during the focus group discussion and not repeating what is said in the interview to others. Participants will be given a pseudonym or code e.g. Participant 1 or P1. This will ensure omission of identifiable information in the transcriptions. Reports of study findings will not include any identifying information. Any person working with your information as part of the research process (e.g. independent data coder or transcriber) will be required to sign a confidentiality agreement before being allowed to access to the anonymised information. Your name will not be published
- 8. WHAT WILL HAPPEN TO THE RESULTS OF THE RESEARCH STUDY?** The results will be written into a research report that will be assessed. In some cases, results may also be published in

a scientific journal. In either case, you will not be identifiable in any documents, reports or publications. You will be given access to the results of this if you would like to see them, by contacting me.

- 9. WHO IS ORGANISING AND FUNDING THIS RESEARCH STUDY?** The study is being organised by me, under the guidance of my research supervisor at the Department of Medical Imaging and Radiation Sciences in the University of Johannesburg. This study has not received any funding.
- 10. WHO HAS REVIEWED AND APPROVED THIS STUDY?** Before this study was allowed to start, it was reviewed in order to protect your interests. This review was done first by the Department of Medical Imaging and Radiation Sciences, and then secondly by the Faculty of Health Sciences Higher Degrees and Research Ethics Committees at the University of Johannesburg. In both cases, the study was approved.
- 11. WHAT IF THERE IS A PROBLEM?** If you have any concerns or complaints about this research study, its procedures or risks and benefits, you should ask me. You should contact me at any time if you feel you have any concerns about being a part of this study. My contact details are:

Sidra Siddique
0649093897
sidra.sid234@gmail.com

You may also contact my research supervisor: Mrs Fatima Bhyat
fatimab@uj.ac.za

Ms. S. Lewis
ShantelL@uj.ac.za

If you feel that any questions or complaints regarding your participation in this study have not been dealt with adequately, you may contact the Chairperson of the Faculty of Health Sciences Research Ethics Committee at the University of Johannesburg:

Prof. Christopher Stein
Tel: 011 559-6564
Email: cstein@uj.ac.za

FURTHER INFORMATION AND CONTACT DETAILS: Should you wish to have more specific information about this research project information, have any questions, concerns or complaints about this research study, its procedures, risks and benefits, you should communicate with me using any of the contact details given above.

Researcher:
Sidra Siddique
<Signature>

Appendix 6: Research consent form



DEPARTMENT OF MEDICAL IMAGING AND RADIATION SCIENCES RESEARCH CONSENT FORM

The lived experiences of radiotherapists treating paediatric patients

Please initial each box below:

I confirm that I have read and understand the information letter dated 26 August 2019 for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.

I understand that my participation is voluntary and that I am free to withdraw from this study at any time without giving any reason and without any consequences to me.

I agree to participate in the above research.

Name of Participant

Signature of Participant

Date

Name of Researcher

Signature of Researcher

Date

If you agree to participate please email me the signed consent form: sidra.sid234@gmail.com

Appendix 7: Confidentiality agreement – independent coder



CONFIDENTIALITY AGREEMENT – INDEPENDENT CODER

I, Charmaine Williamson hereby declare that I understand and agree to the following conditions with regards to the transcripts for coding of the audio recordings.

1. I understand that the audio recordings are received for the purpose of transcribing records of interviews held with the participants in a research study.
2. I understand that the identity of the participants and any radiology departments discussed as well as the content of the interviews are confidential and may not be revealed.
3. I undertake to treat all transcripts/audio tapes received as confidential content to which only I will have access. I will keep the audio tapes and any copied material securely.
4. I will return all copies back to the researcher on completion of the transcription.

NAME: Charmaine Williamson (Dr)

A handwritten signature in black ink that reads "Charmaine Williamson".

SIGNATURE: _____

24/08/2020

DATE: _____

Appendix 8: Higher Degree Committee letter of approval to conduct research study



**FACULTY OF HEALTH SCIENCES
HIGHER DEGREES COMMITTEE**

HDC-01-91- 2019

11 November 2019

TO WHOM IT MAY CONCERN:

STUDENT: SIDDIQUE, S
STUDENT NUMBER: 200671768

TITLE OF RESEARCH PROJECT: The Lived Experiences of Radiotherapists Treating Paediatric Patients: Gauteng, South Africa

DEPARTMENT OR PROGRAMME: MEDICAL IMAGING AND RADIATION SCIENCES

SUPERVISOR: Ms F Bhyat CO-SUPERVISOR: Ms S Lewis

The Faculty Higher Degrees Committee has scrutinised your research proposal and concluded that it complies with the approved research standards of the Faculty of Health Sciences; University of Johannesburg.

The HDC would like to extend their best wishes to you with your postgraduate studies

Yours sincerely,

Prof S Nalla

Chair: Faculty of Health Sciences HDC

Tel: 011 559 6258

Email: shahedn@uj.ac.za

Appendix 9: Research Ethics Committee letter of approval to conduct research study



**FACULTY OF HEALTH SCIENCES
RESEARCH ETHICS COMMITTEE**

NHREC Registration: REC 241112-035

**ETHICAL CLEARANCE LETTER
(RECX 2.0)**

Student/Researcher Name	Sidra Siddique	Student Number	200671768
Supervisor Name	Bhyal, Fatma		
Department	MIRS		
Research Title	THE LIVED EXPERIENCES OF RADIOTHERAPISTS TREATING PAEDIATRIC PATIENTS, GAUTENG, SOUTH AFRICA		
Date	20 November 2019	Clearance Number	REC-212-2019

Approval of the research proposal with details given above is granted, subject to any conditions under 1 below, and is valid until 2020/11/18.

1. Conditions:

Permission from the Gauteng Department of Health and private hospital research committees as required.

2. Renewal:

It is required that this ethical clearance is renewed annually, within two weeks of the date indicated above. Renewal must be done using the Ethical Clearance Renewal Form (REC 10.0), to be completed and submitted to the Faculty Administration office. See Section 12 of the REC Standard Operating Procedures.

3. Amendments:

Any envisaged amendments to the research proposal that has been granted ethical clearance must be submitted to the REC using the Research Proposal Amendment Application Form (REC 8.0) prior to the research being amended. Amendments to research may only be carried out once a new ethical clearance letter is issued. See Section 13 of the REC Standard Operating Procedures.

4. Adverse Events, Deviations or Non-compliance:

Adverse events, research proposal deviations or non-compliance must be reported within the stipulated time-frames using the Adverse Event Reporting Form (REC 9.0). See Section 14 of the REC Standard Operating Procedures.

The REC wishes you all the best for your studies.

Yours sincerely,

Prof. Christopher Stein
Chairperson: REC
Tel: 011 559 6564
Email: cstein@uj.ac.za

Appendix 10: Permission to conduct master's study at an institution/hospital

PERMISSION TO CONDUCT MASTERS STUDY AT AN INSTITUTION/HOSPITAL

University of Johannesburg
Doornfontein Campus
Johannesburg
2000

Date: 20 August 2019

To whom it may concern

Request to participate in study

I am currently registered for an M.Tech Degree (Radiography) at the University of Johannesburg. In order to fulfil the requirements for this degree, I intend to conduct a research study and write a thesis supervised by Mrs. F. Bhyat and Ms. S. Lewis.

The title of my research study is "**The lived experiences of radiotherapists treating paediatric patients**".

The purpose of this study is to explore and describe the lived experiences of radiotherapists treating paediatric patients and to formulate guidelines to assist them to overcome any challenges encountered in paediatric radiotherapy.

I am requesting permission to conduct the research at the Radiotherapy department in your hospital. If you consent and after provincial approval, I will contact the radiotherapists to participate in focus group interviews/one on one interview.

The research proposal has been submitted to the Faculty of Health Sciences, Higher Degrees committee of the University of Johannesburg as well as the Research Ethics committee (see approvals attached)

All ethical standards will be adhered to, which include:

- The department's name will be known by the researcher and the research supervisor but will remain confidential and will not be mentioned in the thesis or any publications.
- Radiotherapists can choose to participate or not.

Keenly awaiting your response.

Yours sincerely

NAME: Sidra Siddique

Tel: 064 909 3897

Email: sidra.sid234@gmail.com

Supervisor:

Mrs. Fatima

Bhyat

[fatimab@uj](mailto:fatimab@uj.ac.za)

[.ac.za](mailto:fatimab@uj.ac.za) (011)

559 6243

Ms. Shantel Lewis

ShantelL@uj.ac.za

(011) 559 6634



Appendix 11: Affidavit



**AFFIDAVIT: MASTER'S AND DOCTORAL STUDENTS
TO WHOM IT MAY CONCERN**

This serves to confirm that I, Sidra Siddique
(Full Name(s) and Surname)

ID Number 821100552082 Student number 200671768

enrolled for the Qualification M-tech Radiography (Therapy) in the
Faculty of Medical Imaging and Radiation Sciences.

herewith declare that my academic work is in line with the Plagiarism Policy of the University of Johannesburg which I am familiar with.

I further declare that the work presented in the The lived experiences of Radiographers
(minor dissertation/dissertation/thesis) is authentic and original unless clearly indicated otherwise and in such instances full reference to the source is acknowledged and I do not pretend to receive any credit for such acknowledged quotations, and that there is no copyright infringement in my work. I declare that no unethical research practices were used or material gained through dishonesty. I understand that plagiarism is a serious offence and that should I contravene the Plagiarism Policy notwithstanding signing this affidavit, I may be found guilty of a serious criminal offence (perjury) that would amongst other consequences compel the UJ to inform all other tertiary institutions of the offence and to issue a corresponding certificate of reprehensible academic conduct to whomever request such a certificate from the institution.

Signed at Benoni on this 24 day of May 2021

Signature S Siddique Print name S. Siddique

[Handwritten signature of the Commissioner of Oaths]

STAMP COMMISSIONER OF OATHS
Affidavit certified by a Commissioner of Oaths
This affidavit conforms with the requirements of the JUSTICE ACT 16 OF 1963 and the applicable Regulations published in the 109 of 2 February 2001 as amended.

SOUTH AFRICAN POLICE SERVICE
117 HARPUR AVENUE, BENONI
24 MAY 2021
CLIENT SERVICE CENTRE
HARPURLAAN 117, BENONI
SUID-AFRIKAANSE POLISDIENST

THE PEACE AND COMMISSIONERS OF OATHS ACT 1972, GN 903 of 10 July 1988, GN 1258 of 2

Appendix 12: Member checking



**FACULTY OF HEALTH SCIENCES
DEPARTMENT OF MEDICAL IMAGING AND RADIATION SCIENCES**

Dear Colleague,

YOU PARTICIPATED IN A RESEARCH STUDY TITLED: THE LIVED EXPERIENCES OF RADIOTHERAPISTS TREATING PAEDIATRIC PATIENTS: GAUTENG, SOUTH AFRICA.

UJ Ethic's clearance number: **REC-212-2019**

To determine the accuracy of findings from the responses received, I require you to confirm that I have interpreted the responses correctly. This process is known as 'member checking'. Once again **your responses will be treated with confidentiality and with anonymity.**

You may choose not to complete this.

Following the responses received, these are the themes that we have generated:

1. **Radiotherapist familiarity with paediatric radiotherapy affects their experience of treating paediatric patients.**
2. **Acknowledging the intense emotional context radiotherapist work within when treating paediatric patients.**
3. **The closeness of contact with the patient, parent and family dimensions influences radiotherapist experiences.**
4. **Facilitating an improvement in paediatric radiotherapy.**

a) Do the themes presented above represent the feelings of the responses?

1. Yes	Yes
2. No	

You may choose to motivate your response.

The Chair of the UJ Ethics Committee (Prof Stein) may also be contacted should you have any queries regarding the Ethics involved in this study.

I would like to thank you once again for participating in this member checking and giving up your time to make a positive contribution in our profession. Please stay safe and thank you for your service to our country during this time.

Please do not hesitate to contact me should you require any additional information.

Regards

Sidra Siddique (sidra.sid234@gmail.com)

Telephone: 0649093897

2 December 2020

Appendix 13: Plagiarism report

The lived experiences of radiotherapists treating paediatric patients: Gauteng,
South Africa

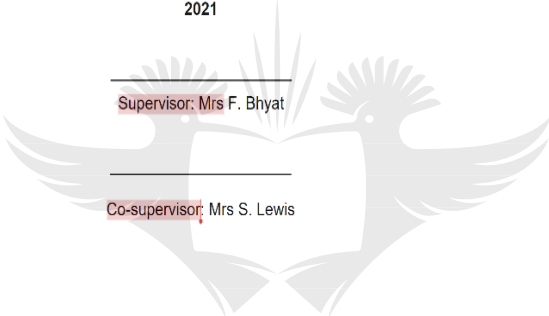
By
Sidra Siddique
Student number: 200671768

A research dissertation submitted in the fulfilment of the requirements of the degree:
MAGISTER TECHNOLOGIAE DEGREE IN RADIOGRAPHY (THERAPY)

In the
Department of Medical Imaging and Radiation Sciences
Faculty of Health Sciences, University of Johannesburg
2021

Supervisor: Mrs F. Bhyat

Co-supervisor: Mrs S. Lewis



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Appendix 14: Language editor- letter of declaration


3 August 2021

To whom it may concern

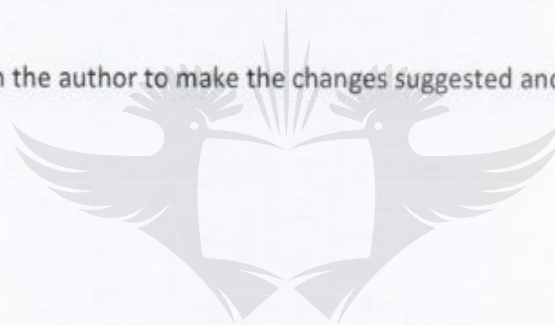
I hereby declare that I have edited the dissertation entitled "The lived experiences of radiotherapists treating paediatric patients: Gauteng, South Africa" written by Sidra Siddique in accordance with the requirements for the Master's degree in Radiotherapy (Therapy) at the University of Johannesburg.

The onus is, however, on the author to make the changes suggested and to attend to the queries.

Glenda Buncombe



BA(Trans), Rhodes University



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