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LEARNING NEEDS ASSESSMENT FOR CONTINUOUS PROFESSIONAL DEVELOPMENT IN PAEDIATRIC ACUTE CARE NURSING: THE ESWATINI PROJECT

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A research report submitted to the Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, in partial fulfilment of the requirements for the degree of

Master of Science in Nursing

Johannesburg, 2019

DECLARATION

I, Nkosingiphile Gcina Shongwe, declare that this research report is my own work. It is being submitted for the degree of Master of Science (in Nursing) at the University of the Witwatersrand, Johannesburg. It has not been submitted previously for any degree or examination at this or any other university.

Signature …….

……day of …… 2019

Protocol Number: M180448

DEDICATION

This work is dedicated to my first born son, Uminathi and all present and future Swati children who stand to benefit from the contributions of this study. It was their undying spirit, even when critically ill, that provided the impetus for me to undertake this study and for that I am grateful.

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My heartfelt gratitude also goes to:

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Abstract

Background: In the year 2012, the Nursing Council of Eswatini introduced mandatory continuous professional development (CPD) for all nurses including Qualified Nursing Assistants. However, despite this move, the learning opportunities provided for nurses working in the paediatric acute care settings have so far been provided on an ad *hoc* basis, without prior investigation of their learning needs through systematic learning needs assessments (LNA). Literature has shown that unless specific learning needs of frontline nurses are known, it remains impossible to provide meaningfully targeted CPD activities.

Setting: The study was undertaken in the paediatric and neonatal units/wards of six (6) public hospitals of Eswatini, including four (4) government owned (Mbabane, Hlathikhulu, Mankayane and Pigg's Peak) and two (2) mission owned (Good Shepherd and Raleigh Fitkin Memorial Mission) hospitals.

Purpose of the Study: The study sought to identify, describe and compare the learning needs of Registered Nurses (RNs) and Qualified Nursing Assistants (QNAs working in the paediatric and neonatal units in Eswatini to provide a basis for which CPD programmes to meet these needs can be planned and implemented

Methods: A quantitative, non-experimental, cross-sectional, descriptive and comparative study was undertaken to recruit 103 respondents from a population of 110 nurses (86 RNs +24 QNAs) using census sampling. A self-administered Hicks-Hennessy Training Needs Analysis (H-HTNA) questionnaire was adapted and used with permission from the authors as a data collection instrument for this research. Descriptive and inferential statistics, including the Student's t test, ANOVA and Mann-Witney U test, were all performed at the α 0.05 level of significance to analyse the data.

Results:
The study reported 15 high level learning needs including research, clinical examination of a neonate/child ,using technical equipment, appraising one's performance, pain management, death and dying and health promotion. These learning needs were further categorised into five H-HTNA super categories, with the Research/Audit super category leading on average. Reporting these learning needs were 55% (n=11) of the QNA group and 43% (n=36) of the RN group and 46% (n= 47) of the entire sample. The open-ended section of the research yielded 16 categories of learning needs, which were skewed towards clinical skills and direct care of neonates and children. There was no statistically significant difference in the overall learning needs scores between the RNs and QNAs.

Recommendations from this study are to sensitise in-service planners and providers on the necessity of learning needs assessments studies as a yardstick to determine what nurses in paediatric settings need to learn. Planning and implementation of CPD activities on the nursing care of paediatric with critical conditions, integrated management of childhood illnesses MCI, handling paediatric emergencies and paediatric resuscitation as a matter of priority. Ultimately, this study recommends the strengthening of undergraduate curriculum on paediatric nursing and to a larger extent, the introduction of child nursing speciality programmes in the Eswatini nursing education institutions.

Keywords: Paediatric nursing, acute care, continuous professional development, learning needs, learning needs assessment

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LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
AC PNP	Acute Care Paediatric Nurse Practitioner
APN	Advanced Practice Nurse
ANA	American Nurses Association
ANOVA	Analysis Of Variance
CPR	Cardiopulmonary Resuscitation
CNS	Central Nervous System
CPD	Continuous Professional Development
ECG	Electrocardiogram
ENC	Eswatini Nursing Council (New Name)
H-HTNA	Hennessy-Hicks Training Needs Assessment
HIV	Human Immune deficiency Virus
IMCI	Integrated Management of Childhood Illnesses
LNA	Learning Needs Assessment
M-W-U	Mann Witney U Statistical Test
MNCH	Maternal, Neonatal And Child Health
NHRRB	National Health Research Review Board Of Eswatini
PHC	Primary Health Care
QNA	Qualified Nursing Assistant
RN	Registered Nurse
SWADNU	Swaziland Democratic Nurses Union
SNC	Swaziland Nursing Council
KoE	The Kingdom Of Eswatini (Formerly Swaziland)
TNA	Training Needs Assessment
UoB	University Of Birmingham
WHO	World Health Organisation

CHAPTER ONE

ORIENTATION TO THE STUDY

1.1 INTRODUCTION

The Ministry of Health (MoH) in the Kingdom of Eswatini (KoE) (formerly Swaziland) has conceded in multiple government papers that the burden of paediatric disease in the country is unbearable (Ministry of Health, 2012, 2015). Ideally, nurses who form more than 80% of the health workforce must be competent and work-ready to provide safe and high-quality care to sick children to avert mortality (Dlamini *et al.*, 2014; Holloway, Arcus and Orsborn, 2018), however evidence suggests that nurses within the country are inadequately prepared for this daunting task (Dlamini *et al.*, 2014; Ministry of Health, 2015). This limitation presents itself as an attribute to inadequacies in pre-registration education (Coetzee, 2014), ineffective, yet on-going continuous professional development (CPD) activities have also been implicated in the literature (Brekelmans *et al.*, 2016).

This study therefore assessed the learning needs of qualified nurses working in the paediatric and neonatal units in the public hospitals of Eswatini as a harbinger and an axis on which targeted CPD programmes can pivot. This chapter provides a background to the research problem. The stated research question and purpose herein are the guiding pillars of the research. Specific research objectives have been outlined, detailing exactly what the researcher will do to answer the research question. Towards the end, the chapter describes the significance of the study in an attempt to explain why the study is a need along with its potential contributions in the field. Following this, operational definitions of the key concepts used and a summary of the overall chapters are outlined.

1.2 BACKGROUND INFORMATION

The KoE is a landlocked country located in Southern Africa, bordering the Republic of South Africa (RSA) and Mozambique (Moz), covering a ground area of approximately 17 364 km^2 and with a population slightly less than 1.2 million people (Ministry of Health, 2014). The country remains one of the developing sub-Saharan countries with a high infant mortality rate (IMR), currently at 46.6/1000 live births (Central Intelligence Agency, 2018).

In 2015, the annual Child Health Report revealed that out of 6,936 under-five children who were admitted in the various health facilities of the country, 283 (4.1%) eventually died, with gastroenteritis and pneumonia named as the leading cause of death, and approximately 71% of child deaths occurring in the first year of life (Ministry of Health, 2015). A similar child mortality trend has recently been published in the Eswatini Annual Vital Statistics Report (Central Statistical Office, 2018)

Comparing with other sub-Saharan countries, the KoE is faced with a number of challenges in paediatric acute care (Ministry of Health, 2014). Firstly, there is a dire shortage of specialist paediatric nurses who account for less than 1% of more than 3000 nursing personnel in the country (Msibi *et al.*, 2014). This is partly due to the lack of post-graduate training in paediatric nursing in the four existing nursing education institutions (NEIs), meaning that most nurses caring for acutely ill paediatric patients are general nurses, an observation also reported in the literature by Coetzee, Britton and Clow (2005) in South Africa. Secondly, there are limited infrastructural and material resources for paediatric acute care and thirdly, there is a limited number of paediatricians to provide expert medical care and technical advice in the care of sick children (McCarthy & Wyatt, 2014).

Considering these challenges, with a commitment to improve the quality of patient care, the Eswatini Nursing Council (ENC) introduced mandatory CPD in the year 2012 (Msibi *et al.*, 2014). Following this move, all nurses, including those working in paediatric settings have increasingly participated in various CPD activities organised at both facility and national levels as required for the annual licence renewal. Widespread evidence suggests that CPD remains the key strategy to improve the quality of healthcare globally (Ross, Barr & Stevens, 2013). This is supported by Duff, Gardner and Osborne (2014), who affirmed that CPD has a positive effect on nurses' performance. Based on this evidence, the introduction of CPD as a quality improvement intervention was a plausible milestone in the evolution of nursing in the KoE (Msibi *et al.*, 2014).

At a glance the CPD strategy appears flawless, even though shortfalls in its planning and implementation have been reported in the KoE and many other countries worldwide (Dyson *et al.*, 2009; Devi and Rao, 2012; Viljoen, Coetzee and Heyns, 2017). Some of the reported shortfalls include the repetition of CPD activities, poor communication regarding these activities and the non-involvement of nurses during the planning of CPD activities

(Magagula, 2017; Viljoen, Coetzee and Heyns, 2017). Dyson et al. (2009) observed that the organisation of CPD activities often excluded the nurses who would later be participants in such programmes. Further research looking into the experiences of nurses regarding CPD in many countries across the globe has reported the lack of learning needs assessment (LNA) prior to CPD as a major setback to CPD success and effectiveness (Devi and Rao, 2012; Letlape et al., 2014).

The assessment of nurses' learning needs is a valid and reliable method that CPD providers can utilise to evaluate strengths and deficits of the nursing workforce (Hudson et al., 2018); it ensures the learning needs of staff are clearly understood and catered for in the planning and development of continuing education activities (While and Ullman, 2007). With paediatric nursing becoming more complex (Reddy and Vatsa, 2014) and challenging as new research findings and advances in technology make way (Letlape *et al.*, 2014; Kol, İlaslan and Turkay, 2017), adequate knowledge and skills to provide safe and high-quality nursing care to paediatric patients is imperative (Coetzee, 2014). In a bid to keep the nurses' knowledge and skills up to date, educators and healthcare organisations have to make informed continuing education easily available (Jest and Tonge, 2011).

Both international and African literature concur that the non-implementation of LNA, prior to CPD programmes, has been and continues to be the root cause for most CPD failures (Devi and Rao, 2012; Mahfod, 2014). In the Swati context, although control mechanisms to ensure nurses' compliance with mandatory CPD have been put in place, there remains little if any practical strategy to compel CPD providers to implement learning needs assessments prior to the implementation of CPD activities. As a result, LNA, although a vital step in CPD programming, has lagged without notice. Paradoxically, the Swaziland Human Resources for Health (HRH) policy and the National CPD framework emphasise that the employee must be involved in the identification of training needs at all stages of CPD planning (Ministry of Health, 2012; Msibi et al., 2014).

Finally, when examining the existing scholarly work on nurses' learning needs, there remains a paucity of literature on the learning needs of nurses working in paediatric acute care settings. Furthermore, amid the scant research works, no study has ever been undertaken in the sub-Saharan Africa region, including in the KoE. Therefore, the learning needs of paediatric nurses in sub-Saharan countries, including Eswatini, remain unknown, and for this

reason, a systematic investigation of the learning needs of nurses working in paediatric units in Eswatini is of research importance.

1.3 PROBLEM STATEMENT

Whereas CPD is mandatory for all nurses in Eswatini (SNC, 2011), the in-service education opportunities provided to nurses working in paediatric acute care units have so far been provided on an *ad hoc* basis, without prior systematic learning needs assessments. Literature states that the undertaking of CPD without prior LNA is a global concern and that when not addressed, organisations either under-train, over train, or just miss the point altogether (Devi and Rao, 2012). Consequently, CPD programmes do not contribute to the improvement of care quality hence patient health outcomes remain undesirable despite on-going CPD activities (DeSilets, 2007; While and Ullman, 2007; Dyson et al., 2009; Brestovacki and Milutinovic, 2011; Pilcher, 2016). Moreover, while meagre data on the learning needs of nurses has been cited there remains a paucity of literature reporting on the specific needs of nurses working in paediatric acute care settings in sub-Saharan Africa, particularly in Eswatini. Therefore, unless the paediatric unit nurses' learning needs are known, it remains impossible to provide meaningfully targeted CPD programmes for paediatric unit nurses in the country.

1.4 RESEARCH QUESTION

What are the learning needs of nurses working in the paediatric units of the six public hospitals in the Kingdom of Eswatini?

1.5 RESEARCH PURPOSE

The study sought to identify, describe and compare the learning needs of Registered Nurses (RNs) and Qualified Nursing Assistants (QNAs) nurses working in the paediatric acute care units in Eswatini to provide a basis for which CPD programmes to meet these needs can be planned an implemented.

1.6 RESEARCH OBJECTIVES

The objectives of the study were:

1.6.1 To determine the learning needs of Registered Nurses and Qualified Nursing Assistants working in paediatric acute care units in Eswatini using a Hennessy-Hicks Training Needs Assessment (H-HTNA) Questionnaire.

1.6.2 To compare the learning needs of the Registered Nurses and Qualified Nursing Assistants in the paediatric acute care units of Eswatini.

1.7 SIGNIFICANCE OF THE STUDY

There has not been a published study reporting on the specific learning needs of nurses working in the paediatric acute care units of Eswatini in the past. Moreover, the international data reporting on the learning needs of paediatric acute care nurses is insufficient to inform CPD for those nurses working in Eswatini. International study recommendations, where available, may not be suited to the Eswatini context due to differences in paediatric disease profiles, resource availability, patient acuity and the academic preparation of nurses. In light of these factors, a study in the Swati context will provide an insight into the specific educational needs of paediatric acute care nurses, thus bridging the existing literature gap.

From the study findings, facility-based and national in-service planners and implementers can develop and implement tailored CPD programmes that will lead to maximised in-service learning for paediatric nurses; this is likely to result in improved nurses' self-efficacy and ultimately, paediatric patients' healthcare outcomes (Msibi *et al.*, 2014). On another note, the study, being the first in Eswatini, will serve as a tool to sensitise the Eswatini government (Ministry of Health), the Nursing Council and in-service education providers on the importance of involving paediatric acute care nurses during the planning and implementation of CPD programmes.

1.8 OPERATIONAL DEFINITIONS

Paediatrics: generally, the concept paediatrics is conceived as the branch of medicine that deals with medical care of children from birth to 18 years old (Kliegman et al, 2016;), however for this study's purpose, this term refers to children from birth to the age of 12

years. This age limit is the cut off age for admission into paediatric units of Eswatini, which are the settings for this study.

Paediatric unit: The global definition of the term denotes an inpatient facility housing both neonates and children (Paz & West, 2014). For purposes of this research, the same definition will be used, save for where specific data from each of the units (i.e. neonatal vs children) will be required as in table 4.1. In this case, the neonatal unit will be used to refer to the unit housing infants less than 28 days of life and paediatric unit for the older children's wards.

Paediatric acute care nurses: In general, this term refers to nurses prepared at postgraduate training for an advanced practice-nursing role in the care of neonates and children who are acutely ill in the hospital emergency departments or wards (Hamric, Hanson & O' Grady, 2014). In this study, **Paediatric unit nurses** will be used to refer to the two nursing cadres available in Eswatini including Registered Nurses and Qualified Nursing Assistants working in the paediatric units of the hospitals of Eswatini.

Registered nurses in the context of Eswatini, refers to the 'professional nurses in possession of a diploma in general nursing as a minimum qualification (SNC, 2010).

Qualified Nursing Assistants are the lowest level nurses trained in basic nursing leading to a certificate in nursing assistant qualification (SNC, 2010).

Learning needs: the definition of the concept by Knowles (1970) (cited in DeSilets, , 2007:207) states that a learning need is "a gap between the person's present level of competence and a higher level of performance that is defined by the learner, the organization or society." This definition was adopted for the purposes of this study.

Learning needs assessment/Training needs assessment: In this study this concept was defined in accordance with Adelson, Manolakas, and Moore's 1985 definition (cited in Pilcher, 2016: 185), that is "a systematic approach to examining what individuals need to learn."

1.9 OUTLINE OF THE REPORT

This research report comprises five chapters.

Chapter One deals with the overview of the study, including the introduction and background information, statement of the research problem, study purpose, the research question and the objectives. A conclusive statement ends the chapter, providing a summary of what has been covered.

In Chapter Two, the researcher reports on the reviewed literature and the process undertaken to review it. The chapter reports on literature appraised to unearth both seminal and contemporary scholarly work on the major concepts used in the study.

In Chapter Three, the research methodology used to conduct the study is stated, defined and discussed in the order as: the study design, setting, population and sampling technique, data collection methods and data management and analysis. This chapter also provides the rationale as to why the design and or techniques used were chosen.

Chapter Four covers the presentation and analysis of the findings of the study, with an aim of answering the research question.

Chapter Five discusses the study results in relation to the findings from other scholars on the subject and finally, the study's limitations and recommendations are provided, after which a conclusion sums up the entire work of the project.

1.10 SUMMARY

The first chapter of this research has provided an orientation to the study to enable readers to acclimatise in anticipation of the subsequent chapters. Briefly, this section allows one to decipher the entire study through the assimilation of arguments presented in the introduction, background information and the research problem. The statement of the purpose, questions and objectives point the reader in the direction in which the research is going. Having

introduced this chapter, the next chapter will cover the literary context of the problem, i.e. what is already known of the problem and what still needs to be investigated.

CHAPTER TWO
LITERATURE REVIEW

2.1 INTRODUCTION

As highlighted in the first chapter summary, this chapter focuses on the systematic search of the literature to provide a non-fictitious report of what is already known on the topic under study. Literature refers to all the written sources considered relevant to the topic of interest (Brink, van der Walt and van Rensburg, 2012). This review was guided by the questions suggested by Randolph (2009:5) including: "*What evidence should be included in the review, what procedures should be used to find the relevant evidence, what retrieved evidence should be included in the review report, what procedures should be used to make inferences about the literature as a whole, and what information should be included in the review report.*"

A literature review with a scope confined to the concepts of interest in this paper, i.e. paediatric acute care nursing, learning needs, learning needs assessment, and continuous professional development was undertaken. Literature was sourced from a host of online journal articles accessible from the University of the Witwatersrand library databases including, Science direct, EBSCO Host (CINAHL) and ProQuest, and print literature including relevant policy documents and books published within a 10-year period. Search filters included articles from 2012 to 2018, full articles in English language. However, due to the paucity of literature on the subject of interest, literature older than the specified period has been included. The product of this process was the compilation of the literature review in the context of paediatric acute care nursing presented next.

2.2 PAEDIATRIC ACUTE CARE NURSING

The definition of acute care, even in the view of the World Health Organization is poorly defined in most care settings (Hirshon *et al*., 2013). According to Paz & West (2014), this type of care is provided in a unique environment with protocols and standards of practice and safety that may not be applicable to other areas of healthcare delivery, such as an

outpatient clinic. In the paediatric context, acute care denotes a secondary level of prevention approach to the nursing management of acutely ill children, where such care should be provided immediately (Almblad, Målqvist & Engvall, 2016; Zhang et al., 2016). The clinical proficiency of the nursing staff and the medical-surgical equipment used in these settings reflect these needs. The aim of care is to improve healthcare quality and paediatric patient safety in the shortest time possible (Paz & West, 2014).

Paediatric acute care settings house a wide variety of routine, urgent, or emergent baby or childcare needs. It is the complex nature of the paediatric acute care unit that has necessitated positive contributions, such as CPD for nurses in order to enable them to be equal to the task. Literature suggests that the lack of appropriate nursing care for acutely ill children is a global concern, especially in hospitals of developing countries (Brestovacki & Milutinovic, 2011). Most of these health facilities are found in rural African societies, where even the fundamentals of emergency care, such as a system for triage, basic equipment and appropriately trained nursing staff, to provide effective care to sick children are scarce (Duke & Cheema, 2016).

These challenges are compounded by the lack of specialised nurses in paediatric acute care settings, thus the care of acutely ill children, including referrals from primary health settings, are left in the hands of unspecialised nurses (Coetzee, 2014). This gap highlights the need of specifically trained paediatric nurses. Andersson et al. (2007) noted that an ideal paediatric nurse is a resource not only for the sick child but also for the family and other staff in the ward. Efforts to bridge this nursing workforce gap, as modelled by the United States of America in 1965, include the Acute Care Paediatric Nurse Practitioner (AC PNP) speciality, which has been incepted in many parts of the world (Hamric, Hanson & O'Grady, 2014). This nurse specialty qualification sought to enable nurses to function at an advanced practice level to deliver the best care to children (Aruda et al., 2015).

Despite the demonstrated need for specialist training in paediatric nursing, the training of paediatric acute care nurses has lagged in many parts of the world (Hewitt-Taylor, 2005). In the KoE for instance, there remains no training towards paediatric nursing, despite the ever-increasing paediatric disease usually culminating in infant and child mortalities. In South Africa, while the training of paediatric nurses is available, the output has shown a downward trend since 1996. Moreover, the shift in healthcare delivery to primary healthcare (PHC) has

necessitated an equal shift in the resources from tertiary care to primary care, including increased training for PHC nurse specialists rather than paediatric nurse specialists (Coetzee, Britton and Clow, 2005; Coetzee, 2014). Despite this, Cook et al. (2012) observed that the burden of paediatric morbidity and acuity levels in hospitalised children has remained high. With the focus of training having shifted, questions remain as to the quality of care received by these children in hospitals (Coetzee, 2014). This further solidifies the need for continuous professional development for nurses working in paediatric acute care settings.

2.3 CONTINUOUS PROFESSIONAL DEVELOPMENT

The American Nurses Associations (ANA) defined CPD as a "lifelong process of active participation by nurses in activities that assist in developing and maintaining their continuing competence, enhance their professional practice and support achievement of their career goals" (Arunachallam, unpublished). According to a publication by Iliffe (2011), there are several surrogate terms for CPD in the literature however, Ni et al. (2014) claimed that the central philosophical base for most of these terms axles around that of CPD. With on-going scholarly debates on the appropriate definition for CPD in existence, the World Health Organization prescribed that there should be no standard CPD model, and each country should devise their own considering their unique needs and available resources (WHO, 1988 as cited in Arunachallam, unpublished).

In nursing, the relevance of CPD has been a longstanding topic of interest with a widespread recognition that has encroached the boundaries of other health disciplines, such as medicine and physiotherapy (Kjaer et al., 2014; Kokic et al., 2016). The innate benefits of CPD and its contribution to patients' health outcomes cannot be ignored (Wellings, Gendek & Gallagher, 2017). Florence Nightingale is well known for her seminal work in encouraging nurses to continue education, stating in her published works "*Notes in Nursing*" that "nurses must continually learn not only through observation and experience but by seeking new knowledge and new evidence" (Gonda, 2017). Her work laid a foundation upon which increasing evidence commended CPD as a necessary strategy to enhance nurses competence needed for today's healthcare environment (Wellings, Gendek & Gallagher, 2017)
Competence, as Viljoen et al. (2017) affirm, hinges on updated knowledge and skills in the individual nurse's field of specialty. Paediatric nurses bear an ethical responsibility to ensure

their knowledge and skills remain relevant to provide safe care to their patients at all times. Thus, it is the nurses' responsibility to identify their own learning needs and ensure those needs are met (Davids, unpublished). According to Reddy & Vatsa (2014), specialised in-service training for nurses to care for children is nothing short of a requirement. Some countries, in the interest of ensuring quality patient care, have sealed CPD as a mandatory requirement for re-licensure (Ross, Barr & Stevens 2013; Ni et al., 2014). However, countries, such as Liberia, Serbia and the Netherlands, have not followed this development regardless of the global calls for CPD (Brestovacki & Milutinovic, 2011; Michel-Schuldt et al., 2018; Pool et al., 2015).

The CPD-licensure linked system was initially introduced in the United States of America and the United Kingdom, followed by South Africa in 2001. In Swaziland, the process was initiated in the year 2011, but eventually implemented in 2013 (Davids, unpublished; SNC, 2011). This move aimed at increasing the uptake of CPD across all practising nurses in order to improve patient care (Ross, Barr & Stevens 2013; Devi and Rao, 2012; Msibi et al., 2014), however, older articles, such as Davids (unpublished), held scepticism on the purported association of mandatory CPD to the promotion of lifelong learning. Recent studies reporting that nurses felt that CPD was being imposed on them (Letlape *et al.*, 2014; Viljoen, Coetzee & Heyns, 2017) may suggest that Davids' assertion held some validity. Increasing literature claims that nurses are self-directed adult learners (Msibi *et al.*, 2014, DeSilets, 2007) therefore imposing education on them might not always work, especially where their learning needs were not considered by means of a systematic assessment (Claflin, 2005; Pilcher, 2016).

2.4 ASSESSMENT OF NURSES' LEARNING NEEDS

As in most areas of education, there has been strong debates on the definition of learning needs assessment (Grant, 2002). Among the researchers who attempted to define the concept were Adelson, Manolakas & Moore (1985), as cited in Pilcher (2016:185), who defined learning need assessment as "a systematic approach to identifying what individuals or groups need to learn." Holloway, Arcus & Orsborn (2018) claimed that learning needs assessment was an initial step in a process that culminates to training or an educational strategy in an organisation. Evidence in the literature states that assessing the learning needs of the target

individuals or groups helps to clarify the objectives, content and the structure of any CPD activity and is thus a necessity (DeSilets, 2007).

The concepts, learning and training needs assessment, have been used interchangeably in literature. However, Krugman (1999) (cited in (Mahfod, 2014) states that the former is concerned with the identification of performance gaps, the prioritisation of and the dealing with the most important, whereas the latter is concerned with investigating the reasons for the gaps. Devi & Rao (2012) contended that staff sometimes requires personalised training to accomplish their responsibilities more effectively. Pool et al. (2015) affirmed that nurses act strategically in their professional development and can engage in learning superficially, if they did not appreciate the importance of the particular activity. Therefore, the implementation of CPD activities informed by a LNA results in tailored staff education, which amounts to productivity increases (Denby, 2010; Mahfod, 2014).

A wide literature base, including both old and recent publications, demonstrates it is imperative for organisations to enforce the implementation of LNA (Grant, 2002; Dyson et al., 2009; Pilcher, 2016; Holloway, Arcus & Orsborn, 2018). In the United States of America, for instance, the assessment of learning needs has been included as a compulsory component of the educator role (DeSilets, 2007). This is supported by Claflin (2005) who observed that assessing the learning needs ensured the right type of education to meet the nurses' healthcare demand was planned and implemented. DeSilets (2007) further posits that it is through a LNA that discrepancies are identified and addressed educationally to strike a balance between current and desired competence. Several other authors have stated that the undertaking of an LNA prior to a CPD activity improves the quality of patient care (Grant, 2002; DeSilets, 2007; Dyson et al., 2009; Pilcher, 2016). The definition of the concept, learning needs, as part of a larger initiative to facilitate implementation of LNA has been deemed necessary by several authors (Grant, 2002; DeSilets, 2007; Pilcher, 2016).

2.4.1 Learning Needs

In the context of learning, Johnson & Puglia (2012) defined a need as a gap between what is and what could or should be within a particular context, leading to strategies aimed at eliminating the gap. Norman et al. (2004) (cited by Pilcher, 2016: 188) described learning needs as "personal and specific needs identified by the individual learner through practice

experience, reflection, questioning, practice audits, self-assessment tests, peer review, and other sources." Cooper's definition, as cited in DeSilets (2007), denotes that a learning need is "a discrepancy between what individuals know and can do and what they need to know and do to achieve a higher level of performance."

According to Dyson et al. (2009), the knowledge gained from basic nursing education becomes obsolete 2 to 5 years after graduating, after which learning needs ensue. In support of this claim, Holloway, Arcus & Orsborn (2018) suggest that prequalification nursing education can only ever be an initial preparation hence on-going education is an imperative. For on-going education to be effective, the emphasis has to be placed on the identification of the nurses' learning needs through systematic assessments (Pilcher, 2016). The major question becomes, which method or model is the best to identify these learning needs? Carlisle, Bhanugopan & Fish (2011) claimed there are several models that can assist in the LNA process.

2.5 LEARNING NEEDS ASSESSMENT METHODS

According to DeSilets (2007) and Pilcher (2016), it is essential to carefully design and employ an LNA technique that best meets the goal or purpose for which the exercise is meant. Grant (2002) claimed that no method to identify learning needs is a 'fit for all,' and neither is the choice of which to use at any point in time craft in stone. It has however been observed that the continuing education activities were not well designed to promote the actual value of CPD, most likely due to the lack of prior LNA (Ni *et al.,* 2014). Pilcher (2016:186) described four different categories of learning needs assessments and the respective data collection tools usable with each category are provided in **Table 2.1.**

Table 2.1 LNA categories with data collection strategies

LNA Category	LNA Data Collection Tools
Gap Analysis	
Formal gap analysis for individuals and small groups	Debriefing pre-testing and post-testing Case study with group discussion Return demonstration Simulation Follow-up interviews Observation Audits
Formal gap analysis for larger groups	Review of the literature with expert analysis Advisory groups Delphi approach Surveys
Organizational Needs	
Job performance LNA	Job descriptions Policies and procedures Audits Observation of performance Peer review competency assessment results Patient records Morbidity patterns Patient satisfaction surveys Risk assessment Error reporting Adverse events Focus or advisory group
Training LNA	Standards and guidelines Advisory group
Consumer needs LNA	Patient outcome measures Review of adverse events Observation Audits
	AHRQ tools Patient satisfaction surveys Services needed for client SWOT analysis
Learner-Identified Need	
Learner-identified LNA	Surveys Interviews Focus groups Diaries/reflection Difficulties arising from practice
Future Needs	
Anticipation LNA	Dashboard development Monitoring/analysis of new literature Analysis of eLearning

Source: Pilcher J. (2016:186)

The learner-identified needs assessment category was utilised to investigate the learning needs of nurses in this study. Pilcher (2016) contended that this category involves the identification of learning needs by the individual nurses themselves. According to Mahfod (2014), people are all different, with unique idiosyncratic strengths and weaknesses. Therefore, it is reasonable for individual nurses to identify their own needs since these are different from those identified by the organisations (Jest & Tonge, 2011; Pilcher, 2016).Under the learner-identified needs category, several data collection strategies including interviews, observations and questionnaires are employed to identify personal and specific needs of nurses (DeSilets, 2007; Mahfod, 2014; Pilcher, 2016).

DeSilets (2007) also puts emphasis on the planning of activities taking into account the unique needs of the target audience to avoid hunch-based planning when developing CPD activities. While Grant's (2002) methods of assessing learning needs were focused on the medical profession, Pilcher (2016) and DeSilets (2007) proposed approaches usable in the field of nursing. Generally speaking, there are limited data reported on the assessment of nurses' learning needs on the paediatric acute care settings globally, thus, studies outside paediatrics have been included in the reviewed literature, which is next presented.

In a quantitative, descriptive study looking at the educational needs of acute care registered nurses from within two acute care hospitals in New Zealand, two groups of nurses, registered and senior registered nurses, were surveyed. Among these nurses, 91% reported using evidence to support practice as their highest learning needs. Interpreting information from diagnostic test and coordinating an emergency were reported by 81% and 78% of nurses respectively. The authors concluded that generic learning needs assessment was a valuable step in designing a CPD programme to assist in the building of a well-informed nursing workforce (Dyson et al., 2009). This study, having been done on a wide spectrum of acute care settings, including paediatrics, yielded important findings for comparison with the current study.

Gallagher et al. (2012) investigated the learning needs of neonatal and paediatric healthcare staff in a tertiary hospital in England. Among the 111 respondents who partook in the survey, the largest proportion was nurses, who accounted for 61% of the total. The study sought to determine the knowledge and confidence of the health staff, with the ultimate goal of developing a multidisciplinary module towards paediatric palliative care based on a local

need. The results of the LNA highlighted a perceived lack of educational preparation for caring for children and infants with palliative or end-of life care needs. This deficit was particularly reported around areas concerning the disclosure of information, legal and ethical issues, organ donation and end-of-life care planning and the coordination of resources. Based on these needs, a tailored educational curriculum was developed.

Kol et al. (2017), undertook a descriptive study using a training needs determination questionnaire to identify the training needs of clinical nurses at a university hospital in Turkey. The findings from this study showed that nurses' learning needs were mostly related to patient care, and included fluid and electrolyte balance, safe drug administration, cardiopulmonary resuscitation (CPR) and pressure ulcers. According to Kol, other studies previously carried out in Turkey showed that the training on emergency care, CPR, ECG interpretation, drug applications and patient care skills was necessary. From these studies, the evidence suggests there is lack of knowledge of nurses related to direct patient care (Avsar & Kasikci, 2011; Yıldırım, Fadıloğlu & Uyar, 2008).

Jest and Tonge (2011) undertook an LNA study to identify knowledge deficits regarding procedural sedation for patients at a paediatric hospital in a large, southeast metropolitan in the United States of America. This study utilised a self-administered questionnaire where respondents had to rate their knowledge on a 4-point Likert scale. Among the registered nurses studied, the majority (frequency data lacking) of RNs reported that their knowledge was deficient in medication and oxygenation. There were practice concerns associated with registered nursing staff management of paediatric patients undergoing procedural sedation. This led to the establishment of annual skills testing in a special procedures laboratory for all nurses who participated in sedation procedures to determine sedation competency.

In another American study on the learning needs of oncology nurses, Cannon et al. (2014) found eleven (11) priority learning needs including the management of cancer symptoms and treatment side effects, complementary and alternative medicine, screening recommendations, hematologic cancers. This study has proved valuable in the assessment of nurses' educational needs in oncology practice in the USA. In addition, the study concluded that responding to current learning needs of nurses is critical for CPD programmes and organisations to remain viable partners in the attainment of an educated nursing workforce.

Utilising a self-administered descriptive survey, Reddy and Vatsa (2014) undertook an assessment of learning needs of nursing personnel caring for children with central nervous system (CNS) infections in selected hospitals of Andhra Pradesh, India. This study, undertaken on 67 nurses at government tertiary level hospitals, found that 89% of nurses indicated lacking knowledge in medication and side effects, 72% in the calculating of diet and fluids according to the age of the child, 70% on maintaining a safe environment for the child, 68% in the area of assessment and 66% in the knowledge regarding disease condition. It was concluded in Reddy and Vatsa's study that it was necessary to realise the prospect of providing education across speciality nursing fields, and ensure that individual exclusive learning needs were met. The study presented credible findings in two aspects: (1) the setting was similar to that of the current study, and (2) it was conducted in a developing country, making its findings and recommendations applicable and comparable to the current study.

A Canadian study carried out on nurses caring for paediatric patients with mental health disorders, by Vallières-noël et al. (2016), sought to explore the need for support for nurses working with these children. This study utilised a qualitative, descriptive design on paediatric nurses working in the medical and surgical units of a paediatric hospital in Quebec. From this research, themes that emerged included not knowing what to do, lack of support to care for children with mental health disorders, and the need for more education on mental health. According to the findings of this study, nurses regarded themselves as powerless members of the healthcare team due to the identified problems. These findings concur with Geyer (2013)'s claim that powerlessness in nursing is associated with the lack of knowledge.

Pilcher (2016), a professional development specialist nurse whose work was published after a detailed literature review, provided an overview of nurses' learning needs in the context of international literature. Not only did this study provide an insight into the definitions, categories, measurement tools, and steps on how to perform nurses' learning needs assessment but also supported the above scholars in the necessity of LNA towards effective CPD programmes. Pilcher (2016) suggested that the decision about which topics were to be prioritised in a CPD programme was always a challenging one, therefore, it remains an inherent responsibility for educators to make informed decision about such topics.

In Africa, there exists a dearth of literature capturing the learning needs of nurses working in the paediatric acute care settings. One study by Abuusad, Mostafa and Ibraheim (2017), which assessed the learning needs of paediatric nurses regarding delirium in Intensive Care Units in Egypt, found the majority (94.5%) of nurses had poor knowledge about paediatric delirium, particularly its definition, causes and its management. This study concurred with global literature, suggesting that paediatric care nurses' learning needs should be evaluated relentlessly and progressively through employing educational training programmes to increase competencies for paediatric nursing staff, especially focusing on delirium. Although the study provided useful findings in paediatric acute care, its specificity to delirium limits its contribution to the study at hand.

A Libyan study, published by Mahfod (2014), reported on training needs assessment as a tool to enhance nurses' learning and effectiveness in practice. The study highlighted several key issues regarding the learning needs assessment in the Libyan and global perspectives. Firstly, in most nursing organisations, the assessment of learning needs is weak, or there is no performance of this function at all. Secondly, if appropriately used, LNA can curtail unnecessary spending on improper, inefficient or ill-targeted programmes and these expenses can be spent on programmes that will move the organisations forward. It was noted that current training needs assessments were more at organisation level and used a mechanistic approach and was of little benefit if any to the 'hands on' nurses. Again, although this study has a continental significance, it only presented an overview and analysis of a LNA as a tool to enhance nurse learning, and did not contribute in any way to the actual learning needs of nurses.

In South Africa, Letlape et al. (2014) explored the in-service training needs of psychiatric nurses in Gauteng Province. From this qualitative study three themes emerged - confirmed need for on-going in-service education, in-service training is beneficial to psychiatric nurses and challenges with regard to in-service training. In relation to learning needs assessment, this paper reported that the needs of staff were neglected; there was a lack of staff motivation, repetition of the same topics, limited opportunities for staff to express their needs regarding in-service training, limited resources and a lack of planning. The study by Lethlape (2014) together with one by Viljoen, Coetzee & Heyns (2017) presented next, contributed to the argument for the study at hand, however with no direct input to the paediatric nurses learning needs.

Another South African study was undertaken by Viljoen, Coetzee & Heyns (2017) to investigate the reasons for critical care nurses reasons for poor attendance at a continuous professional programme. This study reported that the nurses felt neglected in the planning stages of CPD programmes and thus perceived them as irrelevant. This study further captured CPD as a theme under which the emphasis of undertaking an LNA prior to the implementation was placed. The theme and attitudes, which emerged from the data analysis in this study, were similar to those reported by Magagula (unpublished) in a conference paper.

The study titled Nurses experiences of in-service training at a hospital in Eswatini was presented at the 2018 National Health Research Conference in Eswatini by Magagula (unpublished). This study was motivated by the researcher's observation of nurses' unwillingness to attend in-service trainings organised at both local and national level. In this qualitative enquiry, the major findings were that in-service trainings were poorly organised and the selection of nurses to attend in-service trainings was done by management without regard of the individual nurses' learning needs or the organisation's strategic plan. These findings concur with those previously reported in the South African studies above, and likewise did not contribute meaningfully to the investigated learning needs of paediatric nurses in Eswatini.

Another study undertaken in Eswatini, by Msibi et al. (2014), sought to identify nurses learning needs assessment as a groundwork for the establishment of the national CPD framework. More than identifying the nurses learning needs, which were biased towards midwifery practice with little to do with paediatric acute care, this study showed that 82.6% of the nurses had limited resources to attend CPD and 50% reported that maternal, neonatal and child health (MNCH) CPD topics were inadequate. Among the 12 training needs identified, only three were related to paediatrics - infant nutrition, neonatal care and legal and ethical issues in maternal, neonatal and child health (MNCH). This is concerning in lieu of the existing challenges in paediatric acute care in the country. It was concluded in this study that the involvement of nurses at each stage of the CPD planning and development process was crucial. However, this has not been the case in paediatric acute care settings.

An interesting finding in both older and recent literature is the association between the learning needs of nurses and their demographic characteristics (Mahfod, 2014; Kol, İlaslan

and Turkay, 2017). In a Japanese study by Saeki et al. (2007) (cited in Carlisle, Bhanugopan & Fish, 2011) to examine statistical differences among nurses grouped according to their experience, it was demonstrated that experience in job rotations and marital status had huge effects on professional competencies. A Canadian study conducted by Burke (1999) (cited in Carlisle, Bhanugopan and Fish, (2011), to examine whether women and men at similar organizational levels report the same training needs, it was found that women's learning needs on particular areas were not addressed as well as they were for males. These studies demonstrated the importance of considering demographic characteristics of nurses to the success of training in an organisation. In addition, these researchers noted the need for continuing research on factors influencing LNA to inform best practices in implementation (Carlisle, Bhanugopan and Fish, 2011).

2.6 SUMMARY

The paucity of literature reporting on the learning needs of paediatric acute care nurses in both developed and developing countries is indicative of the need for more scholarly work on this subject. While this chapter has contextualised the subject of nurses learning needs from the international, continental and Eswatini perspectives, the learning needs of nurses' working in paediatric acute care settings were scant. Irrefutably however, the evidence from this literature review points to the conclusion that for any CPD activity to be successful, it must be underpinned by a systematic nurses' LNA study. This evidence is congruent with this study's thesis. Whereas nurses working in the paediatric acute care settings of Eswatini hospitals have engaged in on-going CPD activities, the lack of LNA informing such activities justifies a call for more local research on LNA for quality improvement. The methodology section detailing how this study was conducted follows next.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 INTRODUCTION

A succinct use of sound research methods and a reliable data collection instrument are landmarks of a good quantitative research project. Research methodology refers to the process of planning, designing and implementation of strategies to gather and analyse data (Polit & Beck, 2018). In a quantitative research approach, the focus is on the measurement of parameters and outcome data. Such data, having been obtained under standardised conditions using structured or semi-structured instrumentation, is then subjected to formal statistical analysis (Supino & Borer, 2012). This chapter discusses the methods used to obtain the quantitative data collected to answer the research questions.

3.2 STUDY SETTING

The research project was carried out in the children's and neonatal units of the six public hospitals of Eswatini. Of the six hospitals, four are government hospitals, namely Mbabane, Mankayane, Pigg's Peak and Hlathikhulu, and the remaining two are mission hospitals, namely Raleigh Fitkin Memorial and Good Shepherd Mission hospitals. To obtain a sample large enough for a quantitative study necessitated collecting data across multiple settings due to the small number of nursing staff in each hospital's paediatric and neonatal units. Furthermore, the study sought to inform paediatric nurse CPD needs for the whole country, thus conducting the research across the country's major hospitals was rational.

The six hospitals referred to above are the country's major public hospitals, each having demarcated paediatric wards and in some, neonatal special care units. The biggest paediatric unit accommodates 56 patients in full capacity, with the smallest only able to accommodate 18 patients. All but one of the hospitals serve as regional referral hospitals, are found in each of the four regions of the country and provide both outpatient and inpatient services to both walk-in patients and those specifically referred from the particular region's health centres and clinics. The Mbabane Government hospital is the national referral hospital servicing

both walk in patients from the surrounding area and referrals from the other five hospitals. This hospital and the two mission hospitals serve as training hospitals for undergraduate nurses. The size of nursing staff varies from hospital to hospital, usually correlating to the size of the unit, i.e. the smallest has the smallest number of nursing staff. Generally, each shift has a staff complement of both professional nurses (RNs) and qualified nursing assistants (QNAs). These hospitals were selected to be research sites because they were the only ideal sites where data answering the research question could be collected. Moreover, since paediatric acute care nursing is their core business, it was deemed the study variables would best be investigated there.

3.3 RESEARCH DESIGN

Grove, Burns and Gray (2013) noted that it is always important to select an appropriate research design by integrating different study elements. According to de Vos et al. (2011), a research design is a step in the research process that should follow problem formulation and precede data collection. In simpler terms, the research design is a plan or blue print outlining how the researcher will carry out the project (de Jong, 2008, as cited in de Vos 2011). In quantitative research, maximising control over the factors that could influence the validity of the findings is an integral function while planning a research design (Grove, Burns and Gray, 2013).

To answer the research question and meet the objectives of this study, a quantitative, non-experimental, cross-sectional, descriptive and comparative survey design was chosen. Description of the nurses' learning needs was achieved by means of categories inherent in the data collection instrument. Comparison of the learning needs was achieved through comparative statistics to determine if there were significant differences between the RNs and the QNAs. The application of this research design in this study was supported by Creswell (2014) and Ross (2012) who suggested that survey research designs provide a quickest quantitative description of opinions of a population with a purpose of generalising or drawing inferences from the sample results. Therefore, considering the above, the descriptive survey study design was deemed suitable a choice for this study.

3.4 RESEARCH METHODS

Research methods refer to the process or plan for conducting the specific steps of a study. Such methods include the population specification, sample and sampling techniques, data collection and analysis (Grove, Burns & Gray, 2013; Polit & Beck, 2018).

3.4.1 Target population

Supino & Borer (2012) defined a study population as all individuals with the characteristic(s) of interest and meeting the inclusion and exclusion criteria of the study. The target population (N) of this study included all registered nurses (RNs) and qualified nursing assistants (QNAs) working in the neonatal and children's wards of the six public hospitals in Eswatini. The registered nurses are more often demarcated as single and double qualified; the term 'single qualified' refers to those nurses who possess a diploma in general nursing, while double qualification denotes those who acquired a post diploma qualification.

In the Swati context, the term "registered" nurse is used to refer to all those who's minimum training in nursing is the diploma in general nursing. Conversely, as nursing assistants only possess a two-year certificate, they are registered as such by the Eswatini Nursing Council. The accessible population included nurses who were available at the sites and/or reachable during the data collection period. A consultative count of the total number of the nurses working in the paediatric units' staffing registers was approximately N=110 including both categories of nurses under study (N=24 QNAs and N=86 RNs).

3.4.2 Sample and Sampling Methods

Sampling refers to the process of selecting a representative fraction of the population (sample) from which the actual data collection will occur (Creswell, 2014). A sample, according to de Vos et al. (2011), is a subset of the population considered for actual inclusion in the study. Researchers suggest that conducting research on the entire elements of a population would be tedious, time consuming and less feasible, thus making this choice a prohibitive undertaking (de Vos et al., 2011). However, in this case, to recruit a sample adequate for a quantitative research, a census sampling (total sample) technique was ideal

because the number of nurses was small and the hospitals reachable. Census sampling attempts to collect information on all eligible elements in a defined population (Kish, 2011).

Despite the challenges for using census sampling, it still is advantageous to use surveys because there are no sampling errors and the results are readily generalised. Each of the paediatric units serving as a research site had a limited number of nurses, hence surveying nurses in multiple settings was ideal. To do this, it was imperative for the researcher to be acquainted with the entire nursing staffing of all the paediatric units chosen, after which surveying the whole population was deemed feasible. Determination of the sample size by calculating software or formulae was therefore not necessary because the study was planned for the entire population of nurses in the above-named settings.

3.4.2.1 Inclusion and exclusion criteria

According to Ross (2012), the inclusion and exclusion criteria are used to limit the study population to make it manageable and increase the focus of the sample. These criteria set the parameters of the study by identifying who should or should not be included and why. Strictly limiting the sample also increases the precision of a study. As per this project's research design, all RNs and QNAs working in the paediatric acute care units of the six public hospitals of Eswatini who were willing to participate in the study were eligible for participation. However, to control lack of experience and hands on practice, nurse managers and nurses allocated to the paediatric acute care units as relief staff were excluded. Nurses who were on leave or off sick during the data collection period were also excluded, except where they could be reached.

3.4.3 Data Collection

Data collection refers to the process of gathering and measuring information on variables of interest, in a systematic way that allows one to answer stated research questions, test hypotheses, and evaluate outcomes (Creswell, 2014). According to Polit and Beck (2018), data for quantitative studies are often collected according to a structured plan that indicates what information is to be gathered and how to gather it.

3.4.3.1 Instrument

A self-administered Hicks-Hennessy Training Needs Analysis (H-HTNA) Questionnaire was adapted and used with permission from the authors as a data collection instrument for this research (Hennessy & Hicks, 2011). The questionnaires were distributed to 110 respondents. Parahoo (2006) (cited in Ross, 2012), suggested that a structured questionnaire was the preferred measuring instrument for use in survey study designs. Self-administered questionnaires are highly structured, using a set of questions to be answered in a specified sequence and with pre-designed response options (Polit & Beck, 2018).

The questionnaire consisted of three sections: (I) demographic data, (II) pre-determined training needs, and (III) specific training needs. The respondents were required to fill in the responses as required by each section of the instrument. The bulk of the tool (section B) contained 36 predetermined learning activities/items. Here, the respondents were required to rate themselves on an analogue scale of 1 (low) to 7 (high) on two indicators named A and B. Indicator A was concerned with the respondent's perceived importance of each activity in the nurses' job and B was concerned with the nurses' perception of how well they perceived themselves to be performing each of those activities currently (self-efficacy). The last section of the questionnaire was an open-ended section each respondent listed their personal learning needs topics. The aim of this section was to determine individualised and personal learning needs of the nurses for purposes of formulating targeted recommendations.

The original questionnaire was a 30-item questionnaire with each item belonging to one of five superordinate categories namely: research/audit, clinical tasks, administration, management/supervisory tasks, communication/teamwork. The tool comes with a manual specifying how an interested researcher can adapt it to suit their research without invalidating the original questionnaire. The tool, which is intellectual property of the University of Birmingham (UoB), is licensed to the World Health Organization (WHO) for online access and use. It was selected for use in this study because it would accurately elicit data that best answers the research question.

To adapt the tool, the researcher adhered to the laid down instructions provided by the authors' manual. To this end, the researcher swapped eight of the original tool items with clinical tasks specific to paediatric nursing to focus the tool towards paediatric acute care,

and six items obtainable from the item bank of the tool manual and literature review were added to contextualise the tool. The questionnaire was written in the English language and took approximately 30 minutes to complete. It was therefore desirable to use it in this current study as the researcher intended to adapt the tool for paediatric acute care in the KoE.

3.4.3.2 Validity and reliability of the instrument

A validation process by the authors of the H-HTNA Questionnaire is clearly spelt out in the manual. It includes a vigorous process of synthesising findings from a literature review and focus group discussions into themes, which formed the constructs. From each theme, a range of items was developed into a questionnaire format, informed by the previous stage, to ensure a degree of content validity. Following this, a pilot test was administered to healthcare professionals from several disciplines and their responses were analysed using multivariate techniques.

The tool has been used in more than 7000 research studies in both developed and developing countries, with assurances of validity and reliability (Hennessy & Hicks, 2011). For this study, the tool was again pretested on 10% of the study population to ensure validity and clarity. The tool has been credentialed by the World Health Organization as a valid and reliable instrument for use in any given healthcare setting. A Cronbach alpha reliability test performed in this research demonstrated a high internal consistency and scale reliability coefficient (α=0.9454). This result compared similarly to what Markaki et al. (2009) reported as α=0.985, after having translated and used the same data collection tool to identify learning needs of nurses in Greece.

3.4.3.3 Pre-testing the tool

To identify any ambiguities, the tool was initially presented to a faculty panel who suggested minor alterations, which were effected before it was pre-tested with permission from the National Health Research Review Board and the facility matron of Dvokolwako Health Centre. Eleven nurses (10% of sample) volunteered to participate in this process. At this stage, it was emphasised that this was a pilot test and they were requested to forward any comments they had regarding anything on the tool, such as the wording, structure and length.

All comments and unclear sections of the tool raised in the pre-test process were taken into consideration and rectified before the actual data collection process began.

3.4.3.4 Data collection procedure

The data collection procedure details the steps and processes undertaken to collect the data, from the beginning to the end period. Data collection took 30 days, beginning from the 17th September 2018. The researcher arranged with each research site for specific dates where nurses were briefed as a group regarding the research details and their role. During the briefings, pertinent questions were answered and potential respondents were assured of confidentiality and anonymity. The questionnaires were then distributed in correlation to the staffing of nurses per unit. A sealed box for returned questionnaires was left in the nurses' stations. The researcher made follow-up calls as a reminder to respondents to complete the questionnaires to enhance the response rate. Returned questionnaires were personally collected by the researcher for storage in a lockable file.

3.4.4 Data Analysis

According to Dawson (2009), quantitative research seeks to ensure that the measurements are stable and consistent and that there are no errors or bias present, either from the respondents or from the researcher. Data analysis entails categorising, manipulating and summarising the data to give it meaning (Brink, van der Walt and van Rensburg, 2012). Data was entered in to a Microsoft Excel spreadsheet and cleaned to check for errors in data recording. Coding was done electronically using the Stata version 14.3 software package. Descriptive statistics were used to summarise the data, while inferential statistics were used for statistical comparisons. The mean, standard deviation and parametric tests were reported and used for normally distributed data, while skewed data was reported through the median and interquartile range. For this data, non-parametric tests were used for statistical comparisons.

The summative content analysis suggested by Hsieh and Shannon (2005) was used to analyse the open-ended last section of the data collection tool. Typically, the summative approach to analysis starts with identifying and quantifying certain words or content, not to infer meaning but to explore the frequency of usage. Hsieh and Shannon state that **"***If the analysis stopped*

at this point, the analysis would be quantitative, focusing on counting the frequency of specific words or content" (Hsieh and Shannon, 2005:1283). Thus, the aim in this study was to provide frequencies of the respondents' words or content in order to provide a quantitative summary of what their learning needs were.

To meet the research objectives, measures of central tendency and dispersion were analysed descriptively. The Shapiro Wilk test and distribution graphs were used to check normality of all variables distribution. The statistical significance level was set at $p < 0.05$. Comparisons of the learning needs between the two groups of nurses (RNs and QNAs) were achieved using both parametric (t-test and One-way ANOVA) and non-parametric tests (Mann-Witney U), depending on the variable distribution. The data was presented through narratives, tables and bar charts as appropriate.

3.5 ETHICAL CONSIDERATIONS

The proliferation of nursing research has led to growing concerns about the protection of the rights of study respondents, especially where these are humans (Polit & Beck, 2018). In research, ethics define what is a right and wrong thing to do, and at a minimum, ethics help to guide notions of what is morally acceptable to a population (Ross, 2012). For purposes of ethical adherence, in this study, the researcher passed through a vigorous process to obtain clearance from the Human Research Ethics Committee (Medical) of the University of the Witwatersrand and the National Health Research Review Board of Eswatini (NHRRB).

Furthermore, as a professional, the researcher strove to adhere to important principles applicable when dealing with sensitive issues such as honesty, integrity and assigning authorship on scientific publications describing the research (Brink, van der Walt & van Rensburg, 2012). The Codes of Ethics by the Eswatini Nursing Council guided the researcher's impetus to adhere to ethical consideration:

3.5.1 Permission to Conduct Research

Since this study was part of a Master of Science Nursing study, ethical clearance was primarily obtained from the Human Research Ethics Committee (Medical) of the University

of the Witwatersrand, Faculty of Health Sciences, the National Health Research Review Board (NHRRB) of the Eswatini MoH and the respective hospitals where data was collected (See appendices D–F). The study respondents gave their permission by agreeing to complete and return questionnaires.

3.5.2 Informed Consent

To ensure voluntary participation and that the respondents were protected from harm, one mechanism used in research is the informed consent (Brink, van der Walt & van Rensburg, 2012). According to Polit and Beck (2018), informed consent entails full disclosure to the respondents so that they can make an informed decision to participate. In this study, the researcher gave the respondents both verbal and written comprehensive information regarding their participation during the scheduled visits to the research sites. Based on this information, respondents were at liberty to participate in the research at their will and to withdraw at any time without prejudice.

3.5.3 Human Rights and Ethical Principles

There are three fundamental ethical principles that need to be respected in research involving humans. These principles are respect for persons, beneficence and justice, and they emanate from the right to self-determination, to privacy, to confidentiality and anonymity and to fair treatment (Geyer, 2013). To adhere to these ethical principles the researcher undertook the procedures as explained next.

3.5.3.1 Privacy, confidentiality and anonymity

No respondent's name or any form of identification was required in any part of the questionnaire. Respondents were at liberty to complete the questionnaires at their own homes, without any undue assigned person scrutinising their responses. No part of the collected data was prematurely communicated to the institution from where it was collected to avoid exposure of respondents to prejudice. The questionnaires will be stored in the lockable file for about 5 years if the study is unpublished but will be stored for only 3 years publishing then destroyed via shredding. To maintain confidentiality of information, the

questionnaires did not require mention of the institution from where the data was gathered and the names of the institutions were blocked out in the final research report.

3.5.3.2 Respect for persons/Autonomy

An information sheet (Appendix B) explaining the nature of the research, with assurances of voluntary participation and the liberty to withdraw from the study at any time without prejudice, to maximise respondents' understanding before filling in the survey questionnaire was provided. Furthermore, these points were emphasised during the brief presentations in the research sites.

3.5.3.3 Beneficence

This study aimed to provide the greater good for the respondents, in that their individual perspectives regarding their learning needs would be put into consideration for oncoming CPD activities, thus contributing to an improvement in their ability to provide high quality and safe care to their patients. Possibly, the implementation of the study recommendations may improve their motivation, job satisfaction and caring self-efficacy.

3.5.3.4 Justice/fairness

All respondents were afforded equal opportunity to participate or not in the research, without rewards or privileges assigned favourably to those who did.

3.6 SUMMARY

This chapter discussed the researched methodology as employed in this research along with supporting literature justifying the choice of techniques and methods used. The research design, methods, instrument and procedures followed while carrying out the study were well outlined. The discussion further provides an insight into the data collection and management. Finally, the chapter concludes with a section on how the researcher paid attention to the ethical considerations as required in nursing research. The next chapter focuses on the

collected data, the presenting of the findings, and the way the data were analysed to answer the research question.

CHAPTER FOUR

DATA ANALYSIS AND FINDINGS

4.1 INTRODUCTION

Drawing from the chapter on research methodology, this chapter turns to a detailed presentation and analysis of the survey data. Within a population of N=110 nurses working in the neonatal and paediatric units of six hospitals in the Kingdom of Eswatini, a census survey sampling technique was employed yielding a response rate of 94% (n=103). The objectives of this study were to (1) determine the learning needs of nurses working in the neonatal and paediatric units of the public hospitals of Eswatini, and (2) compare these learning needs between the two cadres of nurses in the kingdom, i.e. the registered nurses (RNs) and qualified nursing assistants (QNAs).

4.2 APPROACH TO ANALYSIS

Section I of the data collection tool comprised the nurse respondents' demographic characteristics and was summarised through frequency distribution tables, bar and pie charts. The second section (II) of the questionnaire required computation of the difference between the scores of the two indicators of interest, i.e. perceived importance (indicator A) and perceived efficacy (indicator B). Each indicator was rated along a scale of 1 to 7, for predetermined items (learning needs) inherent to the tool by the respondent nurses. Finally, the last section of the tool (section III) was analysed through a summative content analysis of open-ended list of respondents' responses.

The demographic variables (section I) were summarised through frequency tables and graphs to display majority over minority occurring values. For this purpose, percentages (%) and numerical values (n) were stated. For the second section of the questionnaire, analysis involved summarising the scores to get totals for each indicator. These totals were further reduced into the two categories of respondents in the sample, i.e. registered nurses (RNs) and the qualified nursing assistants (QNAs). Next, the measures of central tendency were reported - the median and interquartile range for all variables with skewed data distribution

and the mean and standard deviation for normally distributed data. The assumption for normality of the distribution was tested through the Shapiro Wilk test for normality and confirmed with distribution graphs. For comparing normally distributed variable data, the independent student's t-test was used for variables with two categories, and the ANOVA test was used where there were more categories. The Mann-Witney U test was utilised to compare skewed variable data distribution. To ascertain the proportion of RNs over QNAs, cross tabulation tests were also performed.

4.3 RESPONSE RATE

From the total population (N=110; that is 86 RegisteredNnurses and 24 Qualified Nursing Assistants) targeted for participation in the survey for learning needs, there were 105 returned questionnaires. Two of these were discarded for being incomplete, as some of the ratings on the two indicators were left unattended, leaving 103 questionnaires eligible for analysis, a response rate of 94%. Of the 103 analysed questionnaires, the majority (65%; n =67) were collected from nurses working in the paediatric units, 6.8% (n=7) from the neonatal wards and 28.2% (n=29) from the special care neonatal units. There were no questionnaires collected by the QNAs from the neonatal and special care neonatal units.

Table 4.1 Frequency distribution of questionnaires returned by department (excluding the incomplete questionnaires)

Department	**Frequency (n)**			**Percentage (%)**		
	RNs	QNAs	**Total**	RNs	QNAs	**Total**
Paediatric Units	47	20	**67**	45.6	19.4	**65**
Neonatal Units	7	0	**7**	6.8	0	**6.8**
Special care neonatal Unit	29	0	**29**	28.2	0	**28.2**
Total	**83**	**20**	**103**	**80.6**	**19.4**	**100**

4.4 RESULTS

4.4.1 Section I: Demographic profile of respondents

Demographic variables refer to the specific attributes collected to describe the sample (Grove, Burns and Gray, 2013), and in this study, these included eight items: age, sex, job title, level of education, academic majors, clinical area of deployment, duration of service and membership to a professional nursing organisation. The frequency distribution of these attributes is summarised in **Table 4.2**.

Table 4.2 Demographic characteristics of respondents

Item	Category	Frequency (n)	Percentage %)
1.	Age		
	<25	9	8.7
	25-29	31	30.1
	30-34	32	31.1
	35-39	8	7.8
	40+	23	22.3
2.	Sex		
	Male	24	23.3
	Female	79	76.7
3.	Job title		
	Paediatric Nurse Specialist	1	0.97
	Advanced Midwife	2	1.94
	Registered Nurse	80	77.67
	Qualified Nursing Assistant	20	19.42
4.	Academic majors		
	Paediatric Nursing	1	0.9
	Medical & Surgical Nursing	13	11.4
	Community health Nursing	19	16.7
	Mental Health Nursing	12	10.5
	Midwifery	69	60.5
5.	Level of education		
	Certificate in Nursing Assistant	20	19.42
	Diploma in general Nursing	6	5.83
	Post-basic certificate in Nursing	37	35.92
	Bachelor's degree in Nursing	37	35.92
	Master's degree in Nursing	3	2.91
6.	Clinical area		
	Paediatric ward	67	65
	Neonatal Unit	7	6.8
	Special Care Neonatal Unit	29	28.2

7.	Work duration		
	<12 months	39	37.9
	12-24 months	27	26.2
	25 months-5 years	21	20.4
	>5 years	16	15.5
8.	Professional Membership		
	Yes	67	65.0
	No	36	35.0

The variable age was analysed both as a continuous and categorical variable, on the first instance to ascertain its distribution physiognomy to determine which descriptive statistics to run and report. The age of respondents ranged from 22 to 54 years. The variable distribution was positively skewed (skewness 0.85) with a median (IQR) age 30 (28-38).

The analysis of the variable age by categories, as shown in **Figure 4.1**, showed that a significant proportion of the respondents fell within the age groups 25 to 29 and 30 to 34, with a marginal difference, representing 30.1% (n=31) and 31.7% (n= 32) respectively. The age group 40+ years recorded 22.3% (n=23), the <25 years category accounted for 8.7% (n=9) and age group 35 to 39 had the least nurses, 7.8% (n=8) respondents.

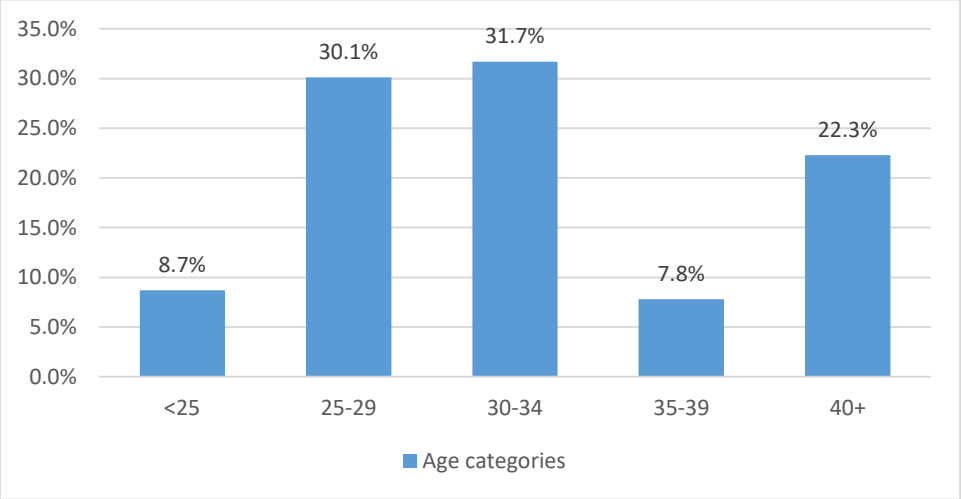

Figure 4.1 The age profile of nurse respondents

Of the total sample, the majority (77 %: n=79) of nurses were female and 23% (n=24) male, indicating that more than half of the respondents were female nurses. Therefore, based on these findings, it can be extrapolated that the overall nurse population in the paediatric acute care settings of Eswatini hospitals was predominantly female **(Table 4.2 & Figure 4.2).**

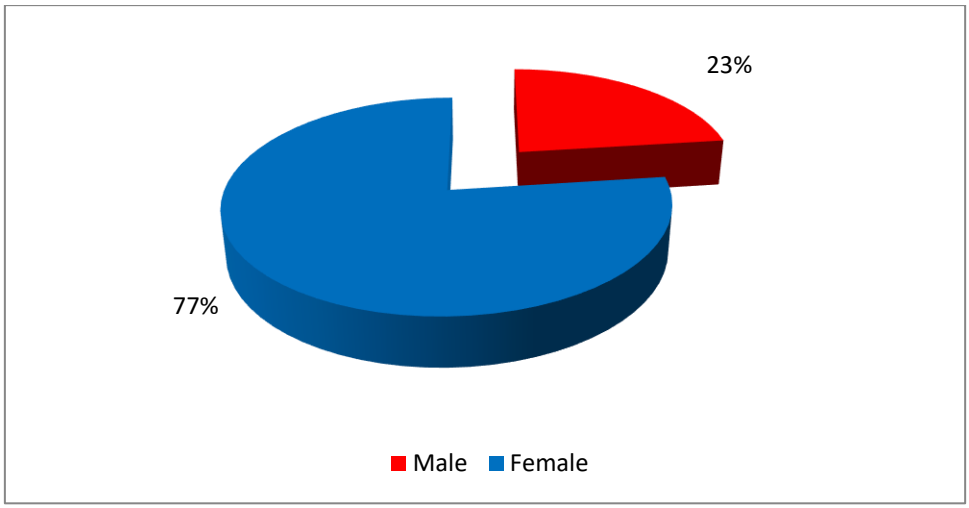

Figure 4.2: The proportion of respondents by sex

A majority (80.6%; n=83) of the respondents were registered nurses (RNs), 19.4% (n=20) qualified nursing assistants (QNAs). Among the registered nurses were n=3 (2,9%) who held were advanced Practice nurses (APNs). As shown in **Table 4.2**, amongst the registered nurses are three categories of nurses demarcated by qualification: Bachelor's degrees (35.9%; n=37), post-diploma certificates (35.9%; n=37), a diploma n=6 (5.8%). Among the APNs 1.9% (n=2) were advanced midwives and 1% (n=1) paediatric nurse specialists. However, in the Swati context, the term 'registered nurse' is used to refer to all professional nurses, excluding the QNAs. Thus, the terms APNs and advanced midwives were used in this analysis for purposes of distinction only. In the comparison analysis, the APNs were included into the registered nurse category. The QNAs possessed a certificate in nursing assistant. The distribution of the qualifications of the nurses surveyed is summarised in **Figure 4.3.**

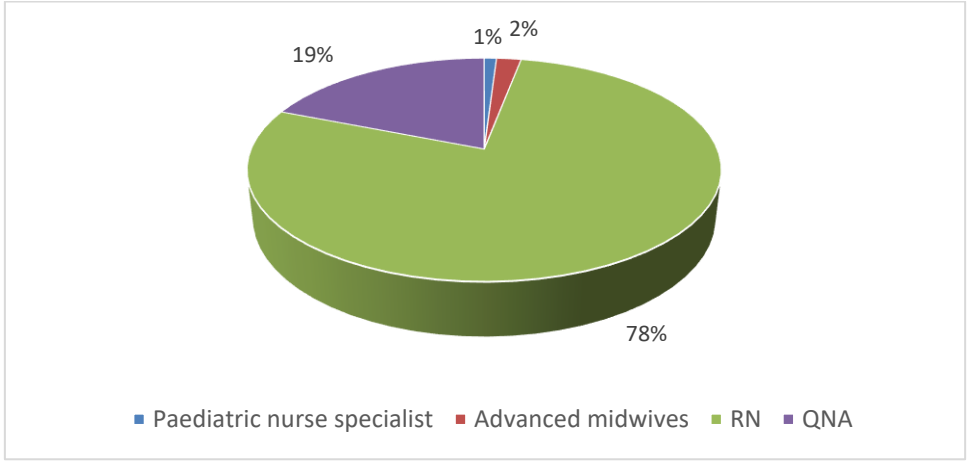

Figure 4.3 The proportion of respondents by qualification

A majority (60.5%; n=69) of the nurses had majored in midwifery science. Only 16.7% (n=19) of nurses had community health nursing. Medical and surgical nursing and mental health majors were held by 11.4% (n=13) and 10.5% (n=12) of nurses respectively. The subject with the least number of nurses having majored was paediatric nursing, accounting for only 0.97% (n=1) of the sample. Furthermore, depending on the qualification held, some respondents had more than one academic major as summarised in **Table 4.3**. About 23.3% (n=24) had two majors, 3.9% (n=4) had three majors and 1% (n=1) had four majors; in total, 74.8% (n=77) nurses had majored in at least one academic subject as part of their qualification. There were no academic majors identified under the qualified nursing assistant qualification

Table 4.3 The proportion of academic majors held by respondents

No. Academic majors	**Qualification n (%)**			**Total n (%)**
	Bachelors	**Post-diploma certificate**	**Master's degree**	
1	8 (7.8)	37 (35.9)	3 (2.9)	**48 (46.6**)
2	24 (23.3)			24 (23.3)
3	4 (3.8)			4 (3.8)
4	1 (0.97)			1 (0.97)
Total	37 (35.9)	37 (35.9)	3 (2.9)	**77 (74.8)**

Most nurses (37.9%, n=39) reported having worked in their respective departments for less than 12 months, followed by 26.2% (n=27) of nurses who had worked for 12 to 24 months, those who had worked for 25 to 60 months accounted for 20.4% (n=21) and lastly, the longest serving nurses (> 60 months) accounted for only 15.5% (n=16). **Figure 4.4** displays this information.

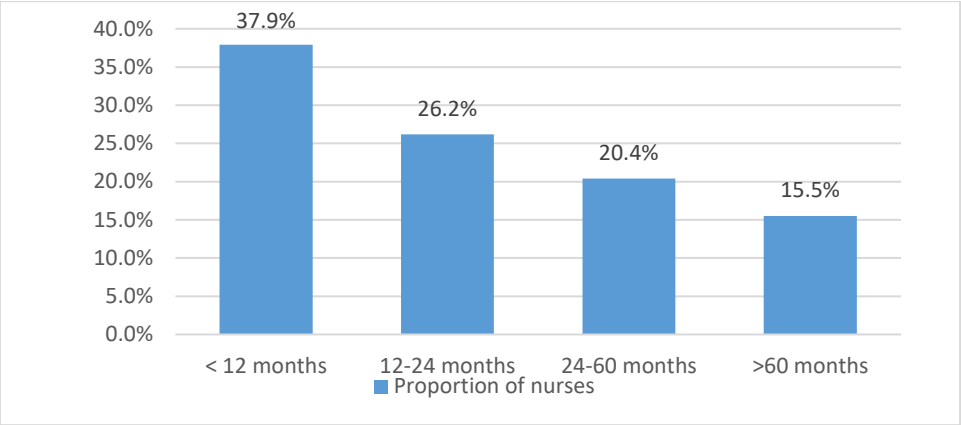

Figure 4.4 the proportions of respondents' duration of work

When analysing the nurse respondents' affiliation to a professional organisation in the Kingdom, the Eswatini Democratic Nurses Union, it was found that a majority (65%, n=67) were members of the organisation. **Figure 4.5** displays the nurse's organisational membership status.

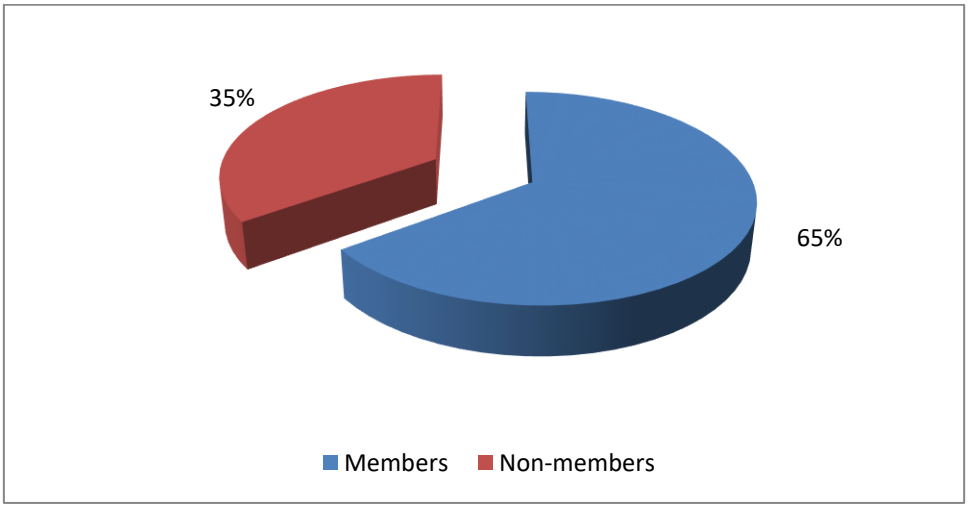

Figure 4.5 The proportions of the respondents' membership status to SWADNU

4.4.2 Section B: The learning needs of all respondents (both RNs and QNAs) obtained from the predetermined activities

Section II of the survey questionnaire consisted of 36 activities, where respondents rated themselves for each activity on a 7-point scale on two indicators, namely A and B. Indicator A was concerned with how important or critical a task was to the respondent's job (perceived

importance) and B investigated how well the respondents perceived themselves to be currently performing (perceived self-efficacy).

4.4.2.1 The total scores of perceived importance and self-efficacy (indicators A and B)

To summarise the total scores (**Table 4.4**) obtained from the respondents' self-rating, the individual scores were computed (summated) via the Stata 14.2 statistical software. The expected highest score for each indicator would have been n=25 956 (7x36x103), and the lowest would be n= 3708 (1x36x103). In this sample, the total scores for perceived importance was n= 23 639 (91.1% of the highest possible) and n=18 168 (70% of the highest possible) for perceived self-efficacy. From this data, it can be extrapolated that the respondents perceived these predetermined tasks as highly important in their job and that their self-efficacy was above average.

Table 4.4 The total of scores per activity for each indicator (**Importance=A and self-efficacy=B)**

Learning needs (Predetermined Activities)	**Indicator scores**	
	A	**B**
1. Establishing a therapeutic relationship with patients and their families	683	533
2. Documenting all relevant information and care rendered to the paediatric patient appropriately	679	552
3. Critically evaluating published research	565	332
4. Appraising your own performance	598	421
5. Determining a child's needs related to growth and development	672	510
6. Providing care that is evidence-based	677	516
7. Applying research results to your own practice	621	407
8. Discussing individual children with a paediatrician	674	532
9. Involving the child and family in the plan of care	667	517
10. Treating the paediatric illnesses/ailments/surgical conditions	669	512
11. Introducing new ideas at work	634	445
12. Accessing relevant literature for your clinical work	641	434
13. Providing feedback to colleagues	657	484
14. Giving information to patients and/or carers	669	518
15. Undertaking comprehensive clinical examinations of a paediatric patient	673	486
16. Showing colleagues and/or students how to do things	684	554
17. Planning and organising individualised patient care	673	533
18. Evaluating patients' psychological and social needs	661	476
19. Organising your own time effectively	671	524

20. Using technical equipment, including computers	588	402
21. Providing supportive care to dying children	666	498
22. Undertaking health promotion activities	645	477
23. Making do with limited resources	627	512
24. Assessing patients' clinical needs	683	550
25. Interpreting and using the results from clinical investigations of identified patients	653	501
26. Enabling patients to make informed choices about their care	664	517
27. Working as a member of a team	671	600
28. Undertaking administrative activities	581	442
29. Obtaining a full history of the patient's health/sickness	669	565
30. Personally, coping with change in the health service	638	517
31. Identifying changes in a child's signs and symptoms and intervene in emergent situations	674	560
32. Maintaining privacy and confidentiality in nurse/child relationships	682	573
33. Serving as a child advocate	685	574
34. Participating in activities to manage a child's pain	686	520
35. Administer medication using age-appropriate guidelines	689	581
36. Evaluate a child for signs and symptoms of abuse	670	493
Total	**23639**	**18168**

To report the measures of central tendency on the two indicators, the Shapiro Wilk test of normality of distribution was conducted to ascertain which measure to report. For perceived importance, the data was skewed, with a median (IQR) 236 (220-246). For the respondents' perceived self-efficacy, the data was normally distributed with a mean SD 176.4 ± (33.0). **Table 4.5** summarises this process.

Table 4.5 The measures of central tendency for the two indicators (**Perceived importance=A** and **Perceived self-efficacy=B**)

Variable	**Frequency (n)**	**Shapiro Wilk test result**	**Mean SD**	**Median (IQR)**
A-Perceived importance	23 639	P < 0.01	229.5 (20.3)	**236 (220-246)**
B-Perceived self-efficacy	18 168	P > 0.05	**176.4 ±(33.0)**	180 (153-200)

Of the total perceived importance score of 23 639, n=19 157 (81%) was reported by the RN group and n=4 482 (19%) was reported by the QNA group, whereas of the total perceived

self-efficacy of 18 168, the RN group reported n=14 834 (82%) while the QNA group reported a total of n=3 334 (18%). The statistics suggest that the number of ratings from the RNs were higher on both indicators than the QNAs. While this is true, the huge difference (76%; n=63) between the sample groups must be taken into consideration, therefore statistical tests to determine whether there were significant differences between the two nursing groups were necessary and are reported towards the end.

Next, the average scores from the two indicators were analysed to determine the central measures of each respondent. From this process, it was observed that the data distribution characteristics of the variables followed the same pattern as that of the total scores. The statistical reporting similar to the previous one then was adopted, as shown in **Table 4.6**.

Table 4.6 The reported measures of frequency and central tendency for the averaged nurses' scores on perceived importance and self-efficacy

Variable	**Average (n)**	**Shapiro Wilk test result**	**Mean SD**	**Median (IQR)**
Perceived importance	656.6	P < 0.01	6.4± 0.6	**6.6 (6.1-6.8)**
Perceived self-efficacy	504.7	P > 0.05	**4.9± 0.9**	5.0 (4.3-5.6)

From this data, it was observed that the median (IQR) perceived importance scores for each nurse was 6.6 (6.1-6.8), and the mean SD for each respondents' perceived self-efficacy was 4.9± 0.9. From the data presented in tables 4.5 and 4.6, it can be extrapolated that an individual nurse respondent' perceived importance of the predetermined activities was higher than their perception of their self-efficacy on performance of the tasks.

4.4.2.2 The difference between perceived importance (Indicator A) and perceived self-efficacy (indicator B)

The totals of self-rated score per activity in indicator B were subtracted from the totals score per activity in indicator A to give a *calculated variable*, (Indicator A ∑=23 639) - (Indicator B∑=18 168) =**5 471.** This calculated variable, indicates the gap between the respondents perception of importance their self-efficacy of the predetermined activities of the research instrument. Of note, this difference was very low, constituting only 25% of the highest

possible difference score (n=22 248). According to the tool manual, the bigger the difference between the two indicator scores, the greater the learning need, i.e. a higher score for perceived importance against a lower score for perceived performance (e.g. 7-1) constitutes a high learning need (Hicks and Hennessey, 2011). **Table 4.7** shows the difference scores obtained for each predetermined activity. Therefore, from these result it can be extrapolated that the sampled nurses, as a collective did not regard these predetermined activities as higher learning needs.

Table 4.7 The learning needs scores (the difference/gap) obtained from subtracting indicator B from A.

Pre-determined activity	**A-B**	**Mean**
1. Establishing a therapeutic relationship with patients and their families	150	1.5
2. Documenting all relevant information and care rendered to the paediatric patient appropriately	127	1.2
3. Critically evaluating published research	233	2.3
4. Appraising your own performance	177	1.7
5. Determining a child's needs related to growth and development	162	1.6
6. Providing care that is evidence-based	161	1.6
7. Applying research results to your own practice	214	2.1
8. Discussing individual children with a paediatrician	142	1.4
9. Involving the child and family in the plan of care	150	1.5
10. Treating the paediatric illnesses/ailments/surgical conditions	157	1.5
11. Introducing new ideas at work	189	1.8
12. Accessing relevant literature for your clinical work	207	2.0
13. Providing feedback to colleagues	173	1.7
14. Giving information to patients and/or carers	151	1.5
15. Undertaking comprehensive clinical examinations of a paediatric patient	187	1.8
16. Showing colleagues and/or students how to do things	130	1.3
17. Planning and organising individualised patient care	140	1.4
18. Evaluating patients' psychological and social needs	185	1.8
19. Organising your own time effectively	147	1.4
20. Using technical equipment, including computers	186	1.8
21. Providing supportive care to dying children	168	1.6
22. Undertaking health promotion activities	168	1.6
23. Making do with limited resources	115	1.1
24. Assessing patients' clinical needs	133	1.3
25. Interpreting and using the results from clinical investigations of identified patients	152	1.5
26. Enabling patients to make informed choices about their care	147	1.4
27. Working as a member of a team	71	0.7

28. Undertaking administrative activities	139	1.3
29. Obtaining a full history of the patient's health/sickness	104	1.0
30. Personally, coping with change in the health service	121	1.2
31. Identifying changes in a child's signs and symptoms and intervene in emergent situations	114	1.1
32. Maintaining privacy and confidentiality in nurse/child relationships	109	1.1
33. Serving as a child advocate	111	1.1
34. Participating in activities to manage a child's pain	166	1.6
35. Administer medication using age-appropriate guidelines	108	1.0
36. Evaluate a child for signs and symptoms of abuse	177	1.7
Total	**5471**	**53.2**

When running the statistical properties of the calculated variable, i.e. the difference scores, the distribution of the variable was observed to be normal, thus the mean SD of 1.48 ± 0.85 was reported. Now, the researcher sought to determine what would be considered as higher learning needs from average learning needs. To do this, a criterion was defined around the mean as follows:

i) All scores < 1.5: 'lower learning needs'
ii) All scores > 1.5: 'higher learning needs'

The output from this categorisation yielded 15 higher learning needs from the 36 predetermined activities of the research tool. These were: critically evaluating published research (M+2.3±1.9); applying research results to your own practice (M=2.1±1.7), accessing relevant literature for your clinical work (M=2.0±1.8); undertaking comprehensive clinical examinations of a paediatric patient (M=1.8±1.6); evaluating patients' psychological and social needs (M=1.8±1.6); using technical equipment, including computers (M=1.8±1.9); introducing new ideas at work (M=1.8±1.8); appraising your own performance (M=1.7±1.7); providing feedback to colleagues (M=1.7±1.6); evaluating a child for signs and symptoms of abuse (M=1.7±1.7); participating in activities to manage a child's pain (M=1.6±1.5); determining a child's needs related to growth and development (M=1.6±1.5); providing care that is evidence-based (M=1.6±1.5); providing supportive care to dying children (M=1.6±1.6); undertaking health promotion activities (M=1.6±1.7). **Table 4.8** shows the results of this process whereby the means for each indicator (A and B) are presented for each predetermined activity, and further shows the calculated variable (A-B) obtained from the subtraction.

Table 4.8 The 15 higher learning needs of nurses in the KoE

Predetermined activity	Average A	Average B	A-B	SD
1. Critically evaluating published research	5.5	3.2	**2.3**	**1.9**
2. Applying research results to your own practice	6.0	4.0	**2.1**	**1.7**
3. Accessing relevant literature for your clinical work	6.2	4.2	**2.0**	**1.8**
4. Undertaking comprehensive clinical examinations of a paediatric patient	6.5	4.7	**1.8**	**1.6**
5. Evaluating patients' psychological and social needs	6.4	4.6	**1.8**	**1.6**
6. Using technical equipment, including computers	5.7	3.9	**1.8**	**1.9**
7. Introducing new ideas at work	6.2	4.3	**1.8**	**1.6**
8. Appraising your own performance	5.8	4.1	**1.7**	**1.6**
9. Providing feedback to colleagues	6.4	4.7	**1.7**	**1.6**
10. Evaluate a child for signs and symptoms of abuse	6.5	4.8	**1.7**	**1.7**
11. Determining a child's needs related to growth and development	6.5	5.0	**1.6**	**1.5**
12. Participating in activities to manage a child's pain	6.7	5.0	**1.6**	**1.5**
13. Providing care that is evidence-based	6.6	5.0	**1.6**	**1.6**
14. Providing supportive care to dying children	6.5	4.8	**1.6**	**1.7**
15. Undertaking health promotion activities	6.3	4.6	**1.6**	**1.7**

Next, the proportion of nurses having reported higher learning needs against those reporting lower learning needs was calculated. To this end, a simple cross tabulation was performed on Stata v 14.3. This process showed that nurses who reported higher learning needs were in a minority (46%; n=47) compared to those reporting lower learning needs (54%; n=56). Of the nurses who reported higher learning needs, 35% (n=36) were RNS and 10.7% (n= 11) were QNAs. On the category of lower learning needs, RNs accounted for 45.6% (n= 47) yet 8.7% (n=9) were QNAs.

It can be extrapolated from these findings that the majority (54%, n=56) of nurses in this sample considered the predetermined activities as lower priority learning needs. However, the proportion of nurses who reported these activities to be of a higher priority learning need

can also be considered significant, as it was almost 50% of the sample. **Figure 4.6** shows the overall proportions of nurses who reported higher learning needs against those who did not.

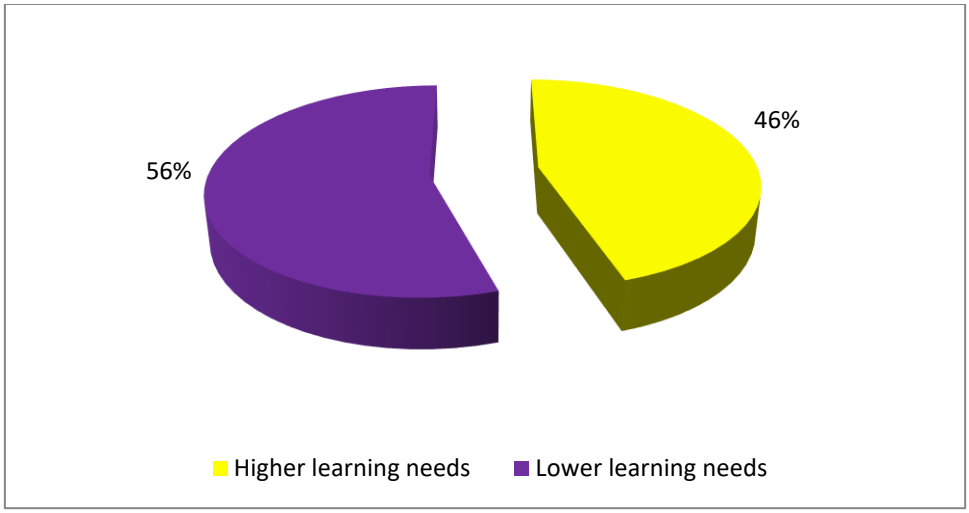

Figure 4.6 the proportion nurses with higher and lower level learning needs

However, due to the unequal size of respondents per nursing qualification group, the proportion of nurses reporting either higher or lower learning needs was further tabulated as a percentage of the total number of the nurses in the qualification group to which they belonged. This process showed that per sample group, RNs with higher learning needs were 43% (n=36) of the total RNs sample, while QNAs with higher learning needs represented 55% (n=11). Therefore, based solely on this statistic, it can be extrapolated that per sample group, there were more (55%, n=11) QNAs with higher learning needs compared to RNs (43%, n=36). **Table 4.9** shows these statistics in bold highlight**.** However, due to possible differences in the independent group sample mean learning needs, this claim may be misleading, therefore statistical tests to check whether there were differences in the mean learning needs of the two sample groups were conducted, showing no statistically significant difference, meaning these findings were valid.

Table 4.9 The proportions of nurses and the category of learning needs

Category	RN			QNA			Total	
	n	%/RN group	%/overall Sample	n	%/QNA group	%/overall Sample	N	%
Higher learning needs	36	**43**	35	11	**55**	10.7	47	46
Lower learning needs	47	57	45.6	9	45	8.7	56	54
Total	**83**	**100**	**80.6**	**20**	**100**	**19.4**	**103**	**100**

4.4.2.3 Learning needs by H-HTNA super-categories

In **Table 4.10**, the mean nurses' learning needs were summarised according to the five super categories provided by the H-HTNA manual to which each of the items belonged. The super-ordinate categories included research/audit (items 3, 6, 7, 12), communication/teamwork (items 1, 8, 9, 13, 14, 27), clinical tasks (items 5,10,15,17, 18, 21, 22, 24, 25, 26, 29, 31, 32, 33, 34, 35, 36), administration (items 2, 20, 28) and management/supervisory task (items 4, 11, 16, 19, 23, 30). The number of items under each super category was uneven therefore, the average scores of items falling within a super category were obtained as shown below.

Table 4.10 The distribution of respondents' higher learning needs per H-HTNA super category

Super-category	Number of items/category	Average learning need score
Research/Audit	4	1.9
Administration	3	1.3
Management/Supervisory	6	1.4
Clinical tasks	17	1.4
Communication/Teamwork	6	1.4
Total	**36**	**7.3**

On average, the research/audit super category was proportionately larger than all the other categories, with a mean M=1.9 (26%). The clinical tasks, communication and teamwork and management/supervisory categories were next, with an equal mean M=1.4 (19%). The administration super category was the least recorded learning need category with a mean M=1.3 (18%). Therefore, from this data, it can be extrapolated that a large number of the nurses learning needs were related to research/audit super category.

4.4.3 Specific Learning Needs of the nurse respondents

The last section (section III) of the survey questionnaire afforded the respondents an option to list additional needs for which they would like to receive further training in order to eliminate the bias that comes with closed-ended questionnaires, which impose preconceived categories to the respondents. Whereas this section of the questionnaire adds a qualitative aspect to the research, the section was analysed quantitatively since the responses provided by the respondents were short and merely a listing, hence could not be analysed through qualitative methodologies.

As stated earlier, the summative content analysis method described by Hiseh and Shannon (2007) was employed, whereby similar learning needs were grouped into a category and a frequency count of the learning needs falling under the category was made, using the 'countif' function in Microsoft excel. This analysis method has been used in a similar study Holloway et al. (2018) in an LNA study in New Zealand. In this study, the analysis of the sample responses yielded 16 categories as summarised in **Table 4.11**.

Table 4.11 A frequency distribution of the specific learning Registered Nurses

Specific learning needs	**QNAs**		**RNs**		**Total**	
	n	**%**	**n**	**%**	**n**	**%**
Integrated management of childhood illnesses	11	11	39	38	50	49
Nursing care of critically ill children	4	4	40	39	44	43
Handling paediatric emergencies including assisting in or undertaking resuscitation	3	3	41	40	44	43
Comprehensive assessment and triage of children	9	9	26	25	35	34
Undertaking health promotion	1	1	32	31	33	32
Patient advocacy and collaboration	1	1	31	30	32	31

Undertaking administrative duties	0	0	25	24	25	24
Performance of clinical skills	3	3	22	21	25	24
Calculating intravenous fluid requirements	3	3	19	18	22	21
Infection prevention and control practices	2	2	18	17	20	19
Safe medication practices	3	3	15	15	18	17
Nursing care of a child with a chronic disease or the dying patient	1	1	12	12	13	13
Providing family centred care	1	1	10	10	11	11
Documentation and Communication skills	2	2	6	6	8	8
Providing care that is evidence based	1	1	6	6	7	7
Pain management and palliative care	0	0	5	5	5	5

The results in **Table 4.11** show that the integrated management of childhood illnesses (IMCI) was reported by almost 50% (n=50) of the sample. Out of this total, the QNAs reporting this learning need accounted for 11% (N=11) whereas the RNs accounted for 38% (n=39). The top two illnesses mentioned under this category were malnutrition and tuberculosis in children. Next on the reported learning needs was the nursing care of critically ill neonates and children reported by only 4% (n=4) of the QNA group and 39% (n=40) of the RN group amking43% (n=44) of the total sample. The management of children with shock, diabetic ketoacidosis, head injury and severe burns were highlighted mainly by the registered nurses. Handling paediatric emergencies including assisting in or undertaking resuscitation was also reported by a same proportion of respondents.

The comprehensive assessment of children, either to identify abuse or deterioration in clinical condition was reported by 34% (n=35%) of the respondents), comprising of 9 (9%) of the QNAs and 25% (n=26) of the RNs. Undertaking health promotion activities including promoting breastfeeding, immunisations and child appropriate counselling for HIV and other conditions as a learning need was reported by 32% (n=33) inclusive of 1% (n=1) of the QNAs and 31% (n=32) of RNs.

Thirty one (31) percent (n=32) of the respondents reported patient advocacy and collaboration as their learning need. Again, QNAs reporting this as a learning need were only 1% (n=1) yet RNs reporting this need formed 30% (n=31) of the sample. Undertaking

administrative duties was reported by 24% (n=25) RNs and no QNA has this reported as a learning need. The performance of clinical skills such as suturing, commencing and monitoring blood transfusion intravenous therapy and transfusion, gastric lavage and aspiration were reported by 24% (n=25 of the respondents. Twenty one percent of the sample (n=22) reported selves as having learning needs related to calculation of fluid requirements of a neonate and child. These included both intravenous and oral fluids.

The remaining learning needs reported by the respondents, were reported by 20% and less of the sample (n=21) reported various learning needs related to infection prevention and control practices (19%, n=20), safe medication practices (17%, n=18), nursing care of a child with a chronic disease or the dying patient (13%, n=13), documentation and communication skills (11%, n=11), providing family centred care (9%, n=9), Providing care that is evidence based (7%. n=7) and lastly pain management and palliative care reported by 5% (n=5) of the sample.

4.4.4 Comparative Statistics

In line with the second objective of this research, comparative statistics to compare the learning needs of nurses were undertaken; this part included performing comparisons between the RNs and QNAs on the variables such as perceived importance, efficacy and the learning needs. It was also investigated if there were differences between the nurses learning needs and the demographic variables. For this purpose, we used statistical tests depending on the data distribution.

4.4.4.1 Comparing the nurses' perceived importance of predetermined activities between the RNs and QNAs

To determine whether there were statistically significant differences in the perceived importance and self-efficacy scores between the two qualifications of nurses in the study, a Mann-Witney U test (M-W-U) was performed to compare each predetermined activity score between the RNs and QNAs. This test, non-parametric in nature, was preferred because the assumption of normality of the variables was not met (Shapiro Wilk normality test = $P < 0.05$). The null hypothesis - there is no difference in the median learning activities between

the RNs and QNAs - was tested against the alternate hypothesis - there is a difference in the median learning needs between the RNs and QNAs.

This operation showed only that 17% (n=6) of the 36 activities rated for perceived importance were statistically significant. These results as shown in **Table 4.12** were discussing individual children with a paediatrician (p 0.05), treating the paediatric illnesses/ailments/surgical conditions (p 0.01), evaluating patients' psychological and social needs (p 0.01), undertaking administrative activities (p 0.01), personally, coping with change in the health service (p 0.03), identifying changes in a child's signs and symptoms and intervening in emergent situations ($p < 0.01$). On these activities, the null hypothesis was rejected in favour of the alternate hypothesis. Thus, it was concluded that there were statistically significant differences in the six predetermined activities between the RNs and the QNAs.

Table 4.12 Results of a M-W-U test for differences in the respondents perceived importance (**Indicator A**) between the RNs and QNAs

Activity	Median	IQR	M-W-U *P*
1. Establishing a therapeutic relationship with patients and their families	7	7-7	0.6011
2. Documenting all relevant information and care rendered to the paediatric patient appropriately	7	7-7	0.7096
3. Critically evaluating published research	6	5-7	0.8593
4. Appraising your own performance	6	5-7	0.1548
5. Determining a child's needs related to growth and development	7	6-7	0.8079
6. Providing care that is evidence-based	7	6-7	0.4105
7. Applying research results to your own practice	7	6-7	0.3620
8. Discussing individual children with a paediatrician	7	6-7	**0.0505***
9. Involving the child and family in the plan of care	6	5-7	0.5655
10. Treating the paediatric illnesses/ailments/surgical conditions	6	5-7	**0.0120***
11. Introducing new ideas at work	6	6-7	0.4137
12. Accessing relevant literature for your clinical work	6	5-7	0.1789
13. Providing feedback to colleagues	6	5-7	0.1452
14. Giving information to patients and/or carers	6	5-7	0.9320
15. Undertaking comprehensive clinical examinations of a paediatric patient	6	5-7	0.3400
16. Showing colleagues and/or students how to do things	7	7-7	0.8635
1. Planning and organising individualised patient care	6	5-7	0.2182
2. Evaluating patients' psychological and social needs	6	5-7	**0.0140***

3. Organising your own time effectively	6	5-7	0.9876
4. Using technical equipment, including computers	6	5-7	0.8407
5. Providing supportive care to dying children	6	5-7	0.7479
6. Undertaking health promotion activities	6	5-7	0.1747
7. Making do with limited resources	6	5-7	0.9927
8. Assessing patients' clinical needs	7	7-7	0.7220
9. Interpreting and using the results from clinical investigations of identified patients	7	6-7	0.3541
10. Enabling patients to make informed choices about their care	6	5-7	0.2811
11. Working as a member of a team	6	5-7	0.6541
12. Undertaking administrative activities	6	5-7	**0.0195***
13. Obtaining a full history of the patient's health/sickness	7	7-7	0.6267
14. Personally, coping with change in the health service	7	6-7	**0.0350***
15. Identifying changes in a child's signs and symptoms and intervene in emergent situations	6	5-7	**0.0048***
16. Maintaining privacy and confidentiality in nurse/child relationships	7	7-7	0.0734
17. Serving as a child advocate	7	7-7	0.1883
18. Participating in activities to manage a child's pain	7	7-7	0.7335
19. Administer medication using age-appropriate guidelines	7	7-7	0.7815*
20. Evaluate a child for signs and symptoms of abuse	6	5-7	0.6387

Key: **Bold***=statistical significance

4.4.4.2 Comparing the nurses' perception of their self-efficacy on the performance of the predetermined activities

The comparison of the nurses perceived self-efficacy between the RNs and QNAs showed there were 25% (n=9) statistically significant results. These activities included applying research results to own practice (P 0.01), discussing individual children with a paediatrician ($p < 0.01$), treating the paediatric illnesses/ailments/surgical conditions (p 0.02), undertaking comprehensive clinical examinations of a paediatric patient ($p < 0.01$), planning and organising individualised patient care ($p < 0.01$), undertaking administrative activities (p 0.02), personally coping with change in the health service (p 0.01), identifying changes in a child's signs and symptoms and intervening in emergent situations ($p < 0.01$) and administering medication using age-appropriate guidelines (P 0.03). These results are presented in **Table 4.13**.

Therefore, for the nurses' perceived self-efficacy, the null hypothesis was rejected in favour of the alternate hypothesis for the nine activities that were found to have a statistically significant difference between the two groups of nurses, meaning there was a statistically significant difference between the two cadres of nurses' perceived self-efficacy on the nine above listed predetermined activities.

Table 4.13 The results of a Mann Witney U test to determine any difference in the self-efficacy (Indicator B) between RNs and QNAs

Activity	Median	IQR	M-W-U *P*
1. Establishing a therapeutic relationship with patients and their families	5	4-6	0.5159
2. Documenting all relevant information and care rendered to the paediatric patient appropriately	5	5-6	0.0811
3. Critically evaluating published research	3	2-5	0.4995
4. Appraising your own performance	4	3-5	0.1394
5. Determining a child's needs related to growth and development	5	4-6	0.4847
6. Providing care that is evidence-based	5	5-6	0.2964
7. Applying research results to your own practice	4	3-5	**0.0137***
8. Discussing individual children with a paediatrician	6	4-6	**0.0038***
9. Involving the child and family in the plan of care	5	4-6	0.8014
10. Treating the paediatric illnesses/ailments/surgical conditions	5	4-6	**0.0209***
11. Introducing new ideas at work	5	3-6	0.2489
12. Accessing relevant literature for your clinical work	5	3-5	0.4112
13. Providing feedback to colleagues	5	3-6	0.0884
14. Giving information to patients and/or carers	5	4-6	0.2450
15. Undertaking comprehensive clinical examinations of a paediatric patient	5	4-6	**0.0019***
16. Showing colleagues and/or students how to do things	6	5-7	0.0963
17. Planning and organising individualised patient care	5	4-6	**0.0090***
18. Evaluating patients' psychological and social needs	5	4-6	0.1409
19. Organising your own time effectively	5	4-6	0.3194
20. Using technical equipment, including computers	4	2-5	0.1224
21. Providing supportive care to dying children	5	3-6	0.3389
22. Undertaking health promotion activities	5	3-6	0.5475
23. Making do with limited resources	5	4-6	0.5143
24. Assessing patients' clinical needs	6	5-7	0.6345
25. Interpreting and using the results from clinical investigations of identified patients	5	4-6	0.1309
26. Enabling patients to make informed choices about their care	5	4-6	0.5606
27. Working as a member of a team	5	4-6	0.3846

28. Undertaking administrative activities	4	3-6	**0.0257***
29. Obtaining a full history of the patient's health/sickness	6	4-7	0.4226
30. Personally, coping with change in the health service	5	4-6	**0.0108***
31. Identifying changes in a child's signs and symptoms and intervene in emergent situations	6	5-7	**0.0056**
32. Maintaining privacy and confidentiality in nurse/child relationships	6	5-7	0.1051
33. Serving as a child advocate	6	5-7	0.1543
34. Participating in activities to manage a child's pain	5	4-6	0.6828
35. Administer medication using age-appropriate guidelines	6	5-7	**0.0295***
36. Evaluate a child for signs and symptoms of abuse	5	4-6	0.6219

Key: **Bold***= statistical significance

4.4.4.3 A comparison of the learning needs between RNs and QNAs

To compare the nurses' learning needs scores (the calculated variable) to the nursing groups, a two-tailed, independent student's t-test was performed because of its normal distribution property. The null hypothesis for this test was there is no difference in the mean learning needs between the RNs and QNAs against the alternative hypothesis that there was a difference in the mean learning needs between the two nursing qualifications. The test was set at alpha 0.05, and the result showed a mean difference of M -0.22 and p 0.29; based on the results ($P > 0.05$), the null hypothesis failed to be rejected, as there was insufficient evidence to conclude there was a statistically significant difference in the mean learning needs scores between the RNs and the QNAs.

Following these findings, we sought to determine if the same results would be obtained if each of the predetermined activities were compared by nursing qualification. However, in this case, the individual activities data was skewed, necessitating the use of a non parametric test. The Mann-Witney U test was used to test the the null hypothesis: the median individul activity scores of RNs is equal to the median individual activity scores of QNAs, against the alternate hypothesis that the median individul activity scores of RNs is not equal to the median inmdividual activity scores of QNAs. The results of this operation showed that only 4 (11%) of the 36 activities were statistically significant (**Table 4.14).**

These activitities were undertaking comprehensive clinical examinations of a paediatric patient (p 0.03), using technical equipment including computers (p 0.01), maintaining privacy and confidentiality ($p < 0.01$) and adminsitering medication using age appropriate

guidelines ($p < 0.01$). Therefore, for these activities the null hypothesis was rejected in favour of the alternate hypothesis. It was concluded that there were statistically significant differences in the four above named learning needs between the RNs and the QNAs. **Table 4.14** presents the information in the results of the comparison test.

Table 4.14 The results of the comparison between the individual learning needs by nurses' qualification.

Activity	Median	IQR	M-W-U *P*
1. Establishing a therapeutic relationship with patients and their families	1	0-2	0.5216
2. Documenting all relevant information and care rendered to the paediatric patient appropriately	1	0-2	0.0619
3. Critically evaluating published research	2	1-4	0.3476
4. Appraising your own performance	1	0-3	0.6849
5. Determining a child's needs related to growth and development	1	0-2	0.4742
6. Providing care that is evidence-based	1	1-2	0.5821
7. Applying research results to your own practice	2	1-3	0.1045
8. Discussing individual children with a paediatrician	1	0-2	0.0821
9. Involving the child and family in the plan of care	1	0-2	0.7200
10. Treating the paediatric illnesses/ailments/surgical conditions	1	0-2	0.1224
11. Introducing new ideas at work	2	0-3	0.3632
12. Accessing relevant literature for your clinical work	2	0-3	0.8547
13. Providing feedback to colleagues	1	0-3	0.2740
14. Giving information to patients and/or carers	1	0-2	0.3987
15. Undertaking comprehensive clinical examinations of a paediatric patient	2	0-3	**0.0318***
16. Showing colleagues and/or students how to do things	1	0-2	0.0583
17. Planning and organising individualised patient care	1	0-2	0.0550
18. Evaluating patients' psychological and social needs	2	0-3	0.4758
19. Organising your own time effectively	1	0-2	0.3420
20. Using technical equipment, including computers	1	0-3	**0.0103***
21. Providing supportive care to dying children	1	0-2	0.3834
22. Undertaking health promotion activities	1	0-3	0.9315
23. Making do with limited resources	1	0-2	0.0759
24. Assessing patients' clinical needs	1	0-2	0.5869
25. Interpreting and using the results from clinical investigations of identified patients	1	0-2	0.9656
26. Enabling patients to make informed choices about their care	1	0-2	0.8828
27. Working as a member of a team	0	0-1	0.2742
28. Undertaking administrative activities	1	0-2	0.8116

29. Obtaining a full history of the patient's health/sickness	0	0-1	0.6572
30. Personally, coping with change in the health service	1	0-2	0.8959
31. Identifying changes in a child's signs and symptoms and intervene in emergent situations	1	0-2	0.0524
32. Maintaining privacy and confidentiality in nurse/child relationships	1	0-2	**0.0060***
33. Serving as a child advocate	1	0-2	0.2673
34. Participating in activities to manage a child's pain	1	0-2	0.6135
35. Administering medication using age-appropriate guidelines	0	0-2	**0.0071***
36. Evaluating a child for signs and symptoms of abuse	1	0-3	0.6504

Key**: Bold*=**statistical significance

4.4.4.4 A comparison of the nurses learning needs by demographic variables

When comparing the published association of nurses' demographic characteristics, such as gender and experience (Carlisle, Bhanugopan and Fish, 2011; Mahfod, 2014; Kol, İlaslan and Turkay, 2017), it was also investigated whether an association of the nurses learning needs to the demographic variables could be found in this study. We ran the student's t test and One-way ANOVA tests to investigate if there were any statistical differences in the respondents' learning needs in relation to their demographic characteristics. Set at alpha 0.05, the null hypothesis, there is no statistically significant difference in the mean learning needs between the nurses' demographic characteristics, was tested against the alternate hypothesis that there was a statistically significant difference in the mean learning needs between the nurses' demographic variables.

The results of all the tests performed showed no statistical significance ($P > 0.05$) on all the nurses' demographic variables. The rejection of the null hypotheses failed because there was insufficient evidence to conclude there were statistically significant differences in the learning needs between the nurses' demographic characteristics. **Table 4.15** shows the results of the statistical tests.

Table 4.15 A comparison between the nurses' learning needs and demographic variables

Demographic variable	**Test performed**	**P value**
Age categories <25		

25-29 30-34 35-39 40+	One-way ANOVA	0.8259
Sex Male Female	Independent Student's t test	0.5716
Academic major Yes No	Independent Student's t test	0.3013
Educational level Certificate Diploma Post-diploma Bachelors Masters	One-way ANOVA	0.909
Department Paediatric ward Neonatal unit Special care neonatal unit	One-way ANOVA	0.467
Work duration <12 months 12-24 months 25-60 months >60 months	One-way ANOVA	0.994
Professional membership Yes No	Independent Student's t test	0.7981

4.5 SUMMARY

This chapter outlined the research findings and the statistical analysis conducted derive meaning from the raw data. The demographic characteristics of the sample and the learning needs under study are presented and analysed, including an examination of their relationship. Descriptive and comparative statistics were used to analyse and present the data to meet the research objectives.

The next chapter presents a detailed discussion linking the research problem, question and objectives to the key findings and positions the current findings to earlier research.

CHAPTER FIVE

DISCUSSION, LIMITATIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter presents the key findings of the study in relation to the research question and objectives. The aim of the chapter is to show how these results fit into existing literature or theory (Browner, 2012). The discussion flows along the findings elicited in each section of the survey questionnaire, with the intention of making the study's contribution to the body of knowledge known. Towards the end, the study's limitations and implications are outlined.

5.2 DISCUSSION OF FINDINGS

The aim of this study was to identify, describe and compare the learning needs of nurses working in the paediatric and neonatal units of the six public hospitals in the Kingdom of Eswatini from their perspective, in order to establish a basis from which tailored CPD activities can be planned and implemented.

5.2.1 Demographic Characteristics of the Study Population

The majority (80.6%; n=83) of nurses in the sample were registered nurses and 19.4% (n=20) were QNAs. Among the registered nurses, there was only 1% (n=1) of nurses with a post-graduate qualification in paediatric nursing. A similar comparison of nurses by qualification was reported by (Markaki et al. (2009) in Greece, except that in her study, there were no nurses with post-graduate qualifications and the comparison was between the registered nurses and license practice nurses (LPNs. The extremely low 1% (n=1) of paediatric trained nurses found in the present study is similar to the 1% (n=2) found by Brestovacki and Milutinovic (2011) in a Serbian LNA study. Generally, the under-representation, of nurses with post-graduate qualifications in paediatric settings has been reported in literature (Coetzee, Britton and Clow, 2005; Hewitt-Taylor, 2005; Kol, İlaslan and Turkay, 2017; Hudson et al., 2018). Contrary to this, Holloway, Arcus and Orsborn (2018) found that the majority (66%) of respondents in her study had a post-graduate nursing qualification.

However, their study was conducted in a primary healthcare (PHC) setting and not a paediatric acute care setting, making this a biased comparison.

A significantly large proportion (35.9%; n=37) of nurses had Bachelor's degree and post-diploma certificate qualifications and very few (5.8%; n=6) had a diploma in general nursing qualification. These findings support those of Vallières-noël et al. (2016), but are contrary to the studies of Reddy and Vatsa (2014) and Dyson et al. (2009), where a significant majority (82% and 80% respectively) of the nurses were diploma holders. The proportion of the nurses' qualifications in this study may be associated with the Eswatini nurse training capacity, i.e. there is only one NEI producing less than fifty (50) nursing assistants per annum against four NEIs training registered nurses with an annual output of about four hundred (400) nurses per annum. There has been no training in paediatric nursing in the country thus far.

The age profiles of the respondents in this study were comparable to the age distribution of respondents in a Greek LNA study by Markaki (2009). In these studies, the majority (>50%) of nurses were within the age range 25 and 34 years, with younger nurses representing the least by 8.7% (n=9). However, in Saeki et al. (2006)'s LNA study, the least represented age category was that of the older nurses (50+), represented by 8.9% (n=143), against an excess of 36.4% (n=587) recorded amongst the younger nurses (<29 years). From this, it can be learnt that there is no specific age trend in paediatric acute care units.

This study further recorded a significantly large number of female (77%) over male (23%) nurses. These findings compare similarly to both older and recent LNA studies (Tyler and Hicks, 2001; Markaki et al., 2009; Stanley and Pollard, 2013; Vallières-noël et al., 2016; Abuusaad, Mostafa & Ibraheim, 2017). It was therefore concluded that nurses in the paediatric settings are predominantly female. However, this finding, is not confined to paediatric settings as it has also been reported in adult nursing settings (Hudson et al., 2018), combined with the general knowledge of nursing as a female dominated profession.

The majority (65%; n=67) of nurse respondents were working in the paediatric units against n=36 nurses in the neonatal units. These findings could not be compared to any study amongst those reviewed therefore a discussion limited to the Swati context was made. These findings could have been affected by the infrastructural shortfalls observed during the data

collected period, i.e. in some hospitals the neonatal units are housed within the main paediatric or maternity wards, making the neonatal unit invisible. In this case, the paediatric unit nurses or midwives would be assigned to the neonatal units on a rotational basis. Thus, there was no clear demarcation of the nursing staff working in the neonatal units in these hospitals. However, the use of census sampling ensured that no eligible nurse (whether RN or QNA) was left out of this investigation.

On the duration of work variable, a considerably high number (38%; n=39) of nurses had worked for less than 12 months in their respective departments. The nurses with the longest duration of work, i.e. more than 5 years, only accounted for 15.5% (n=16) of the sample. These findings were congruent to those of Kol, İlaslan and Turkay, (2017) where nurses with the least number of years of experience were in the majority (55%; n=116) against the 8.1% (n=17) reported for nurses with the longest duration of work. Conversely, Hudson et al. (2018) reported dissimilar findings, as the majority (77%; n=480) was formed by nurses having worked the longest duration. Therefore, based on this disagreement between the current findings and those of Hudson, further studies for the possible reasons may be of interest in the future.

The majority (65%; n=67) of nurses were affiliates of the Nurses' Union of Eswatini. These findings are similar to those of Stanley and Pollard (2013) and Kol, İlaslan and Turkay (2017), where the majority (55% and 88% respectively) of the respondents were members of a professional organisation. However, not many LNA studies reviewed as part of this study had included this demographic characteristic in their investigation, making the comparisons somewhat limited. Similar to the other demographic variables, there was no statistically significant difference in the learning needs between the RNs and QNAs.

Contrary to the assertion by Carlisle, Bhanugopan and Fish (2011) that demographic variables such as age, gender, marital status and professional affiliation have been associated with learning needs, there was no statistically significant difference in the learning needs of nurses and the demographic variables in this study. Therefore, it was concluded that the learning needs identified through the systematic LNA were not associated with any demographic variable, including the nurses' qualification. This was surprising, especially considering the QNA are trained at a much lower level to that of the registered nurses. The nursing assistants' many years of experience working in the paediatric acute care settings

for the nursing assistants may be the reason why they did not show significantly higher learning needs as would be expected from their limited training. In this instance the specific learning needs of the QNAs may be missed, making the open ended section of the H-HTNA very useful when investigating professionals with varying levels of education.

5.2.2 The Nurses' Perception of Importance of the Predetermined Tasks

The nurses rated the pre-determined activities in the tool as very important (M= 6.4 ±0.6), where the highest mean to be attained could be M=7. There was no study using the H-HTNA in the paediatric and neonatal settings from the studies reviewed, to which these findings could be directly compared. However, the results compared similarly to the older LNA studies by Tyler and Hicks (2001) and Hennessy et al. (2006) and recent works by Holloway, Arcus and Orsborn (2018), where the nurses rated the learning activities as strongly important, with mean scores ranging from 5.4 to 6.8.

These findings also confirmed the assertion by Hennessy and Hicks (2011), the developers of the tool, that the H-HTNA survey questionnaire is an opaque psychometric tool having the ability to identify the learning needs of nurses across multiples settings, including developing countries. Of note however, the most important activities (those above the mean) in this study, were different from those obtained by Holloway, Arcus and Orsborn (2018) or of any earlier study by Hennessy and Hicks (2011). This can be attributed to the differences in population characteristics including variances in education and clinical exposure. The modifications implemented by each researcher as permitted by the tool manual to meet contextual needs of the population may also be responsible for this different findings. This therefore means that recommendations to address the unique needs of this population's needs cannot be benchmarked on those of earlier studies.

The statistically significant differences in the perceived importance observed in this study were comparable to the findings of a series of studies conducted by Hennessy et al. (2006), where they made the comparisons between different qualifications of midwives in Indonesia. However, no study in the paediatric acute care settings was available in the literature. Therefore when comparing this study to those of Hennessy et al. (2006), the researcher can claim that some degree of differences will be observed when two cadres of nurses with

unequal levels of training are compared by their perception of importance of the H-HTNA predetermined tasks.

5.2.3 Nurses Perceptions of their Self-efficacy on the Predetermined Tasks

Similar to the LNA study by Holloway, Arcus and Orsborn (2018), the level of respondents perceived efficacy on the performance of the predetermined H_HTNA activities varied between activities but was overall lower (M=4.9) than the perceived importance score (M=6.4). Furthermore, in all the LNA studies reviewed, both in paediatric settings and elsewhere, arrived to the same finding i.e. that the perceived self-efficacy score, was less than the perceived importance score.

There was a statistically significant difference in the respondents' perceived self-efficacy on selected activities between the RNs and the QNAs. A statistically significant correlation between the nurses' self-efficacy on pain management and years of paediatric experience, has been reported in a study by Stanley and Pollard (2013). However, in the current study, the statistically significant difference was observed on different activities to that of Stanley and Pollard (2013). Still, it can be claimed from these findings that in an LNA study comparing nurses with unequal qualifications, there is a probability of differences in the nurses' perception of self-efficacy.

5.2.4 Nurses' Learning Needs on Predetermined Activities

The comparison of the nurses' perceived importance of the activities to their perceived self-efficacy led to the identification of fifteen (15) top priority learning needs, the majority of which were related the research and audit super category. Therefore, it was concluded that research and evidence-based practice was the main learning need of respondents in this study. These activities included critically evaluating published research (M+2.3±1.9), applying research results to your own practice (M=2.1±1.7) and accessing relevant literature for your clinical work (M=2.0±1.8). These findings compared similarly to those reported by Hicks and Fide (2003), and there were statistically significant differences between the groups of nurses compared.

On the contrary, the findings from Holloway, Arcus and Orsborn (2018), the majority of activities fell within the clinical tasks super category with research reported as the least need. However, even Holloway's study 'accessing relevant literature," which was one of the activities within the research category, was amongst the top ten identified learning needs. Therefore, there is some evidence to the effect that research is a potent learning need amongst nurses.

In this study, this finding was not surprising, as the majority of nurses did not have a post-graduate qualification, therefore had limited knowledge in research. However, the lack of statistically significant difference in research as a learning need between the RNs and QNAs in this study is surprising given the unequal levels of education and scope of these two nursing cadres. Nevertheless, it can be concluded that both RNs and QNAs need additional training towards research.

5.2.5 The Specific Learning Needs of Nurses

The significant number of responses obtained from the open-ended section of the H-HTNA questionnaire provided evidence that there were more CPD training requirements of the sample. Although none of the reported learning needs was reported by a majority (>50%), some of the learning needs were almost at 50%. These learning needs as self-listed by the respondents give a personal and individualised picture of the sample's actual learning needs. Therefore, regardless of the statistics, addressing these needs may directly bridge the existing nurses' knowledge gaps.

Of note a significant number of the top learning needs were clinically oriented, including the integrated management of childhood illnesses (IMCI) was reported by almost 49% (n=50) of the sample. The other significantly reported learning needs were the nursing care of critically ill neonates and children reported by 43% (n=44) of the total sample.. Handling paediatric emergencies including assisting in or undertaking resuscitation was also reported by a same proportion of respondents. Of note, these learning needs were more clinically oriented and were similar to those found in the LNA studies of Holloway, Arcus and Orsborn (2018) and Dyson et al. (2009), where clinical tasks was the highly reported theme. It can be concluded from these findings that the respondents in this research needed to be capacitated on the clinical management of the various diseases and acute states in the paediatric units.

Interestingly, this section of the tool elicited learning needs different from those identified in section II of the questionnaire. Research and evidence based practice reported as the highest learning need in section II of the questionnaire was reported by a minority of the nurses (9.7%, n=10) under the last section of the tool. The reason(s) for this disparity is not known and may require a follow up investigation probably utilising different methodology, such as a qualitative enquiry. However it can be assumed that whereas these nurses regarded themselves as lacking in research on one hand, they did not perceive it as necessary or imperative in their clinical area.

Another interesting observation from this section was the majority of QNAs (55%, n=11) reporting the management of childhood illnesses and the pain management and palliative care as a non-learning need. The earlier finding could be attributed to their limited training and the nationwide shortfall in providing IMCI trainings to nurses working with children in the country. This shortfall, as captured in the background information was highlighted by the 2015 Child Health Report of the Ministry of health in the Kingdom of Eswatini. In any case this finding is not worrisome because QNAs do not work in isolation but under the supervision of the RNs at every shift to assist them with in their difficulties. The report of pain management as a non-learning need, on the other hand is worrisome, due to widespread literature suggesting that neonatal and children's pain is under managed in most cases (Wilson-Smith, 2011; Khoza, 2014). It may also be an issue of further research to investigate whether this finding is as a result of competency, or ignorance on the importance of pain management in children.

5.3 SUMMARY OF THE STUDY

This descriptive and comparative study utilised a self-administered learning needs assessment questionnaire to identify the learning needs of nurses working in the public sector hospitals in Eswatini. The purpose of the study was to identify, describe and compare the learning needs of RNs and QNAs nurses working in the paediatric acute care units in Eswatini. The data obtained was organised and analysed through descriptive and to some extent inferential statistics which were computed by means of Stata version 14.3.

The reliability of the study was ensured through several ways. First, the sampling technique, being a census in nature, avoided sampling errors and the bias in selecting respondents. Secondly, the data was presented to a biomedical statistician for recommendations on appropriate statistical reporting. The research instrument was presented to a panel of academic experts who critiqued and refined it to precision, and further pre-tested on 10% (n=11) of nurses before the actual data collection to ensure its validity in the Swati context. The comparative characteristic of the study findings to other studies conducted using the tool also confirms its reliability.

The H-HTNA questionnaire used to survey the nurses learning needs produced 15 higher learning needs out of 36 pre-determined learning needs inherent to the research tool. These learning needs belonged to five super categories, with the research/audit super category emerging the leading category where most nurses learning needs were reported. The other super categories, namely communication/teamwork, clinical tasks, administration, and management/supervision, were reported at an approximate equal frequency.

Furthermore, 18 categories of specific learning needs were elicited by the open-ended section of the tool. The majority of these learning needs found in this section was mainly related to clinical skills and the clinical care of children and neonates. A comparison of the perceived importance of predetermined activities and the nurses' perceived self-efficacy showed statistically significant differences on some (and not all) the predetermined activities. Judging from the findings obtained, the researcher is of the view that the study achieved its purpose.

5.4 LIMITATIONS

The researcher acknowledges the following limitations in this study:

- This study was conducted in the public hospitals of the country, limiting its generalisability to these settings, having missed valuable data that could be obtained from nurses in the private sector.
- Secondly, the sampling technique used targeted the whole population and therefore does not cater for the potential of non-response bias in the study design. Thus, the

study validity may be viewed negatively in the case where the response rate is not 100%, as was the case in this research.

- Thirdly, due to the stringent instructions regarding the permitted modifications that could be effected to the tool without invalidating its psychometric properties, it was not possible to insert relevant nursing activities from the Swati paediatric context.
- Lastly, some of the predetermined activities such as evaluating research in the H-HTNA tool (which were not possible to remove due to the above stated reason) were beyond the scope of the QNA comparison group meaning the results related to these activities must be taken with caution.

5.5 RECOMMENDATIONS

5.5.1 Clinical practice

This study has strong recommendations for clinical practice in the context of paediatric acute care nursing in Eswatini. The findings in this study suggest the nurses working in the paediatric acute care settings have significant knowledge deficits related to the direct care of children. Thus, this study recommends there should be tailored in-service training in such topics as IMCI, management and care of hospitalised critically and chronically ill paediatric patients, and the handling of paediatric emergency resuscitation as a matter of priority. The study findings further call for the strengthening of research and evidence-based practice in the paediatric clinical settings. Nurses working in paediatric acute care units must be encouraged and supported to report their learning needs on a regular basis. There must be a clear system outlining how individual nurses can log their learning needs for tailored planning for CPD.

5.5.2 Nursing Education

The findings elicited from this study also have implications for undergraduate nursing education in Eswatini. Whereas the topics raised as a need for further training in this study are addressed as CPD topics, most of these topics fall under educational material ought to have been covered in the undergraduate nursing curriculum. Therefore, these findings elucidate the need for strengthening pre-registration nursing education on paediatric topics

and skills in preparation for practice. The development of specific paediatric nursing competencies to guide curriculum precincts is of importance in this context. Ultimately, the introduction of advanced paediatric nursing specialist programmes in the Eswatini NEIs, to increase the nurses' knowledge base, and exposure to sick children during training, may be the permanent solution to the knowledge deficits demonstrated in this research.

5.5.3 Further Research

Judging from the controversy between research and clinical needs, as reported by nurses in this study, a qualitative study to understand the reason for this disparity is recommended. Furthermore, since this study was conducted in the public sector hospitals, a similar study in the private sector would assist in creating a complete picture of the learning needs of nurses in the entire country. The development of a local LNA research tool to survey the learning needs of nurses in Eswatini, taking into account the unique context of the paediatric morbidity, patient acuity and socioeconomic factors will help to compile a more accurate data to inform CPD for nurses working in the paediatric acute care settings.

The implementation of more LNA studies in the paediatric context, including the management of specific conditions such diarrhoea, the ever-persistent child killer in Eswatini, is necessary.

5.6 CONCLUSION

It is most probable that every Swati nurse, working in paediatric acute care settings, will be faced with multifaceted challenges in their workplace requiring astute knowledge and critical thinking for swift decision making at times. For these nurses to be able to meet the demands brought in by these challenges, their nursing knowledge and skills competence must be current and adequate. Thus, this study has highlighted the knowledge gaps that must be bridged through a tailored CPD programme to achieve this cause. Overall, this study emphasised the importance of LNAs as part of a larger initiative to effective CPD programmes in the paediatric and neonatal settings in Eswatini, as a precursor to quality care that will contribute positively to efforts aimed at curbing the high under 5 years mortality in the kingdom of Eswatini.

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APPENDIX A

LEARNING NEEDS ASSESSMENT FOR CONTINOUS PROFESSIONAL DEVELOPMENT IN PAEDIATRIC ACUTE CARE NURSING: THE ESWATINI PROJECT

DATA COLLECTION INSTRUMENT

Before reading the instructions, please complete the following*

SECTION I: DEMOGRAPHIC DATA

Please tick (√) the appropriate response except the first question

1.	What is your age? (in years)	
2.	What is your gender?	✓
	Female	
	Male	
3.	What is your job title?	
	Paediatric Nurse Specialist	
	Registered Nurse	
	Qualified Nursing Assistant	
	Other (Specify below)	
4.	What are your academic majors? (Tick √ all that apply)	
	None	
	Paediatric Nursing	
	Medical & Surgical Nursing	
	Community health Nursing	
	Mental Health Nursing	
	Midwifery	
	Other (please specify)	

Continue on the next page

5.	What is your highest level of education?	
	Certificate in Nursing Assistant	
	Diploma in General Nursing	
	Post-diploma certificate	
	Bachelor's degree	
	Master's degree	
	Doctorate in nursing	
	Other (Please specify)	
6.	What is your clinical area of work?	
	General Paediatric Unit	
	Special Care Neonatal Unit	
	Neonatal unit	
	Neonatal intensive Care Unit	
	Other (Please specify)	
7.	How long have you worked in the area mentioned in 6 above?	
	< 12 months	
	12-24 months	
	25-60 months	
	> 5 years	
8.	Are you a member of a professional organisation?	
	Yes	
	No	
	If yes specify	

PLEASE PROCEED TO SECTION II

SECTION 11: TRAINING NEEDS

Instructions:

Please answer all the questions as honestly as possible to enable us to compile a complete picture of your training requirements. Please read and follow instructions for completion carefully.

In order to perform your job effectively you need relevant skills. You will see listed below a range of skilled activities, many of which you undertake in performing your job. Look at each of these activities and then on a scale of 1 to 7 rate each one by writing the appropriate **numbe**r in the box. This questionnaire comprises two sections (A and B) that are to do with your training needs. The first rating (A) is concerned with **how important** the activity is to the successful performance of your job; the second rating (B) is concerned with **how well you currently perform** that activity. An example has been provided.

B: How well do you consider that you currently **perform** this activity? **Rating of 1 to 7 (not well = 1; very well = 7)**

1 → **7**

Not well — very well

A: How i**mportant** is this activity to the successful performance of your job? **Rating of 1 to 7 (not at all important = 1; very important = 7)**

1 → **7**

Not at all Important — very important

A B

Example: calculating the fluid requirements of a neonate	**6**	**2**

Activity	**A**	**B**

1. Establishing a therapeutic relationship with patients and their families		
2. Documenting all relevant information and care rendered to the paediatric patient appropriately.		
3. Critically evaluating published research		
4. Appraising your own performance		
5. Determining a child's needs related to growth and development		
6. Providing care that is evidence-based		
7. Applying research results to your own practice		
8. Discussing individual children with a paediatrician		
9. Involving the child and family in the plan of care		
10. Treating the paediatric illnesses/ailments/surgical conditions		
11. Introducing new ideas at work		
12. Accessing relevant literature for your clinical work		
13. Providing feedback to colleagues		
14. Giving information to patients and/or carers		
15. Undertaking comprehensive clinical examinations of a paediatric patient		
16. Showing colleagues and/or students how to do things		
17. Planning and organising an individual patient's care		
18. Evaluating patients' psychological and social needs		
19. Organising your own time effectively		
20. Using technical equipment, including computers		
21. Providing supportive care to dying children		
22. Undertaking health promotion activities		
23. Making do with limited resources		
24. Assessing patients' clinical needs		
25. Interpreting and using the results from clinical investigations of identified patients		
26. Enabling patients to make informed choices about their care		
27. Working as a member of a team		
28. Undertaking administrative activities		
29. Obtaining a full history of the patient's health/sickness		
30. Personally coping with change in the health service		
31. Identifying changes in a child's signs and symptoms and intervene in emergent situations		
32. Maintaining privacy and confidentiality in nurse/child relationships		
33. Serving as a child advocate		
34. Participating in activities to manage a child's pain		
35. Administer medication using age-appropriate guidelines		
36. Evaluate a child for signs and symptoms of abuse		

PLEASE PROCEED TO SECTION III

SECTION 111: SPECIFIC TRAINING NEEDS

Please specify the areas of your job in which you would like to receive further training or instruction. List these in the order of importance, e.g. 1. Most important and 10 as the least important

1……..

2……..

3……..

4……..

5……..

6……..

7……..

8……..

9……..

10……

Thank you very much for your participation

APPENDIX B

LEARNING NEEDS ASSESSMENT FOR CONTINOUS PROFESSIONAL DEVELOPMENT IN PAEDIATRIC ACUTE CARE NURSING: THE ESWATINI PROJECT

INFORMATION SHEET

Dear Colleague,

My name is Nkosingiphile Gcina Shongwe, and I am currently a student at the University of the Witwatersrand studying towards a Master of Science degree in Nursing (Child). I would like to invite you to take part in a research study I am conducting in partial fulfillment of the degree.

The study titled "*Learning needs assessment for continuous professional development in pediatric acute care nursing: The Eswatini project*" seeks to assess the learning needs of nurses working in the paediatric units of the public hospitals of Eswatini, in order to inform in-service and CPD planners of what you need covered in your future CPD trainings. In light of this, you have been selected as a potential participant in this research as you meet the inclusion criteria.

If you choose to participate, you will be requested to complete a self-administered training needs questionnaire, which will not take more than 20 minutes of your time. The questionnaire is composed of three parts. Section I is to give demographic information about yourself. Section II will be to rate yourself on 36 activities/item on a scale of 1 (lowest) to 7 (highest) on two categories namely: how important (**A**) is the activity or item and how well do you consider yourself to be performing the activity (**B**). In the last section (section C), you will be required to list additional topics on which you need further training; these topics will have to be listed in the order of priority.

An informed consent form will be attached to the questionnaire for your indication of willingness to participate, however consent will be implied by your completion and return of this questionnaire. This research will ensure you remain anonymous throughout the study and participation is voluntary and you may withdraw at any time should you so wish. While you will not derive direct benefits from this study, you will be entitled to the findings or a copy of the study from myself, or access in whichever repository it will be made available.

Be assured that the appropriate research authorities at the University of the Witwatersrand, the Ministry of Health and the hospital administration have approved the study and its procedures.

Thank you for your interest and for considering participation in this valuable study. For any queries, please call: Cell # +26876224273 or +27648449387

Yours Sincerely,
Nkosingiphile Gcina Shongwe (MSc student)

APPENDIX C

LEARNING NEEDS ASSESSMENT FOR CONTINOUS PROFESSIONAL DEVELOPMENT IN PAEDIATRIC ACUTE CARE NURSING: THE ESWATINI PROJECT

CONSENT FORM

Nkosingiphile Gcina Shongwe
MSc Nursing ©- University of the Witwatersrand
Student #: 1487283

I, _____ agree to participate in the research study assessing the learning needs of paediatric nurses working in the paediatric units of the public hospitals in Swaziland.

I have read and understood the information sheet. I also understand that my participation is voluntary and I can withdraw at any given time without any consequences.

I agree to answer the questions honestly. All the information will remain confidential and my name will not appear anywhere on the questionnaire or the research report.

Date:_____ Signature_____

Witness_____

APPENDIX D

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

R14/49 Mr N Shongwe

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
CLEARANCE CERTIFICATE NO. M180448

NAME: (Principal Investigator)	Mr N Shongwe
DEPARTMENT:	School of Therapeutic Sciences Department of Nursing Education Medical School University
PROJECT TITLE:	Learning needs assesment for continous professional development in paediatric acute care nursing: the Swaziland project
DATE CONSIDERED:	04/05/2018
DECISION:	Approved unconditionally
CONDITIONS:	
SUPERVISOR:	Ms S Khoza
APPROVED BY:	Dr CB Penny, Chairperson, HREC (Medical)
DATE OF APPROVAL:	10/09/2018

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Research Office Secretary on 3rd floor, Phillip V Tobias Building, Parktown, University of the Witwatersrand, Johannesburg.

I/We fully understand the conditions under which I am/we are authorised to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated from the research protocol as approved, I/we undertake to resubmit to the Committee. **I agree to submit a yearly progress report**. When a funder requires annual re-certification, the application date will be one year after the date of the meeting when the study was initially reviewed. In this case, the study was initially reviewed in **April** and will therefore reports and re-certification will be due early in the month of **April** each year. Unreported changes to the application may invalidate the clearance given by the HREC (Medical).

Principal Investigator Signature _____ Date _____

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

APPENDIX E

PERMISSION TO CONDUCT THE STUDY FROM THE NHRRB OF ESWATINI

Research Protocol clearance certificate

Type of review	Expedited	X		Full Board		
Name of Organization	**STUDENT(MASTERS)**					
Title of study	**Learning needs assessment for professional development in paediatric acute care nursing: The Swaziland Project**					
Protocol version	**1.0**					
Nature of protocol	New	X		Amendment		Renewal
List of study sites	**The paediatric units of four (4) government hospitals namely: Mbabane, Mankayane, Pigg's Peak and Hlathikhulu and two mission hospitals namely: Raleigh Fitkin Memorial and Good Shepherd Mission hospitals**					
Name of Principal Investigator	**NKOSINGPHILE SHONGWE**					
Names of Co- Investigators	**N/A**					
Names of steering committee members in the case of clinical trials	**N/A**					
Names of Data and Safety Committee members in the case of clinical trials	**N/A**					
Level of risk (Tick appropriate box)	Minimal			High		
	X					
Clearance status (Tick appropriate box)	Approved	X		Disapproved		
Clearance validity period	Start date	**27/07/2018**		End date	**27/07/2019**	
Signature of Chairperson						
Date of signing	**27/07/2018**					
Secretariat Contact Details	Name of contact officers		**Ms Simangele Masilela**			
	Email address		kaluamasi@gmail.com			
	Telephone no.		**(00268) 24040865/24044905**			

MINISTRY OF HEALTH
27 JUL 2018
HEALTH RESEARCH REVIEW BOARD
SWAZILAND

APPENDIX F

LETTER OF PERMISSIONS FROM THE PRETEST AND RESEARCH SITES

SWAZILAND **GOVERNMENT**

Dvokolwako Health Centre
P.O. Box 141
MLIBA

27/07/2018

Nkosingiphile G. Shongwe
University of the Witwatersrand
Facility of Health Sciences
Department of Nursing Education
7 York Road
Park town
2193

Dear Sir

RE: PERMISSION TO CONDUCT A PILOT STUDY ON NURSES WORKING IN THE CHILDREN'S WARD

This serves to grant Nkosingiphile G. Shongwe the permission to conduct a pilot study in Dvokolwako Health Centre on nurses working in the children's ward.

The management is grateful that you chose the facility for the study and we are looking forward seeing results of your study.

The management further wishes you success in your studies.

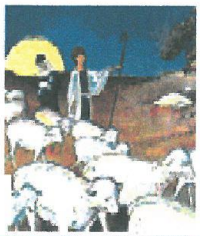
Yours faithfully

MINISTRY OF HEALTH MATRON 2018 P.O. BOX 141 DVOKOLWAKO HEALTH CENTRE

VERONICA MAMBA
MATRON I

GOOD SHEPHERD
MISSION HOSPITAL
P.O. Box 2, Siteki
Swaziland, Southern Africa
Tel: 2343 4133 / 4, 2343 4467
Fax: 2343 4003/2 343 4064

"THE LORD IS MY SHEPHERD"



August 8, 2018

Mr. Nkosingiphile G Shongwe
University of Witwatersrand
Faculty of Health Sciences
Department of Nursing Education
7 York Road
Park Town
2193

Dear Sir

RE: YOUR REQUEST TO CONDUCT A RESEARCH STUDY ON NURSES WORKING IN THE NEONATAL & PAEDIATRIC UNITS.

On behalf of Good Shepherd Mission Hospital & College I am pleased to inform you that the Management has granted you permission to conduct the Research stated above.

Therefore you need to communicate with the Chief Matron in this regard.

Yours Faithfully,

GOOD SHEPHERD HOSPITAL
P.O. BOX 2, SITEKI
TEL: 2343 6672/3
D.C. SIMELANE
HOSPITAL ADMINISTRATOR/CEO

MRS. D.C SIMELANE
HOSPITAL ADMINISTRATOR/CEO
cc- Chief Matron

E-mail: admingsh@realnet.co.sz

SWAZILAND NAZARENE HEALTH INSTITUTIONS (SNHI)
RALEIGH FITKIN MEMORIAL (RFM) HOSPITAL
COMMUNITY HEALTH CLINICS

At Junction of David Hynd Road & Ligusha Street

P.O. Box 14 Manzini 200 Swaziland

06th August 2018

Nkosingiphile G. Shongwe
University of the Witwatersrand
Faculty of Health Sciences
Department of Nursing Education
7 York Rod
Park Town
2193

Dear Sir

RE: AUTHORIZATION TO DO RESEARCH IN THE HOSPITAL

Your request on the fore mentioned endeavors has been duly considered and permission granted on the following conditions please:

a). That confidentiality is strictly observed
b). That the hospital receives a copy of the report on the proposed research.

Sincerely yours

Leonard S. Dlamini (Mr.)
HOSPITAL ADMINISTRATOR

CC: Matron 1
SMO

TELEPHONE: 2508 4000
TELEFAX: 2505 7831
www.snhiswaziland.com
info@snhiswaziland.com
TELEFAX: 2505 5077

Telegrams:
Telex:
Telephone: (+268 2411 8000)
Fax: (+268 2404 6471)

Mbabane Government Hospital
P.O. BOX 8
MBABANE
ESWATINI

THE KINGDOM OF ESWATINI

07 August 2018

Nkosingiphile G. Shongwe

Principal Investigator

University of Witwatersrand

7 York Road

Park town

Dear Nkosingiphile,

RE: LEARNING NEEDS ASSESSMENT FOR PROFESSIONAL DEVELOPMENT IN PAEDIATRIC ACUTE CARE NURSING: THE SWAZILAND PROJECT

This letter serves to inform you that management has granted you permission to undertake the above mentioned study in the facility. You are expected to adhere to all the ethical considerations in the study.

We would very much appreciate if the findings and recommendations of the study can be communicated back to the facility (electronic and hard copy).

Wishing you all the best in your study.

Yours sincerely

Cmkhonta.

MATRON T. MKHONTA (Senior Matron)

FOR: HOSPITAL MANAGEMENT

MBABANE GOVERNMENT HOSPITAL
P.O. BOX 8
MBABANE H100
2018 -08- 07
MATRON 1
SWAZILAND

Telegrams:
Telex:
Telephone: (+268 22178000)
Fax: (+268 2276004)

THE KINGDOM OF ESWATINI

HLATIKULU HOSPITAL
P.O. BOX 20
HLATIKULU
ESWATINI

7 AUGUST 2018

MR. NKOSINGIPHILE G. SHONGWE
UNIVERSITY OF WITWATERSRAND
FACULTY OF HEALTH SCIENCES
DEPARTMENT OF NURSING EDUCATION
7 YORK ROAD
PARKTOWN
2193

Dear Nkosingiphile

RE: PERMISSION TO CONDUCT A RESEARCH STUDY AT OUR HOSPITAL

This serves to inform you that I received your letter requesting to conduct the research at our hospital. You have been granted permission for your study.

Thanking you for choosing our facility to conduct this research and we hope that you will share the results with the Hospital Management, so as to help in the improvement of our service delivery on Neonatal and Paediatric care at our institution.

MINISTRY OF HEALTH
MATRON 1
07 AUG 2018
HLATIKULU HOSPITAL
SWAZILAND

SISANA KHUMALO
SENIOR MATRON

MANKAYANE GOVERNMENT HOSPITAL

P.O. Box 6 Mankayane Tel: 2538 8311/2/3/4/5 Fax: 2538 8353

14 August 2018

Mr. Nkosingiphile Shongwe

University of the Witwatersrand

Faculty of Health Sciences

Department of Nursing Education

7 York Road

Park Town

2193

Dear Sir

RE: REQUEST TO CONDUCT A STUDY ON LEARNING NEEDS OF NURSES WORKING IN THE PAEDIATRIC UNIT OF MANKAYANE GOVERNMENT HOSPITAL

The Mankayane Government Hospital management is granting you permission to conduct a study on the above subject matter. Adherence to professional and ethical code throughout the study will be appreciated.

MANKAYANE GOVERNMENT HOSPITAL ADMINISTRATOR 14 AUG 2018 P.O. BOX 6 MANKAYANE SWAZILAND

Thank you,

PHENDULIWE DLAMINI (Hospital Administrator)

FOR: HOSPITAL MANAGEMENT

PIGG'S PEAK  **HOSPITAL**

GOVERNMENT Pigg's Peak
Swaziland
Tel: 24371111, 24371432, 24373195/6

Shongwe Nkosingiphile

Principal Investigator

University of Witwatersrand

Park Town

South Africa

RE: PERMISSION TO CONDUCT A RESEARCH STUDY ON NURSES WORKING IN THE PAEDIATRIC WARD AT PIGG'S PEAK GOVERNMENT HOSPITAL

This serves to confirm that **Shongwe Nkosingiphile**, a MSc. (Child Nursing) degree student, SNC No. 5005 has been granted permission to conduct a research study titled; **Learning needs assessment for continuous professional development in Paediatric acute care nursing at Pigg's Peak Government hospital.**

Wishing you all the best in your study, hoping to receive a copy of results.

Yours Faithfully

N. MAMBA
MATRON 1



APPENDIX G

APPROVAL FROM POST GRADUATE STUDIES

UNIVERSITY OF THE
WITWATERSRAND,
JOHANNESBURG

Private Bag 3 Wits, 2050
Fax: 027117172119
Tel: 02711 7172076

Reference: Mrs Sandra Benn
E-mail: sandra.benn@wits.ac.za

16 May 2018
Person No: 1487283
PAG

Mr NG Shongwe
Sa 059
Malayinini Siteki
Swaziland
300
Swaziland

Dear Mr Shongwe

Master of Science in Nursing: Approval of Title

We have pleasure in advising that your proposal entitled *Learning needs assessment for continous professional development in paediatric acute care nursing : the Swaziland project* has been approved. Please note that any amendments to this title have to be endorsed by the Faculty's higher degrees committee and formally approved.

Yours sincerely

Mrs Sandra Benn
Faculty Registrar
Faculty of Health Sciences

APPENDIX H

DEBORAH HENNESSY <deb.hennessy@btinternet.com> Thu, 8 Feb, 14:30

to me

Dear Nkosingiphile Shongwe

Thank you for writing to us about your study. We are pleased to learn that you will be using the Hennessy-Hicks Tool for your dissertation study.

Can we assume that you have accessed the Training manual which is freely available on the WHO websitehttp:// www.who.int/workforcealliance/knowledge/HennessyHicks_trainingneedstool.pdf ?

We mention this because you mention modifications of the tool. In the manual you will have noted the maximum number of adaptations you can make to the Hennessy-Hicks Tool i.e: it is permissible to change or remove 25% of the existing items, while adding a further 10 items, without significantly compromising the validity of the questionnaire (Section 5). Any changed or new items would need to be developed in the way outlined in the manual. If you make more adaptations then stated in the manual the tool will change and become a new instrument all together and not the validated Hennessy-Hicks tool. If you do make major modifications you will then need to re-validate the tool your-self according to standard questionnaire development processes.

In your dissemination of knowledge please cite the authors of the questionnaire (Hennessy, D.A. and Hicks, C.M.), the UoB and WHO when publishing work related to this questionnaire.

I was brought up in South Africa and trained as a nurse in the Groote Schuur Group of Hospitals in Cape Town many years ago. Other South African students have used the Hennessy-Hicks TNA and you may find reference to their publications on line

With warm wishes for your studies

Deborah Hennessy (PhD)

----Original message----
From : 1487283@students.wits.ac.za
Date : 06/02/2018 - 17:17 (GMTST)
To : deb.hennessy@btinternet.com
Subject : training needs assessment

APPENDIX I

Language Editing and Proofing

Gill Smithies

Proofreading & Language Editing Services

59, Lewis Drive, Amanzimtoti, 4126, Kwazulu Natal

Cell: 071 352 5410 Email: moramist@vodamail.co.za

Work Certificate

To	Prof. Shelley Schmollgruber
Address	Wits Dept of Nursing Education
Date	05/02/2019
Subject	LEARNING NEEDS ASSESSMENT FOR CONTINUOUS PROFESSIONAL DEVELOPMENT IN PAEDIATRIC ACUTE CARE NURSING: THE ESWATINI PROJECT
Ref	SS/GS/26

I certify that I have edited the following thesis for language, grammar and style,

Chapters 1 to 5 and Appendices: Learning needs assessment for continuous professional development in Paediatric Acute Care Nursing: the Eswatini Project, by Nkosingiphile Gcina Shongwe

to the standard as required by Wits Dept. of Nursing Education.

Gill Smithies