SELF-REPORTED COMPETENCE OF NEWLY QUALIFIED PROFESSIONAL NURSES IN SPECIFIC MIDWIFERY SKILLS

by

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DECLARATION

I declare that **SELF-REPORTED COMPETENCE OF NEWLY QUALIFIED PROFESSIONAL NURSES IN SPECIFIC MIDWIFERY SKILLS** is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

I further declare that I submitted the dissertation to originality checking software and that it falls within the accepted requirements for originality.

I further declare that I have not previously submitted this work, or part of it, for examination at Unisa for another qualification or at any other education institution.

20 January 2019

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SIGNATURE   **DATE**

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SELF-REPORTED COMPETENCE OF NEWLY QUALIFIED PROFESSIONAL NURSES IN SPECIFIC MIDWIFERY SKILLS

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ABSTRACT

The purpose of this study was to determine the self-reported competence of newly qualified professional nurses on the critical midwifery skills.

The study was conducted in the four public hospitals designated for community service in Gauteng Province. A quantitative descriptive design was used with a structured self-report questionnaire as data collection instrument. Non-probability convenience sampling was used for the study. The sample size was eighty-four newly qualified professional nurses. The Stata 15 software was used for statistical analyses. The researcher used descriptive statistics to describe and synthesize the collected data.

The findings revealed that most newly qualified professional nurses had no knowledge in identifying different types of decelerations, management of late and variable decelerations, but had knowledge in most of the skills related to management of third stage of labour.

Key terms

Cardiotocography, competency, critical midwifery skills, monitoring of labour, newly qualified professional nurse, partograph, third stage of labour.

BOKGONI BJA GO IPEGA KA NNOŠI BJA BAOKI BA BASWA BAO BA ITHUTETŠEGO PROFEŠENE YA BOOKI KA GO BOKGONI BJO BO ITŠEGO BJA PELEGIŠO

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SENAGANWA

Maikemišetšo a dinyakišišo tše e be e le go hwetša bokgoni bja go ipega ka nnoši bja baoki bao ba ithutetšego profešene ya booki ka go bokgoni bjo bohlokwa bja pelegišo.

Dinyakišišo di dirilwe dipetleleng tše nne tša bohle tšeo di kgethetšwego tirelo ya setšhaba ka Profenseng ya Gauteng. Khwanthitheitif diskriptif disaene 'Quantitative descriptive design' e dirišitšwe gammogo le lenaneopotšišo leo le beakantšwego la go ipega ka nnoši 'structured self-report questionnaire' bjalo ka sedirišwa sa go kgoboketša bohlatsi. "Non-probability convenience sampling" e dirišitšwe mo go kgetheng banyakišišwa. Bogolo bja sešupo e be e le baoki ba masomeseswai-nne ba baswa bao ba ithutetšego profešene ya booki. "Stata 15 software" e dirišitšwe tshekatshekong ya dipalopalo. Monyakišiši o dirišitše dipalopalo tša tlhalošo 'descriptive statistics' go hlaloša le go kopanya 'data' yeo e kgobokeditšwego.

Ditšweletšo di utollotše gore bontši ba baoki ba baswa bao ba ithutetšego profešene ya booki ga ba na le tsebo ya go hlatha mehuta yeo e fapanego ya diphokotšo, taolo ya diphokotšo tša morago le tša go fetoga, efela ba na le tsebo ka go bokgoni bjo bontši bjoo bo amanago le taolo ya kgato ya boraro ya lešoko.

Mareo a bohlokwa

Khadiyotokhokrafi, bokgoni, bokgoni bjo bohlokwa bja pelegišo, molekodi wa lešoko, baoki ba baswa bao ba ithutetšego profešene ya booki, phatokraf, kgato ya boraro ya lešoko.

U DI RIPOTA NGA HA VHUKONI HAU IWE MUNE KHA VHAONGI VHA KHA DI BVAHO U PHASA VHUONGI KHA SIA LA ZWIKILI ZWA VHUBEBISI

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MANWELEDZO

Ndivho ya ngudo iyi yo vha u wanulusa nḓivho ya vhukoni ha iwe muṋe ya vhaongi vhaswa vha kha ḓi bvaho u phasa vhuongi uri vha na zwikili zwa ndeme zwa vhuongi vhubebisi u swika ngafhi. Ngudo iyi yo itwa kha zwibadela zwiṋa zwa muvhuso zwo ṋewaho u isa tshumelo zwitshavhani kha vunḓu ḽa Gauteng. Kha u kuvhanganya mafhungo muṱoḓisi o shumisa ngona ya u ṱalutshedza ya khwanthithethivi ho ṱanganyiswa na mbudziso dzo dzudzanyiwaho dzi bviselaho khagala kha iwe muṋe (structured self-report questionnaire). Vhunanguludzi ho shumiswaho kha ngudo iyi ho vha "Non-probability convenience". Tshivhalo tsha vhashelamulenzhe vho nanguludzwaho tsho vha vhaongi vhaswa vha kha ḓibvaho u phasa vha fumalo ina. "The Stata 15 software" ndi tshishumiswa tsho shumiswaho kha u sengulusa mafhungo o kuvhanganywaho. Muṱoḓisisi o shumisa zwisiṱatisitika zwa u ṱalutshedza kha u ṱalutshedza na u dzudzanya mafhungo o kuvhanganyiwaho. Ngudo iyi yo bvisela khagala uri vhunzhi ha vhaongi vhaswa vha kha ḓi bvaho u phasa a vha na nḓivho ya u vhona tshaka dzo fhambanaho dza kurwele kwa mbilu ya ṅwana na u langa u lenga ha u rwa ha mbilu ya ṅwana zwo katela na u sa dzudzanyea fhethu huthihi ha kurwele kwa mbilu ya ṅwana, honeha vha na nḓivho ya zwikili zwi yelanaho na vhulanguli ha tshipiḓa tsha vhuraru tsha u beba.

Maipfi a ndeme

Khadiothokhografu, vhukoni, zwikili zwa vhuthogwa zwi no tshimbilelana na vhubebisi, u tola muimana musi a kha vhutungu ha u toda u beba, vha ongi vha no khou bva u fhedza ngudo dzavho, Phathografu, tshipida tsha vhuraru tsha musi hu tshi bebiwa nwana.

VUSWIKOTI LEBYI MUNHU YENA N'WNYI A BYI TIVAKA HI VAONGORI LAVA HA KU THWASELAKA TIDYONDZO EKA SWIKILI SWO HLAWULEKA HI VUSUNGUKATI

NKOMISO

Xikongomelo xa ndzavisiso lowu i ku kuma vuswikoti lebyi munhu a byi twisisaka hi vaongori lava ha ku thwaselaka tidyondzo ta vuongori eka swikili swa nkoka hi vusungukati. Ndzavisiso lowu wu endliwile eka swibedlhele swa mune swa mani na mani leswi yisaka vukorhokeri evanhwini eka Phurovhinsi ya Gauteng, laha ku tirhisiweke maendlelo ya tinhlayo lama hambanaka na swivutiso ku hlengeleta timhaka. Ku tirhisiwile xiphemu xo karhi xa vanhu ku kuma vuxokoxoko hi mayelano na vona hinkwavo. Xiphemu lexi tirhisiweke i xa nhlayo ya vaongori vo ringana makumenhungu-mune wa vaongori lawa ha ku thwaselaka tidyondzo ta vuongori. Ku tirhisiwile "stata software" ku hlela tinhlayo leti tirhisiweke. Mulavisisi u tirhisile tinhlayo, tinhlayonhlamuselo ku hlamusela no katsakanya mahungu lama a ma hlengeleteke. Leswi kumiweke swi paluxa leswaku vunyingi bya vaongori lava ha ku thwaselaka tidyondzo ta vuongori va hava vutivi byo hambanisa mabelo ya mbilu, ku hlawula ku hlwela no hambana ka mabelo ya mbilu, kambe va na vutivi eka swikili mayelana no lawula xiyimo xa vunharhu xo lumiwa.

MARITO/MATHEME YA NKOKA

Mabelo ya mbilu ya n'wana la nga ekhwirini, vuswikoti, swikili swa nkoka swa vusungukati, vulanguteri bya vuveleki, muongori loyi a ha ku thwaselaka vuongori, vuxokoxoko bya vuyimani na xiyimo xa vunharhu xa vuveleki.

ACKNOWLEDGEMENTS

Dedication

I dedicate this work, in memory of my late parents,

Mrs Mukatshelwa Muthambi and Mr Thomas Muthambi ,

for their unconditional love and

support throughout my academic years.

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LIST OF ABBREVIATIONS

AMTSL	Active Management of Third Stage of Labour
Bpm	Beats per minute
CINAHL	Cumulative Index to Nursing and Allied Health Literature
CPD	Cephalo-Pelvic Disproportion
CPD	Continuous Professional Development
CTG	Cardiotocography
DoH	Department of Health
FIGO	International Federation of Gynaecology and Obstetrics
MOU	Maternity Obstetric Unit
NEI	Nursing Education Institution
NMC	Nursing and Midwifery Council
PPH	Post-Partum Haemorrhage
SA	South Africa
SANC	South African Nursing Council
SDG	Sustainable Development Goal
UNISA	University of South Africa
WHO	World Health Organization

CHAPTER 1

OVERVIEW OF THE STUDY

1.1   INTRODUCTION

The chapter provides background of the study, problem statement, purpose and objectives of the study. It provides information on research hypothesis, definitions of key concepts used in the study, discussion of research design and method used in the study, data management and analysis, ensuring rigor in the study, ethical consideration, scope and limitations; and significance of the study. The study determines and describes the self-reported clinical competence of the newly qualified professional nurses in specific midwifery skills. The study was done in Tshwane, Gauteng Province, South Africa.

1.2   BACKGROUND TO THE RESEARCH PROBLEM

The demand for quality services continues unabated. Many women still deliver at home because services are not accessible or are perceived to be of poor quality. According to the World Health Organization (WHO), quality service lies in having an adequate competent midwifery workforce. The key to competent workforce is education (WHO 2013:4). This simply means that the Nursing Education Institutions (NEIs) in South Africa (SA) should be able to produce competent midwifery practitioners at the end of each programme training.

The only two basic programmes that offer the midwifery workforce in the country are the R425 and R254. The R425 programme is the course leading to registration as a Nurse (General, Psychiatric and Community) and Midwife (SANC1985:1) and R254 programme is the course for the Diploma in Midwifery for registration as a Midwife. The R425 programme is the one which registers a lot of students to the programme as compared to the R254 (SANC 1975:1)

The research focused on the newly qualified professional nurses who graduated from the R425 programme since they were more than the R254 programme. The

researcher was interested in finding out if these graduates from the R425 programme were competent in some of the critical midwifery skills.

The SA Strategic Plan for Nurse Education, Training and Practice 2012/13–2016/17 indicates that there is evidence which suggests that many professional nurses are not sufficiently competent in a number of different areas, e.g. midwifery. Majority of health services are no longer having the clinical training departments and there is insufficient supervision and management of students (DoH 2012:21). According to Ndaba (2013:24), in Gauteng, the newly qualified professional nurses who did the SANC R425 programme are faced with challenges in the practice of midwifery during community service because they would have lastly done it in their third-year level of study. The large numbers of students in the nursing colleges has an impact in clinical areas and contributes to clinical incompetency and poor patient care.

The quality of educators is also an important factor affecting the quality of graduates from midwifery programmes. Well-prepared midwifery educators can provide quality education within an enabling environment (WHO 2013:4).

1.3   STATEMENT OF THE RESEARCH PROBLEM

It has been found that globally, newly qualified midwives experience stress, anxiety and a lack of confidence and it has also been reported that the newly qualified midwives feel ill prepared for the new role (Tapping, Muir & Marks-Maran 2013:102).

A study conducted in Australia revealed that graduate nurses have a lower level of self-assessment competence at the start of their career than nurses with more experience, the education providers argued that graduate nurses are ready and are professionally competent. However, on the other hand employers stated that graduates are not practice ready and they are not competent (Lima, Newall, Jordan & Hamilton 2014:354).

Aiken et al (1994) as cited in Gardulf, Nilsson, Florin, Leksell, Lepp, Lindholm, Nordstrom, Theander, Wilde-Larsson, Carlsson and Johansson (2016:166) have shown in a randomised controlled trial that low professional competence among nurses leads to increased mortality in patients treated in hospital.

If South Africa is to meet the Sustainable Development Goal (SDG) target, special attention must be given to the availability of high impact intervention, such as providing an adequate number of appropriately trained healthcare providers and district clinical specialist teams (Rhoda, Velaphi, Gebhardt & Kauchali 2018:S9).

A midwife who does not have the knowledge and ability to analyse and interpret a CTG strip may not notice foetal distress during labour and this may lead to stillbirth. If prolonged labour or obstructed labour is not identified and is not managed on time it may lead to death of both the mother and the foetus. If third stage of labour is not managed properly the mother may have post-partum haemorrhage and post-partum haemorrhage may lead to death

Setumo (2013:78) in her study on Midwifery students' experiences of clinical teaching at Sovenga, recommended a further research on the competence level of newly qualified professional nurses in Midwifery (Setumo 2013:78).

The researcher became interested in doing the investigation because she was an educator in midwifery for seven years, and there have been informal concerns in the clinical facilities about the lack of competency of the newly qualified professional nurses, especially critical skills in midwifery.

1.4   RESEARCH PURPOSE

The research purpose is the stated reason for conducting of a study. It must be concise and specific (Gray, Grove & Sutherland 2017:76). The purpose of the study was to determine the self-reported clinical competence of newly qualified professional nurses who have undergone the SANC R425 nursing education programme on the critical midwifery skills. These skills include electronic monitoring of the foetal heart and interpretation of the cardiotocograph; monitoring progress of labour and management up to third stage of labour, using the partograph.

1.5   RESEARCH OBJECTIVES

The research objectives focus on specifics and the researcher should ensure that all the research questions asked should apply (Brink, Van der Walt & Van Rensburg 2012:62).

Research objectives often consist of a list of desired outcomes of the research (Gray et al 2017:50). The following research objectives were addressed:

- To determine and describe the self-reported clinical competence of the newly qualified professional nurses in the critical midwifery skills.
- To make recommendations regarding the enhancement of clinical competence of the newly qualified professional nurses in the specified midwifery skills, according to the study findings.

1.6   RESEARCH HYPOTHESES

A hypothesis is a statement of the researcher's expectations or predictions about relationships among study variables. It is a predicted answer (Polit & Beck 2017:56).

H0 = Newly qualified professional nurses are competent in the electronic monitoring of the foetal heart and interpretation of the cardiotocograph, monitoring and management of the progress of labour up to third stage of labour, by using the partograph.

H1 = Newly qualified professional nurses, despite having completed the required midwifery theory and clinical skills, are not yet competent in the electronic monitoring of the foetal heart and interpretation of the cardiotocograph, monitoring and management of the progress of labour up to third stage of labour, by using the partograph.

1.7   DEFINITIONS OF KEY CONCEPTS

1.7.1 Critical midwifery skills

Critical midwifery skills in this study refers to important skills without which may result in death of a mother and/or a baby. For the purpose of this study these skills include electronic monitoring of the foetal heart and uterine contraction, interpretation of the cardiotocograph, monitoring and management of the progress of labour, interpretation of partograph and management of third stage of labour.

1.7.1.1 *Cardiotocography*

Cardiotocography is the monitoring of the foetal heart and the maternal uterine contractions using an electronic monitoring machine (Dippenaar & Da Serra 2018:863).

1.7.1.2 *Partogram/Partograph*

Partograph is a graphical record of the observations made of the progress of labour as well as the condition of the mother and foetus (Dippenaar & Da Serra 2013:338).

1.7.1.3 *Third stage of labour*

Third stage of labour is the period from the birth of the baby to complete expulsion of the placenta and membranes. It involves the development of relationship between mother, baby and father; the separation, descent and expulsion of placenta and membranes; control of haemorrhage and initiation of breastfeeding (Marshall, Raynor & Nolte 2016:346).

1.7.2 Competency

Competency refers to knowledge, skill, or attitude, which enables one to effectively perform the activities of a given occupation or function to the standards expected in employment (Dippenaar & Da Serra 2018:863).

1.7.3 Newly qualified professional nurse

Newly qualified professional nurse is a person who has registered with the South African Nursing Council (SANC) upon completing and meeting the requirements prescribed in the regulations relating to the approval of and the minimum requirements for the education and training of a Nurse (General, Psychiatric and Community) and Midwife; published in Government Notice No 425 of 22 February 1985; or any subsequent regulation made to replace it (SANC 2007:4).

1.7.4 Monitoring of labour

In this study it will refer to a process of monitoring of vital signs, uterine contractions, foetal heart rate and wellbeing, descent of the presenting part, assessment of cervical effacement, and dilatation on a woman in labour.

1.8   RESEARCH DESIGN AND METHODS

A research method refers to the techniques researchers use to structure a study and to gather and analyse information relevant to the research question (Polit & Beck 2017:11). A quantitative method of research was used for this study. The approach used deductive reasoning to generate predictions that are tested in the real world. It used control conditions in order to minimise biases. The information gathered is quantitative, that is numeric information that is obtained from a formal measurement and is analysed statistically (Polit & Beck 2017:11). The researcher used a self-administered questionnaire instrument to gather the information and the rating was numeric and the analysis was done statistically.

A research design is a blue print for maximising control over factors that could interfere with a study's desired outcome. The type of design directs the selection of a population, sampling process, methods of measurement and a plan for data collection and analysis (Grove, Burns & Gray 2013:43).

The study is a quantitative descriptive design, it centers on describing variables, examining relationships and improving the precision of measurement. The researcher chose this design because it can be used to identify areas of incompetence, justify current practice and make judgements in relation to the clinical competence of the newly qualified professional nurses in specified midwifery skills. The chosen midwifery skills are critical, the newly qualified professional nurses have to be competent in these skills to adequately care for the mother and foetus, thus, to prevent maternal and foetal deaths.

1.9   SETTING AND POPULATION OF THE STUDY

1.9.1 Setting

The research setting refers to the specific place or places where data is collected (Brink et al 2012:59). The study was conducted at four hospitals in Gauteng Province.

1.9.2 Population

The population is all the elements that meet certain criteria for inclusion in a given universe (Grove et al 2013:44). The population in this study was the newly qualified professional nurses who have completed the SANC R425 nursing education programme and serving the compulsory remunerated community service in public hospitals designated for community service in Gauteng Province.

1.9.3 Sample and sampling methods

A sample is a subset of the population that is selected for a study, and sampling is the process for selecting a group of people, events, behaviours or other elements with which to conduct a study (Grove et al 2013:44). The sample was the newly qualified professional nurses who completed the SANC R425 education programme and are serving the remunerated community service in 2018, and are working in the four public hospitals designated for community service during data collection.

1.9.4 Sample size

The sample size was calculated from the number of the newly qualified professional nurses on community service and working in the four selected public hospitals in Gauteng Province. The total number of newly qualified professional nurses doing community service were one hundred and seven (107). The Raosoft sample size calculator was used to calculate the sample. The margin of error accepted was 5%, confidence level of 95%, and the response distribution at 50%. The sample size was eighty-four (84).

1.9.5 Sampling methods

The type of sampling method for this research was non-probability convenience sampling for the respondents and purposive sampling for the sites.

1.9.6 Site sampling

Four hospitals were purposively selected from the list of public hospitals designated for community service in Gauteng Province. The hospitals were selected for having a high number of newly qualified professional nurses serving community service.

1.9.7 Respondents

Convenience sampling entails using the most conveniently available people as participants (Polit & Beck 2012:276). The newly qualified professional nurses who were working at the time of data collection.

1.9.8 The role of the researcher

The researcher gained entry to the specific setting where the study took place. Permission was requested from the four sampled public hospitals designated for community service in Gauteng Province; appointments were made with the nursing service managers and the potential respondents. Ethical approval processes for the study was followed. The researcher liaised with the nursing service managers to ensure that necessary arrangements were made regarding data collection. This included preparation of the venues where the filling of the questionnaires took place and meeting with the respondents to explain the purpose and objectives of the research, and what was expected from them.

1.10 DATA COLLECTION METHODS AND PROCEDURES

Data collection is the precise, systemic gathering of information relevant to the research purpose or the specific objectives, question, or hypotheses of a study (Grove et al 2013:44).

1.10.1   Methods for data gathering

A self-report questionnaire was administered to the respondents. The questionnaire consisted of four sections i.e. Sections A-D. Sections were categorised according to demographic data, midwifery competencies related to the electronic monitoring of the foetal heart and uterine contractions; interpretation of the cardiotocograph, monitoring and management of the progress of labour and to third stage of labour.

1.11   ENSURING RIGOR IN RESEARCH

Rigor is striving for excellence in research and involves discipline, scrupulous adherence to detail and strict accuracy (Grove et al 2013:36).

1.11.1   Reliability

Reliability refers to the accuracy and consistency of information obtained in a study (Polit & Beck 2012:175). The researcher did a pilot test with ten newly qualified professional nurses in order to check the questionnaire for clarity and relevance of the questionnaire. The statistical reliability was covered by having an adequate sample and the assistance of a statistician during data analysis.

1.11.2   Validity

Validity is the approximate truth of an inference (Polit & Beck 2012:236). The researcher ensured that the statistical conclusion validity was adhered to, by making sure that the relationship between the cause and effect are well explained and the evidence of the relationship is real. The study supervisor and co-supervisor checked the questions for content validity to ensure that the questionnaire was measuring what it was supposed to measure.

A pilot test was done to validate the time given to fill in the questionnaire. The Chronbach Alpha was tested to validate the questions. The results of the pilot test were used to improve the typology errors in the questionnaire, readability, duration,

understanding and ease of filling the questionnaire. The pilot sample was included in the main study.

1.12   DATA MANAGEMENT AND ANALYSIS

1.12.1   Data management

Collected data were saved in the computer files which were password protected, and no unauthorised persons were allowed access to the researcher's computer. All evidences of data collected was stored in a locked locker and no unauthorised person had access to the keys. The information from the completed questionnaires was transferred onto an excel spreadsheet before being converted to the Stata 15 software.

1.12.2   Data analysis

Data analysis reduces, organises and gives meaning to the data. The analysis of data from quantitative research involves the use of descriptive analysis techniques to describe demographic variable and study variables (Grove et al 2013:46). The researcher used the descriptive statistics to describe and synthesise the collected data. Averages and percentages were used to describe the findings. Stata 15 software was used for the statistical analyses of the data. Statistician's advice was used for data analyses

1.13   ETHICAL CONSIDERATIONS

The research proposal for the study was approved by the University of South Africa, Department of Health Studies, Research Ethics Committee (Annexure A). The researcher followed the ethical principles during the research process that is, respect for persons, beneficence and justice.

The principles were based on human rights that needed to be protected in research and this included the right to self-determination, privacy, anonymity and confidentiality, fair treatment and protection from discomfort and harm (Brink et al 2012:34).

The researcher requested for permission to conduct a study from the four hospital managements where the research was conducted as well as Tshwane Ethics Committee in Gauteng Province (Annexure B). Participation in the study was voluntary and written consent was obtained from the respondents (Annexure H). The information regarding the purpose of the study, the reason for nomination, potential benefits, consequences and confidentiality was explained to the respondents.

The researcher asked respondents volunteering to take part in the study to fill in the consent form after explaining the details of the research contained in the information leaflet (Annexure I).

There were no risks such as pain or persecution or negative related labelling that were expected in the study. However, respondents might have not felt free to divulge areas of incompetence in the specified midwifery skills when filling in the questionnaire. The researcher reassured them that the questionnaires did not require the participant's name or any form of identification, they were treated anonymously and no information was to be linked to a person during reporting. Results were reported anonymously in the research report and publications (articles).

1.14   SIGNIFICANCE OF THE STUDY

Midwifery is a very crucial field which involves the lives of the mother and the baby at the same time. Competence in this field is a must. The study determined the self-reported competence of the newly qualified professional nurses in the specified midwifery critical skills. This knowledge assisted the researcher to identify areas of concern in the newly qualified professional nurses' clinical competence in midwifery critical skills. This knowledge assisted the researcher to identify areas of concern in the newly qualified professional nurses' clinical competence in midwifery and has used the research findings to recommend necessary action to be taken by nursing management in practice and nursing education to improve areas of concern.

1.15   SCOPE AND LIMITATIONS

The study only included the newly qualified professional nurses who were working in the four sampled public hospitals in Gauteng Province. The reason for only

including the newly qualified professional nurses was that they had recently completed all the requirements for registration as midwives. It was not feasible to include all the newly qualified professional nurses in all the provinces of South Africa. Newly qualified professional nurses on community service self-reported their clinical competence in the critical midwifery skills. The researcher is aware that self-reports are subjective.

1.16 STRUCTURE OF THE DISSERTATION

Chapter 1 Overview of the study

In this chapter an overview of the study is provided, the introduction and the background to the research problem are covered. The statement of the research problem, research purpose, research objective, research hypotheses is outlined; Key concepts and operational definitions are defined. Summary of the research design and methodology is provided. Data analysis, ethical consideration and scope and limitation was described.

Chapter 2 Literature review

In this chapter the summary of the research studies about the topic are presented.

Chapter 3 Research design and method

In this chapter the design and methodology of the study is discussed.

Chapter 4 Analysis presentation and description of the research findings

The findings and data analysis of the study are presented in this chapter.

Chapter 5 Discussions, recommendations, and conclusion of the study

In this chapter discusses the interpretation of the research findings and give conclusion regarding the self-reported competence of the newly qualified professional nurses in their midwifery skills. The recommendations, and suggestions, for further research are presented in this chapter.

1.17 CONCLUSION

This chapter provided information on the overview of the study. The introduction, background and statement of the research problem were presented. The research purpose, objectives and hypothesis were described. Definition of concepts, summary of research design and methods, ethical considerations, data management and analysis, significance of the study and the scope and the limitations of the study was discussed.

CHAPTER 2

LITERATURE REVIEW

2.1   INTRODUCTION

Literature review refers to locating and summarising the studies about a topic. These are often research studies and may include conceptual articles or opinion pieces that provide framework about a phenomenon (Creswell 2014:32). According to Gray et al (2017:120), literature review is an interpretive, organised and written presentation of what the study's author has read. The chapter provides information on the strategies that were used to search for literature information, explain competence as viewed by different authors and findings of the researches that have been done previously. Four themes emerged from the literature searched, and this include the following; A concept of Competence, Pre-registration requirements for R425 programme, Factors that may have an impact on newly qualified professional nurses' competence, selected critical midwifery skills, i.e. partograph, cardiotocograph and third stage of labour.

2.2   SEARCH STRATEGY

Literature search was done at the University of South Africa Library. The database used included Ebscohost, Cumulative Index to Nursing and Allied Health Literature (CINAHL) Plus with Full Text, National Library of Medicine (MEDLINE), Health Source Nursing Academic Edition, Africa Wide information and Academic Search Premier. Research and subject (midwifery) books were also used for research related and midwifery information. Four themes emerged during literature review. The themes were as follows:

- A concept of competency
- South African Midwifery pre-registration requirements after completion of the R425 programme
- Factors that may have an impact on newly qualified professional nurses's competence
- Selected critical midwifery skills

The keywords used during the search were as follows: Newly qualified professional nurses, competency, cardiotocograph, partograph, third stage of labour, and critical midwifery skills.

2.3   A CONCEPT OF COMPETENCY

Competency refers to knowledge, skill, or attitude that enables one to effectively perform the activities of a given occupation or function to the standards expected in employment (Dippenaar & Da Serra 2018:863).

True competence according to Price-Dowd (2017:900) is about being able to take a step, knowing what is needed for each patient as an individual, and knowing when care is in our scope and when it is not. Competence is when one is conscious of his or her own abilities, having the right skills, behaviours, and attitudes to perform well.

According to American Nurses Association (2015) as cited in Beckham and Riedford (2017:79), competence commonly suggests the ability to appropriately perform. A student who perform a skill according to prescribed protocol or a professional who performs skills according to practice standards is considered competent. This definition is almost similar to Schroeter (2008:2) as cited in Chiliza (2014:5), who indicated that the term competence is used to describe knowledge to be able to perform a particular task. It includes the understanding of knowledge, clinical, technical and communication skills, and ability to solve problems using clinical judgement.

The competence of new registered nurses when joining the workforce and as they gain experience is an important dimension of quality and safety. Thus, prospective employer has a vested interest in ensuring that the skills and competency of the new graduate and the ongoing development of the new graduates are optimised (Brown & Crookes 2016:2). However, a study done in Australia about what level of competency do experienced nurses expect from a newly graduated registered nurse revealed that there is no clear expectation that new graduate registered nurses would be competent, and this agrees with the literature that new graduate registered nurses are not work ready (Brown & Crookes 2016:2).

Karlstedt et al (2015) as cited in Hovland, Kyrkjebo, Andersen and Raholm (2018:162) indicates that the level of education, age, and experience seem to have an impact on nurses' self-perceived competence.

Bastick et al (2006) as cited in Hovland et al (2018:164), indicated that there is a link between adverse events in nursing care and the level of competence; and Bing-Jonsson et al (2016) as cited in Hovland et al (2018:162), indicated that one way of ensuring quality care is to ensure that service providers are competent.

A study done on self-assessed competence among nurses working in municipal health-care services in Norway revealed that there is a correlation between the tasks that nurses perform often and their perception of having a satisfactory competence level (Hovland et al 2018:168).

A study done at Vhembe district in Limpopo on competence of midwives about the prevention of low Apgar scores among neonates, by Mulondo, Khoza and Risenga (2013:12) revealed that midwives perceived themselves to be competent in performing most midwifery skills, but incompetent in performing some critical skills related to midwifery care.

Shokane, Thopola, Jali, Kgale and Mamogobo (2013:159) as cited in Lumadi (2017:29), in a study conducted in Capricorn District of Limpopo, South Africa. Midwives were failing to monitor and plot foetal and maternal status during the intrapartum phase.

2.3.1 Competence of the newly qualified midwives and professional nurses

Yigzaw, Ayalew, Kim, Gelagay, Dejene, Gibson, Teshome, Broerse and Stekelenburg (2015:9) revealed that the competency of graduating midwifery students, and hence the quality of pre-service education, was inadequate. Effective in-service training, on job mentoring, and supervision are needed immediately to improve the competence of the midwifery graduates who are entering the workforce (Yigzaw et al 2015:9). Without it, the safety of the mothers and newborns will be at risk.

Community service practitioners need the same or even more supervision as though they were still in training. The newly qualified nurses do not have the confidence to perform midwifery skills independently (Setumo 2013:2).

The transition from nursing student to Registered Nurse has been proven to be difficult. Some newly qualified nurses are not adequately prepared to assume the role of a nurse without more clinical experience. These nurses face many challenges and pressure to meet professional expectations (Bennett, Grimsley, Grimsley & Rodd 2017:96).

A study about Novel nurses' perception of role transition from nursing student to practice nurse in South East of Iran had almost the same results. The findings suggested that students after graduating and starting nursing practice had perceived an average level of difficulty. Formal and informal strategies were proposed to increase the feel of qualification and self-confidence. The suggested strategies included residency program, internship program, mentorship and peer support (Zarandy, Razban, Noohi & Noohi 2017:362).

New graduates are vulnerable to medical errors because they lack clinical experience and are required to work in unfamiliar, complex health care environment. Their preparedness for safe, reliable care provision is of special importance because they play an important role in frontline patient care (Hwang, Yoon, Jin, Park, Park & Lee 2016:732). In a study done by Duhn et al (2012) about perspectives on patient safety among undergraduate nursing students; Stevanin et al (2015) on knowledge and competence with patient safety as perceived by nursing students as cited in Hwang et al (2016:732) the results showed that final year nursing students had moderate level of patient safety competency. These results were the same in a study conducted in Korea by Hwang et al (2016).

In a study conducted in Tshwane, community service practitioners felt that the responsibility of taking up the role of managing the units was devastating, as they had to endure with limited competencies (Nkoane 2015:69)

2.4 SOUTH AFRICAN MIDWIFERY PRE-REGISTRATION REQUIREMENTS AFTER COMPLETION OF THE R425 PROGRAMME

The R425 programme started in 1985. It is a four-year diploma if it is done in a college or a degree if it is done in a University. Students who successfully complete training under this regulation are registered in the category of professional nurses and are eligible to be registered as nurse (general, psychiatric and community) and midwife. The teaching guide of this programme stipulates that the student should acquire one thousand (1000) hours for clinical experience and a minimum number of midwifery skills to be achieved in order to qualify for registration as a midwife. It also stipulates some of the skills to be acquired before registration of the qualification. These skills include the following;

- Recognising the different stages of labour.
- Critically observing, monitoring and interpreting the findings in the course of all stages of labour, and providing appropriate nursing care.
- Delivering at least 15 patients and conducting the 2nd and 3rd stages of labour (SANC 1985:19).

According to the British Journal (2016:867), the Nursing and Midwifery Council's (NMC) (2009:21) standards for pre-registration midwifery education state that student midwives must be proficient in all Nursing and Midwifery Council standards by the end of their training in order to practice safely and effectively without the need for direct supervision.

2.5 FACTORS THAT MAY HAVE AN IMPACT ON NEWLY QUALIFIED PROFESSIONAL NURSES' COMPETENCE

2.5.1 Clinical environment and facilitation

Midwifery students' competency development may be influenced by various factors such as, student preceptor relationship, clinical practice environment, and societal attitudes (Licqurish, Seibold & Mclnerney 2013:876).

Moleki and Mogotlane (2011:83) as cited in Bosch (2017:1) indicated that clinical facilitation in the education and training of nurses provides the experiential foundation

for the knowledge, skills, and values to be consolidated and applied in practice. In the study conducted by Bosch (2017) the student's experiences included clinical nurses who did not know the objectives of the programme, what the students should accomplish during training, poor integration of practical and theory possibly as a result of lack of mentoring. The challenges in mentoring and facilitation seem to be that, student and clinical nurses are part of the daily workforce, therefore clinical facilitator do not have time to render mentoring.

Clinical preceptors have been found to positively influence midwifery students' self-esteem and ability to learn. They can enhance the quality of clinical placement and students' experience of learning. Preceptors are instrumental in providing learning opportunities for competency development and a link between theory and practice, role modelling and occupational socialisation (Licqurish et al 2013:875). The study conducted in Sweden showed that most students and midwives were satisfied with how the Swedish midwifery education prepares for clinical practice, however, respondents would have liked more time on intrapartum because it is the area where the challenge of being a safe practitioner is most obvious (Licqurish et al 2013:875).

Competence of graduate can also be affected by the conditions under which they have trained. According to Malwela, Maputle and Lebese (2016:3) in a study conducted in Limpopo, it was revealed that shortage, reluctance and unwillingness to perform the teaching function by professional nurse affected integration of theory and clinical practice. It was also indicated that some midwives had an attitude towards the students following the R425 programme because they would be more qualified at the end of their training.

Mathebula (2016:100) in Limpopo Province found that students encountered different challenges which made the clinical learning environment not conducive for student learning, these included nurse educators who did not spent enough time with the students during clinical accompaniment. However, in the same study it was found that students were well accompanied by the clinical facilitators.

Experiential learning should provide opportunities to integrate theory and practice and to meet the professional and critical outcomes as stated in the curriculum (Jacobs, Mackenzie & Botma 2013:3). Nurse educators need to ensure that students can operate

as independent practitioners when they do their community service. Billings and Halstead (2009:161) as cited in Jacobs et al (2013:3) stated that in order to be a competent nurse practitioner, students should develop their cognitive, psychomotor and affective domains for effective learning to provide high quality care. Students must be guided along the path of knowledge to a stage where they can assume responsibility of their nursing actions.

According to Elcock et al (2007:4) as cited in Jacobs et al (2013:5), the quality of the clinical learning experiences has a significant impact on the student's ability to integrate theory and practice and to develop appropriate practical and professional skills, required by a professional nurse.

Billing and Halsted (2009:145) as cited in Jacobs et al (2013:6) clinical environments where students learn experientially, should be assessed regularly to determine their strengths and weaknesses and whether they continue to provide the necessary learning opportunities that will enable students to meet the course outcomes

2.5.2 Shortage of human resource during training

In Malawi, Msiska, Smith and Fawcett (2014:39) reported that student nurses practiced through trial and error when allocated at the clinical learning environment due to lack of human resource to provide clinical guides to them as cited in Mathebula (2016:3). In South Africa, North West Province, Watkins (2010:15) reported that the clinical learning environment where students were allocated was not conducive to learning due to great shortage of clinical resources (Mathebula 2016:3).

2.5.3 Gender perspective

Findings of a study conducted by Mthombeni and Phaladi-Digamela (2015:58) in Limpopo indicated that male nurses found clinical learning during intra-partum care a challenge. They experienced difficulties because of various obstacles such as difficulty in adapting, feeling of frustration about working in a female dominated labour ward, awkwardness about being exposed to the nakedness of women during birth, lack of learner supervision and unstructured learner accompaniment plan. All these challenges limited essential education for male nurses (Mthombeni & Phaladi-Digamela 2015:58).

For learners to be competent, it is important to involve them during performance of procedures which formed part of their learning outcomes and according to Mabuda (2008:25) as cited in Mthombeni and Phaladi-Digamela (2015:57) learner involvement is critical for clinical learning.

2.5.4 Shortage of human resource and mentorship after training

Most of the researchers' finding seems to indicate that shortage, unavailability of mentors in the units are challenges of the newly graduates. Chiliza's (2014:88) findings on the experiences of neophytes professional nurses allocated in critical care unit in their first year post graduation in KwaZulu-Natal revealed the same results. Lack of proper induction programme was also mentioned as one of the challenges faced by newly qualified nurses.

The view of shortage of human resource was also shared by Nkoane (2015:65), where she indicated that shortage of human resource is linked with absenteeism and this leads to compromised clinical experience and skills necessary for new nurses to successfully transit into professional practice.

2.6   SELECTED CRITICAL MIDWIFERY SKILLS

2.6.1 Partograph monitoring

A partograph is a graphical record of the observations made of the progress of labour as well as the condition of the mother and the foetus. The record of labour is a legal document and observations must be accurately recorded as soon as any event has occurred. Accurate record of early stages of labour provides a basis for making objective decisions as labour progresses or fails to progress (Dippenaar & Da Serra 2013:338).

The use of partograph is associated with reduction in frequency of prolonged labour, augmented labour, postpartum haemorrhage, ruptured uterus, puerperal sepsis, perinatal and maternal morbidity and mortality. It also provides information at a glance to assess progress of labour (Dippenaar & Da Serra 2013:338).

The usage of partograph to monitor labour and delivery is recommended, with the objective to improve health care and reduce maternal and foetal morbidity and mortality. It provides health professionals with a pictorial overview of the labour to allow early identification and diagnosis of pathological labour (Meena & Vasundhara 2018:60). In spite the recommendation to use the partograph it is still not widely used to monitor labour in the developing world. Caregivers feel that completing the partograph is an additional time-consuming task (Devakirubai, Devakirubai, Benjamin & Sebastian 2018:25).

Partograph is poorly utilised, with observations either not monitored or not documented and this leads to midwives not identifying problems and not taking action, endangering the mother and the baby (Fernandes & Strumpher 2016:78). Mathibe-Neke, Lebeko and Motupa (2013:151) as cited in Fernandes and Strumpher (2016:87), in a study conducted in an academic hospital of Gauteng Province, South Africa it was concluded that partograph is underutilised because of discrepancies in the recording of findings among different staff members, such as those pertaining to vaginal examination, early plotting before the woman is in active stage of labour, a pattern of incorrect plotting, along with confusion in transfers and referrals from other hospitals due to differences in plotting.

Environmental factors such as staff with insufficient knowledge and skill, unrealistic patient/staff ratios and lack of resources make the correct and thus effective use of the partograph difficult (Fernandes & Strumpher 2016:87).

Partograph consist of three main sections:

- Foetal condition - The observations done in this section focus on checking foetal heart rate, moulding in cephalic presentation and membranes and colour of liquor.
- Progress of labour - The observations done in this section focus on checking effacement and dilatation of the cervix, descent, rotation and presentation.
- Maternal condition - The observations done in this section focus on checking vital signs, urinary output and contractions (Dippenaar & Da Serra 2013:338).

The rate of cervical dilatation is the main parameter for recording progress of labour. The graphic recording of progress of labour has been used since 1970 to detect labour that is not progressing normally. It serves as an early warning system and assist in making an early decision on transfer, augmentation and termination of labour (Rani & Laxmi 2016:315). In a study done in India by Rani and Laxmi (2016), it was evident that the routine use of the partograph is helpful in detecting abnormalities in the progress of labour and allows early intervention therapy. The key to early diagnosis and detection of the disorders in labour progression is by the characteristic patterns of cervical dilatation and foetal descent (Rani & Laxmi 2016:315).

The following are the principles for the use of partograph which midwives are expected to have knowledge about:

- The latent phase of labour should not last more than eight hours
- The active phase of labour starts when the cervix is 4 cm dilated
- During active phase of labour the cervix should dilate at least 1cm per hour
- Duration between vaginal examination should be at least four hours during latent phase and two hours during active phase of labour
- Foetal heart should be checked and recorded every 30 minutes (Dippenaar & Da Serra 2013:338)

There are key considerations when one is using the partograph, and midwives are responsible for their own acts of omission and commission. Their obligations include correct and comprehensive records, identifying abnormalities in recordings, interpreting findings correctly, identifying warning signs of abnormalities and preventing further development of these abnormalities, acting on recorded and timely referral of women in case of abnormalities (Dippenaar & Da Serra 2013:338).

All the sections of the partograph regarding monitoring of progress of labour, the principles for the use of partograph which midwives are expected to have knowledge about, and the legal responsibilities of own acts of omission and commission are included in the curriculum for the R425 programme. During training the students are also taught about the scope of practice under which a midwife can practice her/his profession according to SANC R2488. These would include management of labour and postpartum haemorrhage.

2.6.1.1 Foetal condition observations

Foetal heart rate

- Foetal heart rate should be checked and recorded every 30 minutes.
- Foetal heart rate should be checked before, during and after contraction.
- Normal foetal heart rate is 110–160 beats per minute.
- The rate should not be decelerating with contraction. If there are decelerations, it should be indicated whether they are early or late (Dippenaar & Da Serra 2013:340).

Moulding

Moulding is the term used to describe the overriding of the skull bones during labour in a cephalic presentation. The shape of the foetal head changes as the foetus passes through the birth canal. The change in shape is made possible by the bones of the vault as they override at the sutures thus reducing the size of the presenting diameters. Moulding protects the brain from compression. Moulding is assessed each time during per vaginal examination. Assessment of moulding during labour is as follows:

- No moulding - Bones are separated, and sutures are felt easily.
- + moulding - Bones are just touching each other.
- ++ moulding - Bones are overlapping but reducible when digital pressure is applied.
- +++ moulding - Bones are overlapping and non-reducible with digital pressure (Dippenaar & Da Serra 2013:340).

Membranes and liquor

It should be indicated on the partograph if membranes have ruptured or not. Early rupture of membranes exposes both the woman and the foetus to infection and it is important to indicate the time when the membranes ruptured. Assessment of membranes and liquor during labour is as follows:

- Intact membranes - information is indicated as letter 'I' on the partograph.
- Ruptured membranes - the colour of liquor is indicated as 'C' if the liquor is clear and 'M' if liquor is meconium stained (Dippenaar & Da Serra 2013:340).

2.6.1.2 Progress of labour

The progress of labour is determined by dilatation of the cervix, level of descent of the presenting part, foetal position and contractions. It is divided into the latent and active phase of labour. Assessment of progress of labour is as follows:

- Cervical dilatation is checked every four hours in latent phase and two hours in active phase.
- The cervix should dilate between 1-1.5 cm per hour in the active phase depending the woman's parity.
- Descent of the presenting part is recorded in fifths if the presentation is cephalic and it is related cervical dilatation.

2.6.1.3 Maternal condition

Maternal condition is assessed based on the nature of contractions, vital signs, urinary output and includes her emotional stamina and response to labour. Any drugs administered to the mother during labour should be recorded in this section.

Contractions monitoring

Contractions are monitored abdominally and are classified as mild, moderate and severe. Contractions are classified as follows:

- Mild uterine contractions last for 20 minutes or less and plotted with faint dots on the partograph.
- Moderate uterine contractions last more than 20 seconds up to 35 seconds and are plotted as light shaded lines.
- Strong uterine contractions last more than 35 seconds and not more than 60 seconds and are plotted as dark shaded areas on the partograph.

- Hypertonic uterine contractions last more than 60 seconds and this kind of contractions may cause maternal and foetal distress (Dippenaar & Da Serra 2013:341).

Vital signs monitoring

Vital signs monitoring will depend on the protocol or policy of the hospital.

- Temperature is checked every four hours and should be remain normal and may slightly increase if epidural anaesthetic is used.
- Pulse is checked every 30 minutes and should remain normal. Tachycardia may be a sign of haemorrhage, pain, infection or reaction to certain medications.
- Blood pressure should be checked every hour and should remain normal in the absence of hypertension conditions (Dippenaar & Da Serra 2013:341).

Urinalysis

- Urinalysis should be done every hour because full bladder may interfere with progress of labour.
- All urine passed should be recorded and tested for glucose, proteins, and ketones (Dippenaar & Da Serra 2013:343).

Prolonged labour is a leading cause of death among mothers and newborns in the developing world. Early detection of prolonged or obstructed labour greatly contributes to the prevention of complications such as post-partum haemorrhage, ruptured uterus, puerperal sepsis and obstetric fistula (Mezmur, Semahegn & Tegegne 2017:2). Competent use of partograph can save lives by ensuring that labour is closely monitored and life-threatening complications such as obstructed labour are identified and treated (Meena & Vasundhara 2018:61).

In a study done in India by Rani and Laxmi (2016), it was evident that the routine use of the partograph is helpful in detecting abnormalities in the progress of labour and allows early intervention therapy. The key to early diagnosis and detection of the disorders in

labour progression is by the characteristic patterns of cervical dilatation and foetal descent (Rani & Laxmi 2016:315).

Despite the documented benefits and recommendations, utilisation of the partograph is either poor, inconsistent or used incorrectly. The most important barrier to the use of partograph is amongst others low competence and lack of on-going facilitative supervision (Mezmur et al 2017:2).

Abede, Birhanu, Awoke and Ejigu (2013:26) cited in Muzeya (2015:3) in a research conducted in Ethiopia, findings revealed that the level of knowledge of the components of the partograph was very poor and approximately a third of the partograph was very poor and approximately a third of the partograph papers that were reviewed were not properly documented. The findings of his study revealed that the nurse midwives had knowledge of obstetric care issues, however, there were still gaps in certain areas such as comprehensive assessment during antenatal care, determination of foetal positions and active management of the third stage of labour.

These findings were a little bit different from the research that was also conducted in the same country in 2017, where it was revealed that more than half of the health professionals had good level of knowledge about partograph, however less than half of health professionals had fair knowledge about the partograph in the public health institutions in eastern Ethiopia. Lack of training for health professionals and lack of positive attitude towards the use of partograph were related to the utilisation of partograph (Mezmur et al 2017:2).

A study done by Meena and Vasundhara (2018:63) revealed that 6,67% had adequate knowledge, 24,67% of nurses had moderate knowledge and 68,67% had inadequate knowledge regarding partograph. This shows that majority of nurses do not have adequate knowledge regarding the use of partograph. Almost the same findings were revealed in a study done in Cameroon. The obstetric care providers' (who are mostly nurses and midwives) have knowledge, and utilisation of the partograph in monitoring labour was generally poor and it was recommended that if the state is to reduce maternal mortality, all the obstetric care providers should be subjected to intensive pre-service training reinforced with periodic refresher courses via unit presentations,

seminars, and workshops on the use of partograph (Sama, Takan, Danwe, Melo, Dingana & Angwafo 2017:12).

Another study done in Malawi revealed that health care providers did not accurately record all the parameters on the partograph to monitor the progress of labour as per the national guidelines. Vital signs such as temperature and blood pressure were not monitored at all. It was also indicated that unavailability of equipment and lack of knowledge on the importance of the partograph by obstetric care providers could be part of the reason for low documentation, however it was suggested that these need to be ascertained. Foetal heart rate, descent of the foetal head and moulding were not adequately documented. Cervical dilatation was fully recorded in 75.5% of the partograph and this agrees with the findings reported in Tanzania and Uganda (Mandiwa & Zamawe 2017:3).

Completion of partograph is poor and is likely to impact on the tool in clinical practice. The sections in the partograph which most likely to be completed are those relating to progress and foetal well-being, this may reflect ease of use in completing particular sections, availability of equipment or respondents understanding of the partograph. It does appear to work as a trigger for referral and transfer (Bedwell, Levin, Pett & Lavender 2017:5).

Even though most of the research findings recommend the use of partograph, in the recent years various researchers have found no significant benefits of using partograph, hence creating controversies, whether a partograph is useful and which design of partograph is better (Jain & Sharma 2016:20).

2.6.2 Cardiotocography

Cardiotocography is the monitoring of the foetal heart and the maternal uterine contractions using an electronic monitoring machine (Dippenaar & Da Serra 2013:754).

Intermittent auscultation of foetal heart rate is still the recommended method of assessing foetal heart rate in low risk labouring women, however, electronic foetal monitoring remains widespread in clinical practice. Intermittent assessment is recommended because it facilitates freedom of movement, infant rotation, promotes

clinical assessment, and reduces anxiety for labouring woman whereas electronic monitoring of foetal heart rate does the opposite (Riffle 2014:55). CTG was developed in order to enable obstetricians and midwives to analyse the changes of foetal heart rate during labour in order to make interventions on time to avoid intrapartum hypoxic-ischaemic injury (Pinas & Chandraharan 2016:33). However, the four trials conducted in UK and Ireland showed that women allocated to CTG tended to have high rates of caesarian section than those allocated to intermittent auscultation (Wiley & Sons 2017:1).

Many parts of the world are using CTG routinely in both low and high -risk labour. In some centers intermittent auscultation is used in low risk cases, but a large percentage of women are monitored with CTG (Ayres-de-Campus 2016:6). Most of the hospitals and Maternity Obstetric Unit (MOUs) in Gauteng Province South Africa are using both the intermittent and electronic methods of foetal heart monitoring (with the use of CTG machines) in the labour wards. It is of utmost important that midwives and professional nurses working in these labour wards know how to monitor foetal heart rate with both methods, and where electronic monitoring is used practitioners should know how to interpret the CTG tracing. The analysis and interpretation of CTG is one of the skills that is expected from a midwife.

2.6.2.1 Interpretation of foetal wellbeing

Interpreting CTG traces can pose a challenge and research has found that the same CTG trace may bring out different interpretations. This may be a cause for concern considering the impact of CTG traces on decision-making.

A normal CTG which is incorrectly interpreted may lead to delayed intervention and an abnormal CTG which is incorrectly interpreted may lead in unnecessary intervention (Ignatov & Lutomski 2016:91). The use of CTG is based on guidelines which require the clinician to classify the CTG based on baseline foetal heart rate, variability and accelerations, and the presence of decelerations and use the classification to manage the risk of foetal-acidaemia (Ugwumadu, Steer, Parer, Carbone, Vayssiere, Maso & Arulkumaran 2016:866).

A reassuring CTG should have the foetal heart rate baseline of 110-160, variability greater than 5 beats per minute, no decelerations, and presence of accelerations (Frazer, Cooper & Nolte 2014:304).

2.6.2.1.1   Baseline heart rate

Baseline heart rate is the average heart rate in the absence of, or between periodic heart rate variations. A normal foetal heart rate is between 120 and 160 beats per minutes (bpm) (Frazer et al 2014:306). The normal range of foetal heart rate may differ from one author to another, some authors state that the 110 -160 is within normal ranges. International Federation of Gynaecology and Obstetrics (FIGO) consider the normal foetal heart rate as 110-160. An increase in baseline rate above 160 bpm for more than 10 minutes is called baseline tachycardia and a baseline rate below 110 is called baseline bradycardia (Pereira & Chandrahan 2017:124).

2.6.2.1.2   Variability

Variability is the normal irregularity of the cardiac rhythm. Good variability on the foetal heart rate panel is demonstrated by fluctuations of the foetal rate baseline (Frazer et al 2014:307). The baseline variability normally exceeds 5 beats per minutes giving the baseline a spiky appearance. A baseline variability which is less than 5 beats per minutes may be a sign of foetal distress. According to Pereira and Chandrahan (2017:125) normal variability is 5-25 bpm, reduced variability is less than 5bpm and increased variability is more than 25 bpm.

2.6.2.1.3   Accelerations

Accelerations are transient increases in the foetal heart rate of more than 15 beats from the baseline and lasting for more than 15 seconds. Accelerations are associated with foetal movements and are a reassuring feature (Pereira & Chandrahan 2017:125).

2.6.2.1.4   Decelerations

Decelerations are transient decrease of foetal heart rate of more than 15 beats and lasting for more than 15 seconds. Decelerations can be secondary to cord compression,

hypoxaemia, head compression. Decelerations due to cord compression are commonly seen in labour and can be identified by a 'V' shape, due to hypoxaemia tend to have 'U' shape and due to head compression starts at the onset of uterine contractions and reaches the lowest point with the peak of the contraction (Pereira & Chandrahan 2017:125).

2.6.2.1.5   Contractions

Contraction is the spontaneous contraction of the uterine muscle (Dippenaar & Da Serra 2018:139).

Four characteristics should be considered when interpreting contractions.

Tone

Tone is the basic pressure in the uterus. The normal tone pressure is between 8-12 mmHg (Dippenaar & Da Serra 2018:39).

Intensity

Intensity is referred to as the strength of the contraction (Dippenaar & Da Serra 2018:139).

Duration

Duration is the time from the beginning to the end of a contraction (Dippenaar & Da Serra 2018:139).

Frequency

Frequency is the number of contractions in ten minutes. When the woman is in labour, two to three contractions per ten minutes is required (Dippenaar & Da Serra 2018:139).

Ugwumadu et al (2016:867) argued that there is no agreed validated, reliable or nationally approved training programme for intrapartum CTG interpretation, yet it is a key skill responsible for up to two-thirds of litigations in obstetrics.

Ugwumadu et al (2016:868) suggested that the profession needs to agree on some key principles, i.e.

- Appropriate understanding and expertise in CTG interpretation is a mandatory skill for intrapartum care.
- Training for professionals in intrapartum care should focus on ensuring recognition of, and response to, normal and abnormal CTG traces and include the role of intrapartum factors associated with adverse perinatal outcome.
- Acquisition and competence in performing these critical skills should be tested before the clinician can practice.
- Testing should be as realistic as possible, and the appropriate standard is 100% success at recognising normality and defining those cases that need further investigation.

In Denmark, it was found that the mean score on a CTG test of knowledge, interpretation skills and decision-making was positively associated with working in large maternity units and having less than fifteen years of obstetric work experience. It was also found that the standardised national CTG attendance course improved the CTG skills of both highly and less experienced midwives (Thellesen, Sorensen, Hedegaard, Rosthoej, Colov, Andersen & Bergholt 2017:1080).

2.6.3 Management of third stage of labour

Third stage of labour is the period from birth of the baby to complete expulsion of the placenta and membranes, involving the separation, descent and expulsion of the placenta and membranes and control of haemorrhage from the placenta site (Frazer et al 2014:346).

There are two approaches in the management of third stage of labour, namely the expectant or physiologic (passive) management and active management of third stage of labour (AMTSL). The expectant management involves waiting for signs of placental

separation and allowing for spontaneous delivery of the placenta whereas the active management involves clamping and cutting the umbilical cord immediately after delivery of the infant, administration of oxytocin and delivery of the placenta by means of controlled cord traction and applying counter indirect pressure on the uterus. Third stage of labour takes about 5-15 minutes in active management (Dippenaar & Da Serra 2013:379). Guidelines for maternity care in South Africa recommends the active method of managing the third stage of labour in order to prevent excessive bleeding (National Department of Health 2015:50).

One of the main causes of maternal mortality is post-partum haemorrhage (PPH) which accounts for 34% of maternal death. PPH is also the most common complication of third stage of labour (Felarmine, Joachim & Agina 2016:2). PPH refers to blood loss of ≥500 ml at vaginal delivery and ≥1000 ml at ceasarian section (Cauldwell, Steer, Swan, Uebing, Gatzoulis & Johnson 2017:945). Evidence suggests that active management of third stage of labour reduces the risk of Postpartum haemorrhage, maternal anaemia, transfusion and the therapeutic use of uterotonic drugs (Chireau 2015:217).

The same view was shared by Barlett, Cantor, Lynam, Kaur, Rawlins, Ricca, Tripathi and Rosen (2015:159) when they indicated that active management of third stage of labour can prevent postpartum haemorrhage and this intervention can reduce maternal blood loss by up to 66% compared with physiological or expectant management. As PPH continues to be the global leading cause of maternal death, the problem does not appear to be lack of effective interventions but rather the failure to implement interventions properly in all settings. In Africa, 25% of all maternal deaths are due to haemorrhage and it is estimated that more than two-thirds of reported deaths are due to PPH (Hofmeyr & Quresh 2016:69).

The study that was carried out in Kiambu County in Kenya showed that AMTSL was utilised by 31.5% of the birth attendants. Controlled cord traction was the most utilised with 96.5% of the caregivers utilising it. Uterine massage was the least utilised component at 33.1% (Felarmine et al 2016:2).

In a study done in metropolitan Melbourne Australia, the study showed that the use of Syntometrine in third stage of labour management in low risk women did not reduce the rate of PPH when compared with oxytytocin. In the same study, it was revealed that PPH

was significantly higher in women undergoing induction or augmentation of labour as compared to those with spontaneous labour (Springhall, Wallace, Stewart, Knight, Mockler & Davies-Tuck 2017:305).

A study conducted in London demonstrated that managing the third stage of labour in women with heart disease with an additional slow bolus of 2IU does not cause any apparent clinically significant alteration in maternal cardiovascular parameters and significantly reduce blood loss. Women who had a blood loss of at least 1000 ml were lower in those who received additional 2IU infusion showing the clinical importance of additional oxytocin (Cauldwell et al 2017:949). Results of a study conducted in France show that oxytocin is widely used for placental delivery after vaginal birth and the first line treatment for stopping PPH is oxytocin (Vendittelli, Barasinski, Perreira, Dreyfus, Lemery & Bouvier-Colle 2016:23).

2.7   CONCLUSION

In this chapter a concept of competence has been highlighted. The South African Midwifery pre-registration requirements after completion of the R425 programme were described. Factors that may have an impact on newly qualified professional nurses' competence, which include clinical environment and facilitation, shortage of human resource during training, gender perspective, and shortage of human resource after training was discussed. The selected critical midwifery skills i.e. partograph, cardiotocograph and management of third stage of labour were also discussed.

Chapter 3 will entail research design and methodology. Population, sampling methods, methods of data collection, ensuring rigor in research, data management, ethical considerations and scope and limitations will be discussed.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1   INTRODUCTION

This chapter entails a description of research design and methodology. It explains the methods used to conduct the study. The population, sample and sampling method, eligibility and exclusion criteria, data collection methods and procedures, pilot testing the questionnaire are explained. An overview of data management and analysis, how rigor was ensured, ethical consideration, and scope and limitations are explained.

3.2   RESEARCH DESIGN

A research design is a blue print for maximising control over factors that could interfere with a study's desired outcome. The type of design directs the selection of a population, sampling process, methods of measurement and a plan for data collection and analysis (Grove et al 2013:43).

The researcher adopted a quantitative, descriptive design, which centres on describing variables, examining relationships and improving the precision of measurement. The researcher chose this design because it could be used to identify areas of incompetence, justify current practice and make judgements in relation to the clinical competence of the newly qualified professional nurses in specified midwifery skills. The chosen midwifery skills were critical, the newly qualified professional nurses have to be competent in these skills to adequately care for the mother and foetus, and to prevent maternal and foetal deaths.

3.2.1   Quantitative approach

A quantitative method of research was used for this study. The approach uses deductive reasoning to generate predictions that are tested in the real world. It uses control conditions in order to minimise biases. The information gathered is quantitative, that is numeric information obtained from a formal measurement is analysed statistically

(Polit & Beck 2017:11). The researcher used a self-administered questionnaire instrument in order to have a controlled condition and the rating was numeric and the analysis was done statistically.

3.2.2 Descriptive design

Research in descriptive design is conducted in a natural setting. It is conducted in order to answer a research question related to incidence, prevalence, or frequency of occurrence of a phenomenon of interest. The purpose of descriptive research is to describe a phenomenon and its component variables within one single subject group. This design uses descriptive statistics and data collection for all subjects occurs at the same time (Gray et al 2017:200). In descriptive design there is no intention of establishing a cause-effect relationship. It may be used to identify problem in practice, to justify current practice, make judgements and to determine what other professionals in similar situations are doing. Descriptive design is concerned with gathering information from a representative sample of the population (Brink et al 2012:112).

Brink and Wood (1998) as cited in Brink et al (2012:113) indicates that descriptive designs are based on the following assumptions:

- A study may commence without a theoretical framework, but the researcher should provide the rationale for the study based on a thorough literature review.
- Existing studies may provide the rationale and theoretical framework for the study in a case of a known concept.
- Findings cannot be generalised in a study where the criteria for external validity cannot be met due to unknown population parameters.
- There is insufficient existing literature describing the study population or variable.
- The variable exists in the study population as a single variable that is amenable to description.

3.3   POPULATION

Population is all the elements that meet certain criteria for inclusion in a given universe (Grove et al 2013:44). The population in this study was the newly qualified professional nurses who have completed the SANC R425 nursing education programme in 2017 and serving the compulsory remunerated community service in public hospitals designated for community service in Gauteng Province.

Target population refers to the entire set of individuals who meet the sampling criteria (Gray et al 2017:330). In this study, the total number of the Community Service Professional Nurses in Gauteng was six hundred and seven (607). Accessible population refers to the portion of the target population to which the researcher has reasonable access (Gray et al 2017:330). In this study the total number of accessible Community Service Professional nurses was one hundred and seven (107). These are the newly qualified professional nurses who were allocated in the four selected hospitals in Tshwane.

3.3.1 Eligibility criteria

Eligibility criteria specify the population characteristics for inclusion in the study (Polit & Beck 2017:250). In order to be included in the study, the newly qualified professional nurse had to meet the following criteria:

- Have completed the SANC R425 nursing education programme
- Serving the compulsory remunerated community service in public hospitals designated for community service in Gauteng Province
- Working in the four chosen hospitals

3.3.2 Exclusion criteria

Exclusion criteria specify the population characteristics that people must not possess (Polit & Beck 2017:250). Newly qualified professional nurses excluded from this study are as follows:

- Those who did not qualify to do community service in the public hospitals
- Those who are not working in the four chosen four hospitals
- Those who were not willing to participate in the study

3.3.3 Sample and sampling methods

A sample is a subset of the population that is selected for a study, and sampling is the process for selecting a group of people, events, behaviours or other elements with which to conduct a study (Grove et al 2013:44). In this study, the sample size was calculated from the number of newly qualified professional nurses on community service and are working in the four chosen hospitals in Tshwane, Gauteng Province. The Raosoft sample size calculator was used to calculate the sample. The margin of error accepted was 5%, confidence level of 95%, the population size of 107, with the response distribution at 50%. The sample size was eighty-four (84) newly qualified professional nurses according to the Raosoft calculator. The researcher could only use the newly qualified nurses who were on duty on the day of data collection. Some of eligible newly qualified professional nurses were not available because they were on different kinds of leaves. The types of leave taken ranged from annual, family responsibility to sick leave. Some of the newly qualified professional nurses were not willing to participate.

The type of sampling method for this research was non-probability convenience sampling for the respondents and purposive sampling for the sites. Convenience sampling entails using the most conveniently available people as respondents (Polit & Beck 2017:252). The newly qualified professional nurses who were on duty at the time of data collection were sampled. Four hospitals were purposively selected from the list of public hospitals designated for community service in Tshwane, Gauteng Province. The hospitals were selected for having a high number of newly qualified professional nurses serving community service.

3.3.4 The role of the researcher

The researcher gained entry to the specific setting where the study took place. Permission was requested from the four sampled public hospitals designated for community service in Gauteng province; appointments were made with the nursing service managers and the potential respondents (Annexure G), Ethical approval processes for the study was followed (Annexures A and B). The researcher liaised with the nursing service managers to ensure that necessary arrangements were made regarding data collection. This included preparation of the venues where the filling of the questionnaires took place and meeting with the respondents to explain the purpose and objectives of the research, and what was expected from them.

3.3.5 Pilot testing the questionnaire

Pilot refers to a small-scale study conducted prior to the main study on a limited number of respondents from population at hand. It is done to investigate the feasibility of the proposed study and to detect any problems with the methodology, design, and inaccessibility to the sample. Flaws that may have severe consequences on the study may be identified, e.g. rigor, time, money and effort (Brink et al 2012:174).

Pilot test was conducted with ten newly qualified professional nurses in order to check the questionnaire for clarity and relevance of the questionnaire. It was also done to validate the time given to fill in the questionnaire. It took 15 to 20 minutes to complete the questionnaire. The Chronbach Alpha was tested to validate the questions. The results of the pilot test were used to improve the typology errors in the questionnaire, readability, duration, understanding and ease of filling the questionnaire. The study supervisor and co-supervisor checked the questions for content validity to ensure that the questionnaire was measuring what it was supposed to measure.

3.4 RESEARCH METHOD

Research method refers to the technique researchers use to structure a study and to gather and analyse information relevant to the research question (Polit & Beck 2017:11). The researcher chose survey method of data collection. Survey method was

chosen because it can collect data from large samples of people and present respondents with a series of questions to willing respondents. The questions in surveys may tap on matters of facts, attitudes, beliefs, preferences or opinions (De Vos, Strydom, Fouché & Delport 2011:156). A cross-sectional survey design was used, because it creates an overall picture of a phenomenon at the same time. This kind of design collect data from respondents once and there is no need to repeat (Du Plooy-Cilliers, Davis & Bezuidenhout 2014:149).

Leedy and Ormrod (2005:183) as cited in De Vos et al (2011:156) indicated that survey is simple in design. The researcher poses the questions to respondents, summarises their responses with percentages, frequency counts, and then draws inferences about a population from the responses of the sample. One of the most commonly used method of data collection is written questionnaire and the researcher opted to choose this method. A self-report questionnaire was administered to the respondents. This means that the respondents completed the questionnaire on their own. McCarthy et al (2011) as cited in Hovland et al (2018:162), indicated that there are different methods and instruments developed to measure competence in the health care fields, and structured or unstructured self-report instruments are the most common ones.

The researcher used survey method of data collection because of its advantages which include the following:

- It is relatively inexpensive.
- Questionnaires are completed anonymously, thus encourage respondents to respond to sensitive issues.
- It is less time consuming than other methods.
- Large amount of data can be collected, and data can be standardised (Du Plooy-Cilliers et al 2014:160).

3.4.1 Methods for data collection

The researcher collected data between the months of August and October 2018 in the four chosen hospital in Gauteng. The researcher made appointments with the nursing service managers of the four hospitals in order to prepare the respondents about the research, and some appointments were made directly with the respondents in the

different wards. The researcher explained what the research entailed, and those who consented to participation were given questionnaires to complete while researcher waited. On completion the questionnaires were collected by the researcher and there were no repeats done.

The questionnaire consisted of four sections i.e. Section A-D. Sections are categorised according to demographic data, midwifery competencies related to the electronic monitoring of the foetal heart and uterine contractions; interpretation of the cardiotocograph, monitoring and management of the progress of labour and third stage of labour.

Section A

This section had questions related to demographic data and this included the following:

- Age
- Gender
- Qualification
- Number of months in community service

The competence rating scale consisted of the following:

- No - No = the respondent does not have adequate knowledge or skill, nor feel confident to meet the requirements of the competency.
- YB - Yes but = the respondent knows enough or can do the competency, however, he/she is not confident doing it and would like to learn how to do it better.
- YS - Yes = the respondent has the knowledge, skill, attitude and judgement to adequately meet all the requirements for the competency.
- NA - Not applicable = the competency does not apply to the respondent, or may be outside the legislated scope of practice or not part of current nursing practice.

The training assessment consisted of the following:

- YS - Yes = the respondent will need in-service training on the skills that he/she is not competent.

Section B

Consisted of nine (9) cardiotocograph competence related questions and one (1) related to training.

Section C

Consisted of twenty-nine (29) partograph competence related questions and one (1) related to training

Section D

Consisted of twelve (12) third stage competence related questions and one (1) related to training.

The researcher designed the questionnaire and the supervisor and the co-supervisor approved its use. The Higher Degree Committee of the Department of Health Studies at UNISA also approved the questionnaire.

3.4.2 Strengths of questionnaires

- The format was standard for all respondents and did not depend on the mood of the interviewer.
- Respondents were more likely to provide honest answers and they felt a great sense of anonymity.
- It was one of the easiest research instruments to test reliability and validity.
- They were less expensive in terms of time and money.
- It was a quick way of obtaining data from a large group of people (Brink et al 2012:153).

3.4.3 Weaknesses of questionnaire

- Respondents must be literate.
- The respondents may not be representative of the population.
- There is no opportunity to clarify any questions that may be misunderstood by respondents.
- Mailing of questionnaires may be expensive.
- Response rate may be low.
- Respondents may provide socially acceptable answers (Brink et al 2012:153).

The researcher remedied some of the above weaknesses by personally delivering the questionnaires and waiting for the respondents to complete and then collect on the same day. The required sample was achieved. All the respondents were literate because they either had a diploma or degree and they were able to complete the questionnaire themselves.

3.5 ENSURING RIGOR IN RESEARCH

Rigor is striving for excellence in research and involves discipline, scrupulous adherence to detail, and strict accuracy (Grove et al 2013:36). It also means hardness or difficulty, and this is associated with inflexible rules, strict logic and unflagging effort in quantitative research (Gray et al 2017:43). Rigor implies the following:

- The sample is chosen according to the inclusion criteria.
- The site is chosen in order to eliminate intrusion of what might affect results.
- Any research intervention is enacted the same way each time it is implemented.
- Data are recorded the same way it is (Gray et al 2017:43).

The researcher followed the sampling inclusion criteria during data collection. All the respondents were the newly qualified professional nurses who have completed the SANC R425 nursing education programme and were serving the compulsory remunerated community service in public hospitals designated for community service in Gauteng Province. The site for the research was the four chosen hospitals. The

collection of data was done the same way in all the groups that were participating. All the responses were recorded the same way as they are on the questionnaire.

3.5.1 Reliability

Reliability refers to the accuracy and consistency of information obtained in a study (Polit & Beck 2012:175). The researcher did a pilot test with ten newly qualified professional nurses in order to check the questionnaire for clarity and relevance of the questionnaire. The results were very good with the reliability coefficient of about 90% for internal consistency.

Reliability also refers to credibility of the research, meaning that if a research is to be repeated by a different researcher at a different time using the same method or instrument it will give the same results (Du Plooy-Cilliers et al 2014:254). The statistical reliability was covered by having an adequate sample and the assistance of a statistician during data analysis.

3.5.2 Validity

Validity is the approximate truth of an inference (Polit & Beck 2012:236). Du Plooy-Cilliers et al (2014:256) state that validity is determining if research has measured what it is supposed to measure. The internal validity refers to whether the research methods will answer the research question. External validity refers to the researcher's ability to confidently state that if the same method used for the current research can be used to the whole population it would find the same results. The researcher ensured that the statistical conclusion of validity was adhered to, by making sure that the evidence of the relationship is real. The study supervisor and co-supervisor checked the questions for content validity to ensure that the questionnaire was measuring what it was supposed to measure. A pilot test was done to validate the time given to fill in the questionnaire. The Chronbach Alpha was tested to validate the questions. The results of the pilot test were used to improve the typology errors in the questionnaire, readability, duration, understanding and ease of filling the questionnaire.

3.6   DATA MANAGEMENT AND ANALYSIS

3.6.1   Data management

The respondents' names did not appear on the questionnaires, the identification number was assigned to each questionnaire. Consent forms and questionnaires were kept separately. Collected data were saved in the computer files which are password protected, and no unauthorised persons were allowed access to the researcher's computer. All evidences of data collected have been stored in a locked locker and no unauthorised person has access to the keys. The information from the filled questionnaires was transferred onto an excel spreadsheet before being converted to Stata 15 software.

3.6.2   Data analysis

Data analysis reduces, organises and gives meaning to the data. The analysis of data from quantitative research involves the use of descriptive analysis techniques to describe demographic variable and study variables (Grove et al 2013:46). The researcher used the descriptive statistics to describe and synthesise the collected data. Descriptive statistics is done through creating a frequency distribution of variable or variables being studied (Gray et al 2017:523).

The aim of descriptive methods is to produce a scope of characteristics of such distributions through frequencies measures of central tendency and measures of dispersion (De Vos et al 2011:251). Averages and percentages were used to describe the findings. Stata 15 software was used for the statistical analyses of the data. The assistance of the statistician was used for data analysis. The whole process of analysis should involve the following process

3.6.2.1   *Preparing the data for analysis*

As it has been mentioned above the Stata 15 software was used for the statistical analyses. This phase of analysis involves entering data into the software. The process includes cleaning the data, identifying missing data, data transformations, data calculations and data storage (Gray et al 2017:528). The researcher prepared the data

before entering into the software by checking, editing and coding the collected data. Sarantakos (2005:364) as cited in De Vos et al (2011:252) indicates that coding is a process of systematically reorganising raw data into a format that is machine readable. All the responses are coded including non-responses and this is done in order to make sure that every question is accounted for in the analysis of data (De Vos et al 2011:252)

The process of data cleaning was checked just after entering data on the spreadsheet. Data cleaning includes two types of checks which include outliers and wild code. Outliers are values that lie outside the normal range and may result from data entry errors while wild code refers to a code which is not possible (Polit & Beck 2017:429).

3.6.2.2   Description of the sample

This happens after the data have been entered into the software. The researcher starts conducting the essential analysis for the study. A complete picture of the sample is obtained. The demographic variables such as age, gender is analysed and used to develop the characteristics of the sample (Gray et al 2017:529).

3.6.2.3   Testing reliability

The reliability of the methods of measurement used in the study should be examined (Gray et al 2017:529).

3.6.2.4   Exploratory analysis of the data

Data is examined descriptively in order to be familiar with the nature of the data. Omitting this step jumping immediately to testing of hypothesis, questions or objectives may lead to a risk of missing important information in the data and analysing data that are inappropriate for the data. The researcher should examine data on each variable by using measures of central tendency and dispersion. Table and graphs may be used to illustrate the descriptive analyses (Gray et al 2017:529).

3.6.2.5   *Confirmatory analysis*

Findings are inferred from the sample to the population. The sample size must be enough for the confirmatory process to be justified. A written analysis plan should describe the confirmatory analyses that will be conducted in order to examine each hypothesis, question, or objective and this will involve the following:

- Identifying the level of measurement of the data available for analysis
- Selecting a statistical procedure for the level of measurement
- Selecting the level of significance that will be used to interpret the results
- Choosing a one-tailed or two tailed tests if appropriate for the study
- Determining the risk of a Type II error by performing a power analysis
- Determining the sample size
- Evaluating the representativeness of the sample
- Developing tables and graphs to illustrate the methods that will be used to display the results
- Interpreting the results in terms of the hypothesis, question or objective
- Re-examine the analysis to ensure that the procedure was performed with the appropriate variable
- The results should be interpreted in terms of the framework (Gray et al 2017:530)

3.7   ETHICAL CONSIDERATIONS

The research proposal for the study was approved by the University of South Africa Department of Health Studies, Research Ethics Committee. The researcher requested for permission to conduct a study from the four hospital managements where the research was conducted as well as the National Health Research Department and permission was granted in writing (Annexures A, B, C, D, E and F). Upon approval by the Tshwane Ethical Committee the researcher personally visited the hospitals to request for the permission to conduct a research. Formal letters were sent to the hospitals following the acceptance during the visit. Another clearance certificate was obtained from University of Pretoria because Steve Biko Academic Hospital uses the University of Pretoria Ethical Committee to check the protocol before the Chief Executive Officer can give the hospital permission.

The researcher followed the ethical principles during the research process that is, respect for persons, beneficence and justice. The principles were based on human rights that needed to be protected in research and this included the right to self-determination, privacy, anonymity and confidentiality, fair treatment and protection from discomfort and harm (Brink et al 2012:34).

3.7.1 Right to self-determination

The right to self-determination is based on the ethical principle of respect for persons. This principle indicates that because humans can make their own decisions, they should be treated as autonomous being. This means that they have freedom to conduct their lives the way they choose without any external controls (Gray et al 2017:162). Participation in the study was voluntary and written consent was obtained from the respondents. The information regarding the purpose of the study, the reason for nomination, potential benefits, consequences and confidentiality was explained to the respondents. The researcher asked the respondents volunteering to take part in the study to fill in the consent form after explaining the details of the research contained in the information leaflet. Respondents were also given information that they can withdraw from the study at any time without any penalty.

The researcher also prevented violation of research subjects' right to self-determination by making sure that coercion and covert data collection did not occur. Coercion occurs when a person intentionally gives threat of harm or attracts respondents with excessive reward in order to obtain compliance. Thus, some respondents feel coerced to participate because they will be harmed if they do not participate. Covert data collection is when the researcher collects data when the respondents are unaware that research data are being collected (Gray et al 2017:16). No threats to harm the respondents or any excessive gifts were given to the respondents in order to get favour of participation to the study.

3.7.2 Right to privacy

Privacy is when a person has the right to determine the time, extent, and general circumstances under which personal information is shared with or withheld from others (Gray et al 2017:170). Data were collected through appointments, and at the time when the respondents felt it was convenient for them to participate. The respondents were made aware that the information collected will be kept safe, in password protected computer and locked lockers. The respondents' privacy was also protected under anonymity since respondents to the study remained anonymous so other people would not know anything about personal information.

3.7.3 Right to anonymity and confidentiality

Anonymity means that even the researcher cannot link the participant's identity to the participant's response and confidentiality is the researcher's management of private information shared by the respondents that must not be shared with other people without the participant's permission (Gray et al 2017:170). The researcher explained to the respondents that the questionnaires did not require the participant's name or any form of identification, they were treated anonymously, and no information was to be linked to a person during reporting. The anonymous data would be used for the purposes such as research report, journal article and/or conference but respondents will not be identifiable in such reports. Results were reported anonymously in the research report and publications (articles).

3.7.4 Right to fair treatment

The right to fair treatment is based on the principle of justice. Each person should be treated fairly and their treatment during the study should also be fair (Gray et al 2017:172). Selection of a population and specific subjects should be fair so that the risks and benefits of the study are distributed fairly, and respondents should be selected for reasons directly related to the problem that is being studied (Gray et al 2017:172). This will also mean that selection of respondents should be based on study requirements and not on group vulnerability (Polit & Beck 2017:141). The newly qualified professional nurses who were on community service and working in the four

selected hospitals in Gauteng had equal chance of being respondents in the study because the sampling method was non-probability convenience sampling.

The researcher took cognisance of fair treatment to the respondents by making prior appointments with the respondents first before they can meet. The researcher also made sure that those appointments were honoured and on time. The researcher's respondents included people of different age, race, ethnic groups, and socioeconomic status. The research report shows that respondents were of different age groups.

There were few people who declined participation to the study, but the researcher never treated them with prejudice.

3.7.5 Right to protection from discomfort and harm

The right to protection from discomfort and harm is based on the principle of beneficence, this principle states that one should do good and not do harm (Gray et al 2017:173). When conducting research which involve humans the researcher should avoid, prevent or minimise harm. Harm and discomfort can be physical, emotional, social or financial. Ethical researchers have the obligation to use strategies that will minimise harm and discomforts, even those that are temporary. Sometimes it may be easy to protect humans from physical harm, but psychological consequences of study participation are usually subtle and may require sensitivity (Polit & Beck 2017:139).

There were no foreseeable risks of harm or side-effects to the respondents, however the researcher was aware that the respondents could be uncomfortable to respond to questions that could expose them that they were incompetent in some of the critical midwifery skills. During information giving the researcher explained to the respondents that they could withdraw at any time if they felt uncomfortable to continue with the study. Respondents were assured that they would not be victimised or penalised due to withdrawal from the study. The estimated time for completion of the questionnaire was also stated considering that some respondents could feel that completion of a questionnaire could be an inconvenience.

3.8   CONCLUSION

This chapter described the research design and methods. Information on the population, sample and sampling methods, eligibility and exclusive criteria, data collection methods and procedures, pilot testing, data management, data analysis and ethical considerations were explained. Ways and means of ensuring rigor, significance of the study, scope and limitations were discussed.

Data analysis presentation and description of the research findings will be discussed in the next chapter, which is Chapter 4.

CHAPTER 4

ANALYSIS PRESENTATION AND DESCRIPTION OF THE RESEARCH FINDINGS

4.1   INTRODUCTION

In Chapter 3 the researcher described the design and methods that were used to conduct the study and the quantitative descriptive design was used for this study. The research methods which included, sampling, population, data collection methods and procedures, pilot testing were explained. How the researcher ensured rigor in the study, data management and analysis was described. Ethical considerations taken for the study were also explained. This chapter presents and discuss the findings of a quantitative, descriptive, cross sectional study that was conducted in Gauteng, in Tshwane District. Questionnaire was used to collect data from the newly qualified professional nurses. Data from the respondents were analysed by means of Stata 15 software. The data were presented in a form of frequencies, graphs, charts and tables. The responses from the questionnaires were as follows:

Section A: Demographic data questions

Section B: Competence in cardiotocograph questions

Section C: Competence in partograph questions

Section D: Competence in management of third stage of labour questions

4.2   OBJECTIVES OF THE STUDY

The objectives of the study were as follows:

- To determine and describe the self-reported clinical competence of the newly qualified professional nurses in the following critical midwifery skills:

    − Electronic monitoring of the foetal heart and the uterine contractions
    − Interpretation of the cardiotochograph (CTG)
    − Monitoring and management of the progress of labour

- Interpretation of a partogram
- Management of 3rd stage of labour

- To make recommendations regarding the enhancement of clinical competence of the newly qualified professional nurses in the specified midwifery skills, according to the study findings.

4.3 OVERVIEW OF THE DATA COLLECTION INSTRUMENT

The adequacy of the tool was evaluated and the level of reliability of the questionnaire was as follows:

The scale reliability coefficient was 89.14%. The number of items in the scale was fifty-seven (57). The average inter-item correlation was 12.59%.

4.3.1 Cardiotocograph compliance measures

The number of questions or items in the scale were ten (10). The scale reliability coefficient was 73.57%. The average inter-item correlation was 21.78%.

4.3.2 Partograph compliance

The number of questions or items in the scale were thirty (30). The scale reliability coefficient was 88.33%. The average inter-item correlation was 20.15%.

4.3.3 Third stage of labour compliance

The number of questions or items in the scale were thirteen (13). The scale reliability coefficient was 66.45%. The average inter-item correlation was 13.22%.

4.4 RESEARCH FINDINGS

4.4.1 Description of the demographic profile data
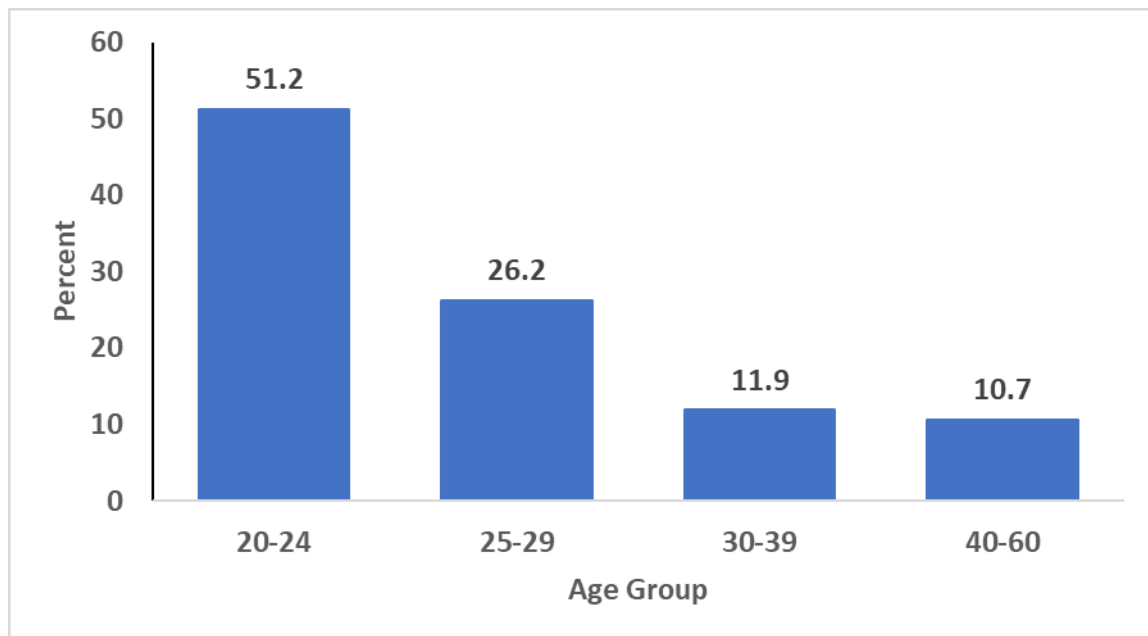
Figure 4.1 Distribution by age group

4.4.1.1   *Age*

All respondents (N=84) responded to the question. The findings indicated that approximately half 51% (n=43) respondents were aged 20 to 24 years. Twenty-six percent (n=22) of respondents were aged 25-29 years. Twelve percent (n=10) of respondents were aged 30-39. Eleven percent (n=9) of respondents were aged 40-60 years.

4.4.1.2   *Gender*

All respondents (N=84) responded to the question. The findings indicated that majority 95% (n=80) of the respondents of the newly qualified nurses were females. Only five percent (n=4) of respondents were males.

4.4.1.3   Qualification
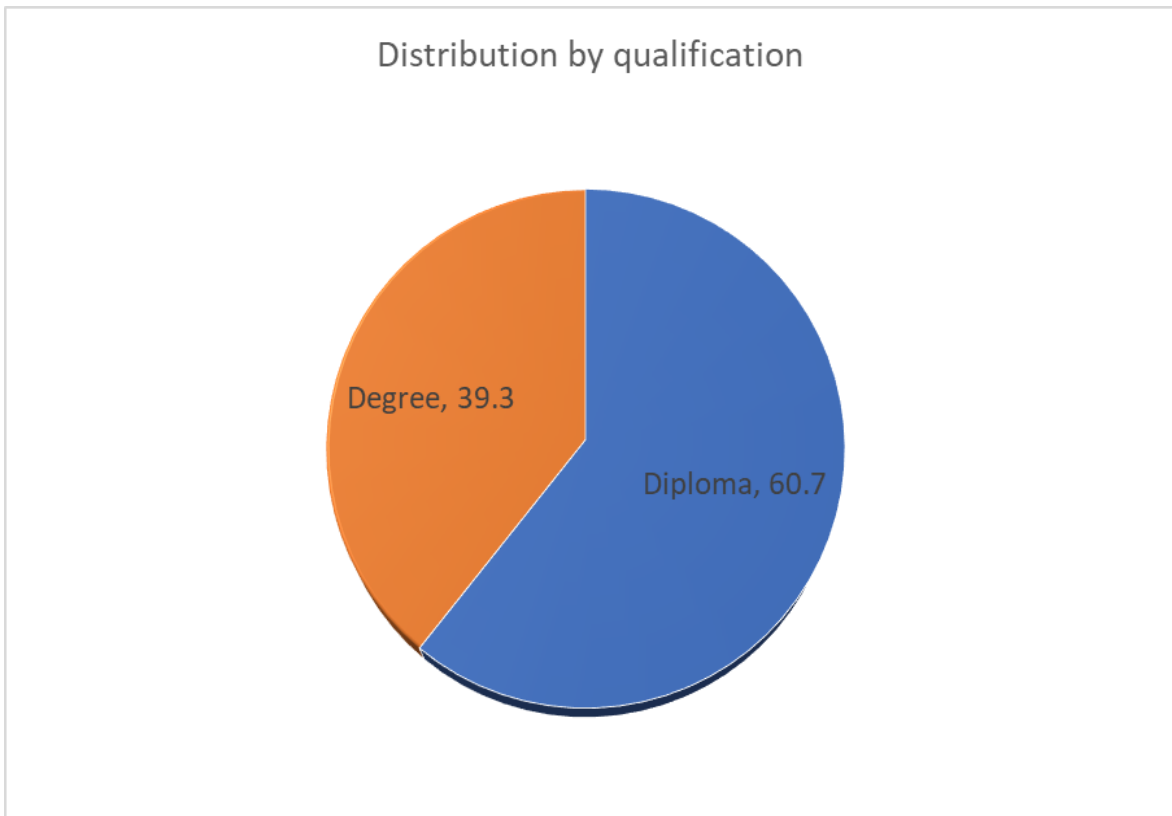
Figure 4.2 Distribution by qualification

The findings indicated that 61% (n=51) of the respondents had a qualification in diploma and only 39% (n=33) had a qualification in degree.

4.4.1.4 Number of months in community service

0 - 6, 1.2

12 - 24, 10.7

6 -12, 88.1

■ 0 - 6 ■ 6 -12 ■ 12 - 24
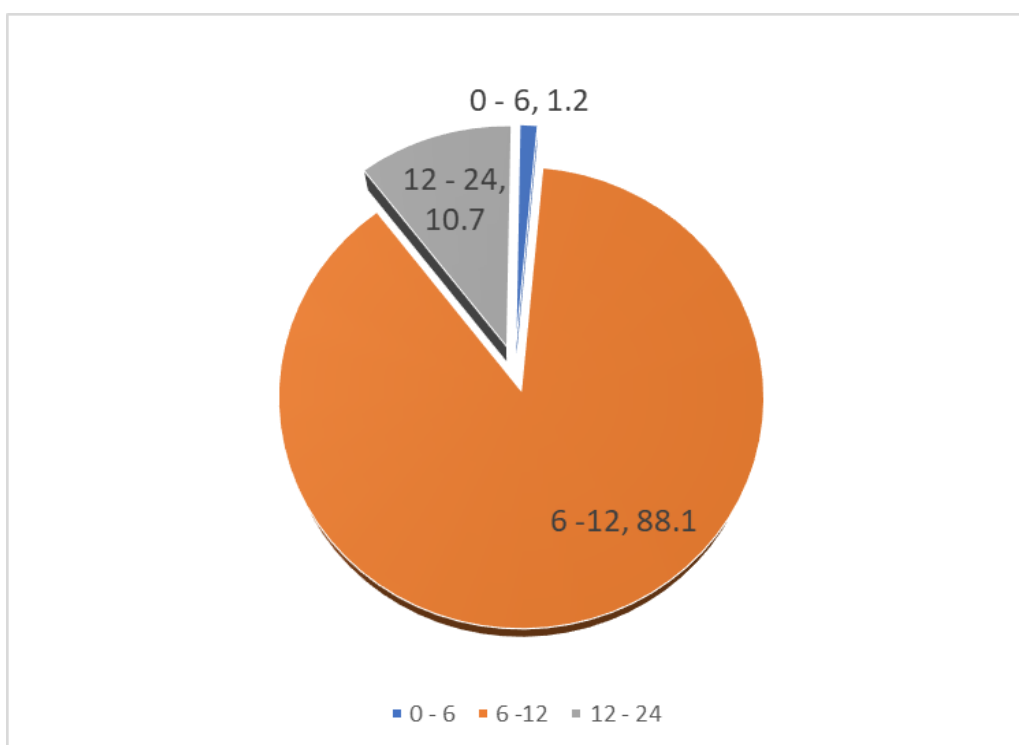
Figure 4.3 Distribution showing number of months of experience in community service

The results revealed that majority 88% (n=74) of the newly qualified nurses had 6 to 12 months in community service. Eleven percent (n=9) of respondents had 12-24 months of community service and only 1% (n=1) had 0-6 months of community service.

4.4.2 Description of competence in cardiotocograph

Table 4.1   Frequency distribution on competence in cardiotocograph

Competence	Frequency (Percentage)			
	No	Yes but	Yes	Not applicable
1. Knowledge on which probes on the CTG are for foetal heart rate and contraction	n=2 (2.8)	n=6 (7.1)	n=76 (90.5)	n=0 (0)
2. Ability to safely put the patient on the CTG machine	n=0 (0)	n=4 (4.8)	n=80 (95.2)	n=0 (0)

Competence	Frequency (Percentage)			
	No	**Yes but**	**Yes**	**Not applicable**
3. Ability to identify the normal foetal heart rate baseline	n=1 (1.2)	n=4 (4.8)	n=78 (94)	n=0 (0)
4. Ability to identify the abnormal foetal heart rate on a CTG trace	n=0 (0)	n=10 (11.9)	n=74 (88.1)	n=0 (0)
5. Ability to interpret CTG strip	n=3 (3.6)	n=35 (42.2)	n=45 (54.2)	n=0 (0)
6. Ability to identify different types of decelerations on a CTG trace	n=4 (4.8)	n=43 (51.2)	n=36 (42.8)	n=1 (1.2)
7. Ability to differentiate between the early and variable decelerations	n=5 (6)	n=47 (56)	n=32 (38)	n=0 (0)
8. Management of a patient with late decelerations	n=10 (11.9)	n=56 (66.7)	n=18 (21.4)	n=0 (0)
9. Management of a patient with variable decelerations	n=10 (11.9)	n=60 (71.4)	n=14 (16.7)	n=0 (0)
10. Availing self to training of CTG if made available to enhance competence where not competent	n=3 (3.6)		n=80 (96.4)	

4.4.2.1 Knowledge regarding which probe on the CTG is for foetal heart rate monitoring and for contraction

The findings revealed that majority 91% (n=76) of the respondents had knowledge on which probe on the CTG is used for foetal heart rate monitoring and which is for contraction.

4.4.2.2 The ability to safely put the patient on the CTG

The findings indicated that majority 95% (n=80) of the respondents reported to have the ability to safely put the patient on the CTG machine. Five percent (n=4) of respondents had knowledge but were not confident doing the skill.

4.4.2.3 The ability to identify the normal foetal heart rate baseline

The findings revealed that majority 94% (n=78) of the respondents reported to have the ability to identify the normal foetal heart rate baseline on the CTG trace.

4.4.2.4   The ability to identify the abnormal foetal heart rate on a CTG trace

The findings revealed that majority 88% (n=74) of the newly qualified nurses reported to have the ability to identify the abnormal foetal heart rate baseline on the CTG trace.

4.4.2.5   The ability to interpret the CTG strip

One of the respondents did not respond to this question. The findings of the study indicated that just above half 54% (n=45) of the respondents reported to have the ability to interpret the CTG strip. Forty-two percent (n=35) of respondents reported to have knowledge but were not confident about their ability to interpret the CTG strip. Four percent (n=3) of the respondents reported not have adequate knowledge to meet the requirements of the competency.

4.4.2.6   The ability to identify different types of decelerations

The findings of the study indicated that less than half 43% (n=36) of the respondents reported to have the ability to identify different types of decelerations. Fifty-one percent (n=43) of respondents reported to have knowledge but were not confident about their ability to identify different types of decelerations. Five percent (n=4) of the respondents reported not have adequate knowledge to meet the requirements of the competency.

4.4.2.7   The ability to differentiate between the early and variable decelerations

The findings of the study revealed that less than half 38% (n=32) of the newly qualified professional nurses reported to be competent in differentiating between the early and variable decelerations. Fifty-six percent (n=47) of respondents reported to have knowledge but were not confident about their ability to differentiate between the early and variable decelerations. Six percent (n=5) of the respondents reported not to have adequate knowledge to meet the requirements of the competency.

4.4.2.8   Management of a patient with late decelerations

The findings revealed that only few 21% (n=18) of the newly qualified professional nurses reported to be competent in managing a patient with late decelerations. Sixty-seven percent (n=56) of respondents reported to have knowledge but were not confident about their ability to manage a patient with late decelerations. Twelve percent (n=10) of the respondents reported not to have adequate knowledge to meet the requirements of the competency.

4.4.2.9   Management of a patient with variable decelerations

The findings revealed that few 17% (n=14) of the newly qualified professional nurses reported to be competent in managing a patient with variable decelerations. Seventy-one percent (n=60) of respondents reported to have knowledge but were not confident about their ability to manage a patient with variable decelerations. Twelve percent (n=10) of the respondents reported not to have adequate knowledge to meet the requirements of the competency.

4.4.2.10   Availing self for CTG training where not competent

The findings indicated that the majority 96% (n=80) of the respondents would like to be trained on the skills that they were not competent.

4.4.3   Description of competency in monitoring, management of the progress of labour and interpretation of a partograph

Table 4.2   Frequency distribution on competency in monitoring, management of progress of labour and interpretation of partograph

Competence	Frequency (Percentage)			
	No	**Yes but**	**Yes**	**Not applicable**
1. Knowledge on the purpose of using a partogram during labour	n=1 (1.2)	n=9 (10.8)	n=73 (88)	n=0 (0)
2. Foetal heart rate monitoring in latent and active phase	n=1 (1.2)	n=13 (15.5)	n=70 (83.3)	n=0 (0)

Competence	Frequency (Percentage)			
	No	**Yes but**	**Yes**	**Not applicable**
3. Colour of the amniotic fluid	n=0 (0)	n=2 (2.4)	n=82 (97.6)	n=0 (0)
4. Amniotic fluid recording and knowledge in identifying abnormalities when interpreting the partograph	n=11 (13.4)	n=24 (29.3)	n=46 (56.1)	1 (1.2)
5. Ability to identify and record caput succedaneum	n=6 (7.2)	n=28 (33.7)	n=49 (59)	n=0 (0)
6. Ability to identify various mouldings, identify the abnormalities and record correctly	n=5 (6)	n=48 (57.1)	n=31 (36.9)	n=0 (0)
7. Knowledge on how often should progress of labour be monitored	n=0 (0)	n=11 (13.1)	n=73 (86.9)	n=0 (0)
8. The ability to record information on progress of labour	n=0 (0)	n=13 (15.7)	n=70 (84.3)	n=0 (0)
9. The ability to identify and classify contractions	n=3 (3.6)	n=24 (28.6)	n=57(67.9)	n=0 (0)
10. The ability to record contractions	n=0 (0)	n=13 (15.5)	n=71 (84.5)	n=0 (0)
11. The ability to identify and measure the descent of the presenting part	n=4 (4.8)	n=31 (36.9)	n=48 (57.1)	n=1 (1.2)
12. The ability to record the descent of the presenting part	n=4 (4.8)	n=25 (29.8)	n=55 (65.5)	n=0 (0)
13. The ability to identify normal and abnormal foetal presentations	n=2 (2.4)	n=23 (27.4)	n=59 (70.2)	n=0 (0)
14. The ability to assess cervical effacement using the bishops score	n=16 (19.3)	n=45 (54.2)	n=22 (26.5)	n=0 (0)
15. Knowledge on how effacement should be charted	n=7 (8.3)	n=29 (34.5)	n=48 (57.2)	n=0 (0)
16. The ability to record cervical effacement	n=8 (9.6)	n=27 (32.5)	n=48 (57.3)	n=0 (0)
17. The ability to differentiate normal from abnormal cervical effacement	n=12 (14.6)	n=41 (50)	n=29 (35.4)	n=0 (0)
18. The ability to assess cervical dilatation	n=1 (1.2)	n=11 (13.3)	n=71 (85.4)	n=0 (0)
19. The ability to identify abnormal cervical dilatations	n=7 (8.3)	n=23 (27.4)	n=54 (64.3)	n=0 (0)

Competence	Frequency (Percentage)			
	No	Yes but	Yes	Not applicable
and interpret in relation to the progress of labour				
20. The ability to record cervical dilatation findings on the partograph	n=1 (1.2)	n=13 (15.5)	n=70 (83.3)	n=0 (0)
21. The ability to interpret the recordings on the action line of the partograph	n=2 (2.4)	n=23 (27.4)	n=59 (70.2)	n=0 (0)
22. Knowledge on how often maternal vital signs should be monitored	n=0 (0)	n=4 (4.8)	n=80 (95.2)	n=0 (0)
23. The ability to record fluid balance and urinalysis	n=0 (0)	n=3 (3.6)	n=81 (96.43)	n=0 (0)
24. The ability to record given medication on the partograph	n=0 (0)	n=3 (3.6)	n=81 (96.4)	n=0 (0)
25. Assessment of recorded foetal and maternal wellbeing on the partograph	n=0 (0)	n=8 (9.5)	n=76(90.5)	n=0 (0)
26. Ability to identify prolonged labour on the partograph	n=1 (1.2)	n=7 (8.3)	n=76 (90.5)	n=0 (0)
27. Ability to manage a patient with prolonged labour	n=4 (4.8)	n=40 (47.6)	n=40 (47.6)	n=0 (0)
28. Ability to identify cephalo-pelvic disproportion (CPD) or obstructed labour	n=11(13.1)	n=34 (40.5)	n=39 (46.4)	n=0 (0)
29. Ability to discern as to when to report or transfer the patient with an obstetric problem	n=4 (4.8)	n=36 (42.9)	n=44 (52.4)	n=0 (0)
30. Availing yourself to training of partograph if made available to enhance competence where not competent	n=4 (4.8)		n=80 (95.2)	

4.4.3.1   Knowledge on the purpose of using a partograph during labour

The findings of the study indicated that majority 88% (n=73) of the respondents reported to have knowledge on the purpose of using a partograph during labour.

4.4.3.2   Knowledge on foetal heart rate monitoring in latent and active phase

The findings of the study revealed that majority 83% (n=70) of the respondents reported to have knowledge on foetal heart rate monitoring in latent and active phase of labour.

4.4.3.3   Knowledge on the normal colour of the amniotic fluid

The findings of the study indicated that majority 98% (n=82) of the respondents reported to have knowledge on the normal colour of the amniotic fluid.

4.4.3.4   Knowledge on recording amniotic fluid and identifying abnormalities during interpretation of the partograph

The findings indicated that 56% (n=46) of the respondents reported to have knowledge on how amniotic fluid was recorded and could identify abnormalities during interpretation of the partograph. Twenty-nine percent (n=24) of respondents reported to have knowledge but were not confident about their ability to record and identifying abnormalities during interpretation of partograph. Thirteen percent (n=11) of the respondents reported not have adequate knowledge to meet the requirements of the competency.

4.4.3.5   The ability to identify and record caput succedaneum

The findings of the study indicated that 59% (n=49) of the respondents reported to have the ability to identify and record caput succedaneum. Thirty-four percent (n=28) of respondents reported to have knowledge but were not confident about their ability to identify and record caput succedaneum. Seven percent (n=6) of the respondents reported not have adequate knowledge to meet the requirements of the competency.

4.4.3.6   The ability to identify various mouldings, identify abnormalities and record correctly

The findings revealed that 37% (n=31) of the respondents reported to have the ability to identify various moulding, identify abnormalities and record correctly. Fifty-seven percent (n=48) of respondents reported to have knowledge but were not confident about

their ability to identify various mouldings, identify abnormalities and record correctly. Six percent (n=5) of the respondents reported not have adequate knowledge to meet the requirements of the competency.

4.4.3.7   Frequency on monitoring of progress of labour

The findings indicated that majority 87% (n=73) of the respondents reported to have knowledge on how often progress of labour should be monitored.

4.4.3.8   Recording of the progress of labour

The findings indicated that 84% (n=70) of the respondents reported to have the ability to record information on progress of labour. Sixteen percent (n=13) of respondents reported to have knowledge but were not confident about their ability to record the progress of labour on the partograph.

4.4.3.9   Identify and classify contractions

The findings indicated that 68% (n=57) of the respondents reported to have the ability to identify and classify contractions.

4.4.3.10   Recording of contractions

The findings of the study indicated that the majority 85% (n=71) of the respondents reported to have the ability to record contractions on the partograph.

4.4.3.11   Identify and measure the descent of the presenting part

The findings indicated that 57% (n=48) of the respondents reported to have the ability to identify and measure descent of the presenting part. Thirty-seven percent (n=31) of respondents reported to have knowledge but were not confident about their ability to identify and measure the descent of the presenting part. Five percent (n=4) of the respondents reported not have adequate knowledge to meet the requirements of the competency.

4.4.3.12 Recording of the descent of the presenting part

The findings indicated that 66% (n=55) of the respondents reported to have the ability to record the descent of the presenting part.

4.4.3.13 Identify normal and abnormal foetal presentations

The findings indicated that 70% (n=59) of the respondents reported to have the ability to identify normal and abnormal foetal presentations. Twenty-seven percent (n=23) of respondents reported to have knowledge but were not confident about their ability to identify normal and abnormal foetal presentations.

4.4.3.14 Assessment of cervical effacement using the bishop score

The findings revealed that few 27% (n=22) of the respondents reported to have the ability to assess cervical effacement using the bishop score.

4.4.3.15 Charting of effacement

The findings of the study revealed that 57% (n=48) of the respondents reported to have knowledge on how to chart effacement on the partograph.

4.4.3.16 Recording of cervical effacement (cm or %)

The findings of the study revealed that 57% (n=48) of the respondents reported to have knowledge on how effacement should be recorded on the partograph.

4.4.3.17 Ability to differentiate normal from abnormal cervical effacement

The findings of the study revealed that only 35% (n=29) of the respondents reported to have the ability to differentiate normal from abnormal cervical effacement.

4.4.3.18   Ability to assess cervical dilatation

The findings indicated that majority 85% (n=71) of the respondents reported to be competent in assessing cervical dilatation.

4.4.3.19   Ability to identify abnormal cervical dilatation and interpretation in relation to the progress of labour

The findings of the study indicated that 64% (n=54) of the respondents reported to have the ability to identify abnormal cervical dilatations and interpretation in relation to the progress of labour.

4.4.3.20   Ability to record cervical dilatation findings on the partograph

The findings revealed that the majority 84% (n=70) of the respondents reported to have the ability to record cervical dilatation findings on the partograph.

4.4.3.21   Ability to interpret the recordings on the action line of the partograph

The findings revealed that 70% (n=59) of the respondents reported to have the ability to interpret the recordings on the action line of the partograph.

4.4.3.22   Maternal vital signs monitoring

The findings of the research indicated that the majority 95% (n=80) of the respondents reported to knowledge on how often maternal vital signs should be monitored during labour.

4.4.3.23   Recording of the fluid balance and urinalysis

The findings revealed that majority 96% (n=81) of the respondents reported to have the ability to record fluid balance and urinalysis on the partograph.

4.4.3.24   Recording of medication

The findings revealed that the majority 96% (n=81) of the respondents reported to have the ability to record given medication on the partograph.

4.4.3.25   Assessment of foetal and maternal wellbeing

The findings indicated that majority 91% (n=76) of the respondents reported to have the ability to assess recorded foetal and maternal wellbeing on the partograph.

4.4.3.26   Identification of prolonged labour

The findings indicated that 91% (n=76) of the respondents reported to have competence in identifying prolonged labour on the partograph chart.

4.4.3.27   Management of a patient with prolonged labour

The findings revealed that 48% (n=40) of the respondents reported to have the ability to manage a patient with prolonged labour.

4.4.3.28   Ability to identify cephalo-pelvic disproportion or obstructed labour

The findings revealed that 46% (n=39) of the respondents reported to have the ability to identify cephalo-pelvic disproportion or obstructed labour. The results for this characteristic demonstrate that there was a general evidence of low level of competence.

4.4.3.29   Ability to discern as to when to report or transfer the patient with an obstetric problem

The findings indicated that 52% (n=44) of the respondents reported to have the ability to discern as to when to report or transfer the patient with an obstetric problem. Similarly, the level of competencies relatively low compared to others presented above.

4.4.3.30 Availing self for partograph training where not competent

The findings indicated that the majority 95% (n=80) of the respondents reported that they would like to be trained on the skills that they were not competent.

4.4.4 Description of competency in management of third stage of labour

Table 4.3   Frequency distribution on competency in management of third stage of labour

Competence	Frequency (Percentage)			
	No	Yes but	Yes	Not applicable
1. Ability to passively manage third stage of labour	n=0 (0)	n=8 (9.5)	n=76 (90.5)	n=0 (0)
2. Ability to identify signs of placental separation and placental descent on a patient	n=6 (7.2)	n=18(21.4)	n=60 (71.4)	n=0 (0)
3. Ability to actively manage third stage of labour on a patient	n=1 (1.2)	n=3 (3.6)	n=80 (95.2)	n=0 (0)
4. Ability to identify when to administer oxytocin or uterotonic drugs	n=1 (1.2)	n=13 (15.5)	n=69 (82.1)	n=1 (1.12)
5. Ability to do controlled cord traction during delivery of the placenta	n=2 (2.4)	n=4 (4.8)	n=78 (92.9)	n=0 (0)
6. Knowledge on the measures to stimulate uterine contraction	n=2 (2.4)	n=18 (21.4)	n=64 (76.2)	n=0 (0)
7. The importance of measuring the total blood loss	n=2 (2.4)	n=8 (9.5)	n=74 (88.1)	n=0 (0)
8. I know the abnormal blood loss	n=0 (0)	n=16 (19.1)	n=68 (80.9)	n=0 (0)
9. Ability to identify post-partum haemorrhage and to institute emergency management	n=0 (0)	n=20 (23.8)	n=64 (76.2)	n=0 (0)
10. Ability to examine the placenta	n=1 (1.2)	n=8 (9.5)	n=75 (89.3)	n=0 (0)
11. Knowledge on the importance of placenta examination	n=2 (2.4)	n=5 (6.0)	n=77 (91.6)	n=0 (0)

Competence	Frequency (Percentage)			
	No	Yes but	Yes	Not applicable
12. Ability to identify abnormalities on the placenta during examination	n=3 (3.6)	n=18 (21.4)	n=63 (75)	n=0 (0)
13. Availing yourself to training of management of third stage of labour if made available to enhance competence where not competent	n=4 (4.8)		n=80 (95.2)	

4.4.4.1   Ability to passively manage third stage of labour

The findings of the study indicated that majority 91% (n=76) of the respondents reported that they could passively manage third stage of labour.

4.4.4.2   Identification of signs of placental separation and placental descent

The findings of the study indicated that 71% (n=60) of the respondents reported that they had the ability to identify signs of placental separation and placental descent on a patient.

4.4.4.3   Active management of third stage of labour

The findings of the study indicated that the majority 95% (n=80) of the respondents reported that they could actively manage third stage of labour.

4.4.4.4   Ability to identify when to administer oxytocin or uterotonic drug

The findings of the study indicated that 82% (n=69) of the respondents reported to have the ability to identify when to administer oxytocin or uterotonic drugs.

4.4.4.5   Ability to do controlled cord traction during delivery of the placenta

The findings of the study indicated that 93% (n=78) of the respondents had the ability to do controlled cord traction during delivery of the placenta. Five percent (n=4) of

respondents reported to have knowledge but were not confident about their ability to do controlled cord traction during delivery of the placenta. Two percent (n=2) of the respondents reported not have adequate knowledge to meet the requirements of the competency.

4.4.4.6   Measures to stimulate uterine contraction

The findings of the study indicated that 76% (n=64) of the respondents reported that they had knowledge regarding measures to stimulate uterine contractions.

4.4.4.7   Importance of measuring total blood loss

The findings of the study indicated that 88% (n=74) of the respondents reported that they had knowledge regarding the importance of measuring the total blood loss.

4.4.4.8   Knowledge of abnormal blood loss

The findings of the study indicated that 81% (n=68) of the respondents reported that they knew abnormal blood loss.

4.4.4.9   Identification of post-partum haemorhage and emergency management

The findings of the study indicated that 76% (n=64) of the respondents reported that they had the ability to identify post-partum haemorhage and institute management.

4.4.4.10   Ability to examine placenta

The findings of the study indicated that 89% (n=75) of the respondents reported that they had the ability to examine the placenta. Ten percent (n=8) of respondents reported to have knowledge but were not confident about their ability to examine the placenta. One percent (n=1) of the respondents reported not have adequate knowledge to meet the requirements of the competency.

4.4.4.11 Importance of placenta examination

The findings of the study indicated that 92% (n=77) of the respondents reported that they knew the importance of placenta examination.

4.4.4.12 Ability to identify abnormalities on the placenta during examination

The findings of the study indicated that 75% (n=63) of the respondents reported that they could identify abnormalities on the placenta during examination.

4.4.4.13 Availing self for management of third stage of labour training

The findings indicated that the majority 95% (n=80) of the respondents would like to be trained on the skills that they were not competent.

4.4.5 Compliance analysis

4.4.5.1 Overall compliances for the competences

Table 4.4 Overall compliances for the Competencies

	Category	Compliance	95% C.I.	Non-compliance	95% C.I.
1	Cardio	0.70	[0.59, 0.79]	0.30	[0.21, 0.41]
2	Partograph	0.87	[0.78, 0.93]	0.13	[0.07, 0.22]
3	Third Stage	0.96	[0.89, 0.99]	0.04	[0.01, 0.11]

4.4.5.1.1 Cardiotocograph compliance

With respect to cardiotocograph there was 70% level of compliance with confidence interval of between [59-79]. There was also 30% non-compliance with confidence interval of between [21-41].

4.4.5.1.2   Partograph compliance

The findings revealed that with respect to partograph there was 87% level of compliance with confidence interval of between [78-93]. There was also 13% level non-compliance with confidence level of between [7-22].

4.4.5.1.3   Third stage of labour management compliance

With respect to third stage of labour management there was 96% level of compliance with confidence interval of between [89-99].

4.4.5.2   Compliance by gender for the three compliance characteristics

Table 4.5   Compliance by gender for the three compliance characteristics

		Males		Females	
	Category	**Compliance**	**Non-compliance**	**Compliance**	**Non-compliance**
1	Cardio	0.75	0.25	0.7	0.30
2	Partograph	1.00	0.0	0.86	0.14
3	Third Stage	1.00	0.0	0.96	0.04
	Total	**1.0**	**0.0**	**0.91**	**0.9**

4.4.5.2.1   Compliance by gender for cardiotocograph

With respect to compliance by gender for cardiotocograph, there was 75% level of compliance and 25% non-compliance with males. There was 70% compliance and 30% non-compliance with females.

4.4.5.2.2   Compliance by gender for partograph

With respect to compliance by gender for partograph, there was 100% level of compliance and males. There was 86% compliance and 14% non-compliance with females.

4.4.5.2.3.   Compliance by gender for third stage

With respect to compliance by gender for third stage, there was 100% level of compliance for males. There was 96% compliance and 4% non-compliance with females.

4.4.5.3   Compliance by qualification for the three compliance characteristics

Table 4.6   Compliance by qualification for the three compliance characteristics

		Diploma		Degree	
	Category	**Compliance**	**Non-compliance**	**Compliance**	**Non-compliance**
1	Cardio	0.73	0.27	0.67	0.33
2	Partograph	0.86	0.14	0.88	0.12
3	Third Stage	0.94	0.06	1.00	0.00
	Total	**.90**	**0.10**	**0.94**	**0.06**

4.4.5.3.1   Compliance by qualification for cardiotocograph

With respect to compliance by qualification for cardiotocograph, there was 73% level of compliance and 27% non-compliance with those who had a diploma qualification. There was 67% compliance and 33% non-compliance with those who had a degree.

4.4.5.3.2   Compliance by qualification for partograph

With respect to compliance by qualification for partograph, there was 86% level of compliance and 14% non-compliance with those who had a diploma qualification. There was 88% compliance and 12% non-compliance with those who had a degree.

4.4.5.3.3   Compliance by qualification for third stage

With respect to compliance by qualification for third stage, there was 94% level of compliance and 6% non-compliance with those who had a diploma qualification. There was 100% compliance with those who had a degree.

The results revealed that with respect to compliance by qualification for all the three characteristics, there was 90% level of compliance and 10% non-compliance with those who had a diploma qualification. There was 94% level of compliance and 6% of non-compliance with those who had a degree.

4.4.5.4   Compliance by Age-group for the three Compliance Characteristics

Table 4.7   Compliance by age-group for the three compliance characteristics

| | | Compliance | | | | Non-compliance | | | |
| | | Age group | | | | Age group | | | |
	Category	**20-24**	**25-29**	**30-39**	**40-60**	**20-24**	**25-29**	**30-39**	**40-60**
1	Cardio	0.72	0.59	0.80	0.78	0.28	0.41	0.20	0.22
2	Partograph	0.88	0.86	0.80	0.89	0.12	0.14	0.20	0.11
3	Third Stage	0.98	0.95	0.90	1.00	0.02	0.05	0.10	0.00
	Total	**0.93**	**0.95**	**0.80**	**0.89**	**0.07**	**0.05**	**0.20**	**0.11**

4.4.5.4.1   *Compliance by age group for cardiotocograph*

With respect to compliance by age group for cardiotocograph, there was 72% level of compliance for respondents aged 20-24 years and 28% non-compliance between the same age. The results revealed that there was 59% level of compliance respondents aged 25-29 years and 41% non-compliance for the same age. There was 80% level of compliance for respondents aged 30-39 years and 20% non-compliance for the same age. There was 78% level compliance for respondents aged 40-60 years and 22% non-compliance for the same age.

4.4.5.4.2   *Compliance by age group for partograph*

The findings revealed that with respect to compliance by age group for partograph, there was 88% level of compliance for respondents aged 20-24 years and 12% non-compliance between the same age. There was 86% level of compliance for respondents aged 25-29 years and 14% non-compliance between. There was 80% level of compliance for respondents aged 30-39 years and 20% non-compliance for the same

age. There was 89% level of compliance for respondents aged 40-60 years and 11% non-compliance for the same age.

4.4.5.4.3   Compliance by age group for third stage

With respect to compliance by age group for cardiotocograph, there was 98% level of compliance for respondents aged 20-24 years and 2% non-compliance between the same age. The results revealed that there was 95% level of compliance for respondents aged 25-29 years and 5% non-compliance for the same age. There was 90% level of compliance for respondents aged of 30-39 years and 10% non-compliance for the same age. There was 100% level compliance for respondents aged of 40-60 years.

4.4.5.5   Compliance by months of community service for the three compliance characteristics

Table 4.8   Compliance by **months of community service for the three compliance characteristics**

		Compliance			Non-compliance		
		Months of community service			Months of community service		
	Category	0-6 months	6-12 months	12-24 months	0-6 months	6-12 months	12-24 months
1	Cardio	1.00	0.70	0.67	0.00	0.30	0.33
2	Partograph	1.00	0.86	0.89	0.00	0.14	0.11
3	Third stage	1.00	0.97	0.89	0.00	0.03	0.11
	Total	**1.00**	**0.92**	**0.89**	**0.00**	**0.08**	**0.11**

4.4.5.5.1   Compliance by months of community service for cardiotocograph

The findings revealed that with respect to compliance by months of community service for cardiotocograph, there was 100% level of compliance between 0-6 months. There was 70% level of compliance and 30% non-compliance between 6-12 months. There was 67% level of compliance and 33% non-compliance between 12-24 months.

4.4.5.5.2. Compliance by months of community service for partograph

The findings revealed that with respect to compliance by months of community service for partograph, there was 100% level of compliance between 0-6 months. There was 86% level of compliance and 14% non-compliance between 6-12 months. There was 89% level of compliance and 11% non-compliance between 12-24 months.

4.4.5.5.3   Compliance by months of community service for third stage

The findings revealed that with respect to compliance by months of community service for third stage, there was 100% level of compliance between 0-6 months. There was 97% level of compliance and 3% non-compliance between 6-12 months. There was 89% level of compliance and 11% non-compliance between 12-24 months.

4.4.5.6   Compliance by months of community service ignoring the single respondents in 0-6 months

Table 4.9   Compliance by months of community service ignoring the single respondents in 0-6 months

| | | Compliance | | Non-compliance | |
| | | Months of community service | | Months of community service | |
	Category	6-12 months	12-24 months	6-12 months	12-24 months
1	Cardio	0.70	0.67	0.30	0.33
2	Partograph	0.86	0.89	0.14	0.11
3	Third Stage	0.97	0.89	0.03	0.11
	Total	**0.92**	**0.89**	**0.08**	**0.11**

4.4.5.6.1   Compliance by months of community service for cardiotocograph

The findings revealed that with respect to compliance by months of community service for cardiotocograph, there was 70% level of compliance and 30% non-compliance between 6-12 months. There was 67% level of compliance and 33% non-compliance between 12-24 months.

4.4.5.6.2   *Compliance by months of community service for partograph*

The findings revealed that with respect to compliance by months of community service for partograph, there was 86% level of compliance and 14% non-compliance between 6-12 months. There was 89% level of compliance and 11% non-compliance between 12-24 months.

4.4.5.6.3   *Compliance by months of community service for third stage*

The findings revealed that with respect to compliance by months of community service for third stage, there was 97% level of compliance and 3% non-compliance between 6-12 months. There was 89% level of compliance and 11% non-compliance between 12-24 months.

Generally, from the analysis and using the standard of 50%, there was a general evidence of good compliance. The compliance on cardiotocograph was lowest in comparison to the other three subdomains. There was relative evidence to show that those with more months of experience compares closely with those in the younger years. The result showed no evidence of association between compliance and any of the demographic characteristics (age, gender, qualification or number of months served.) The findings on the training revealed that about 80% indicated their willingness to avail themselves for training for each area of Competence.

4.5   CONCLUSION

In this chapter analysis presentation and description of the research findings of the data collected from the newly qualified professional nurses regarding their competence on specific midwifery skills was described. Overview of the data collection instrument was also described.

In Chapter 5 the researcher discusses the interpretation of the research findings, give conclusions and recommendations of the study.

CHAPTER 5

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1   INTRODUCTION

Chapter 4 presented the analysis and description of the research findings. The purpose of this chapter is to determine if the research aim has been achieved. The chapter discusses the interpretation of the research findings and give conclusion regarding the self-reported competence of the newly qualified professional nurses in specific midwifery skills. The recommendations, and suggestions, for further research are presented in this chapter.

5.2   RESEARCH DESIGN AND METHOD

The researcher adopted a quantitative, descriptive design, which centres on describing variables, examining relationships and improving the precision of measurement. The researcher chose this design because it can be used to identify areas of incompetence, justify current practice and make judgements in relation to the clinical competence of the newly qualified professional nurses in specified midwifery skills. The study described the self-reported competence of newly qualified professional nurses in specific midwifery skills. The chosen midwifery skills are critical, the newly qualified professional nurses must be competent in these skills to adequately care for the mother and foetus, thus, to prevent maternal and foetal deaths.

The information gathered was quantitative, that is numeric information obtained from a formal measurement is analysed statistically (Polit & Beck 2017:11). The researcher used a self-administered questionnaire instrument in order to have a controlled condition and the rating was numeric and the analysis was done statistically.

The population in this study was the newly qualified professional nurses who have completed the SANC R425 nursing education programme and are serving the compulsory remunerated community service in the four public hospitals designated for community service in, Tshwane Gauteng Province. In this study, the total number of the

Community Service Professional Nurses in Gauteng was six hundred and seven (607). The total number of accessible Community Service Professional nurses was one hundred and seven (107). The sample size was eighty-four (84) newly qualified professional nurses.

The type of sampling method was non-probability convenience sampling for the respondents and purposive sampling for the sites. The newly qualified professional nurses who were on duty at the time of data collection were sampled. Four hospitals were purposively selected from the list of public hospitals designated for community service in Tshwane, Gauteng Province. The hospitals were selected for having a high number of newly qualified professional nurses serving community service.

The survey method of data collection was used for this research. A cross-sectional survey design was used, because it creates an overall picture of a phenomenon at the same time. This kind of design collect data from respondents once and there is no need to repeat (Du Plooy-Cilliers et al 2014:149). A self-report questionnaire was administered to the respondents. Data was collected between the months of August to October 2018 at the four sampled hospitals in Gauteng.

The objectives of the study were as follows:

- To determine and describe the self-reported clinical competence of the newly qualified professional nurses in the following critical midwifery skills:

  − Electronic monitoring of the foetal heart and the uterine contractions
  − Interpretation of the cardiotochograph (CTG)
  − Monitoring and management of the progress of labour
  − Interpretation of a partogram
  − Management of third stage of labour

- To make recommendations regarding the enhancement of clinical competence of the newly qualified professional nurses in the specified midwifery skills, according to the study findings.

5.3   SUMMARY AND INTERPRETATION OF THE RESEARCH FINDINGS

The findings of the study are summarised according to the sections.

5.3.1 Section A - Demographic data

The study found that most (51%) respondents were between the age of 20 to 24 years and only 11% were between the age of 40-60. This may be because of the assumption that students who are accepted to this programme, have completed matric at the age of 17 years and start tertiary education at 18 years. Nxumalo (2011:83) as cited in Setumo (2013:54) indicated that the average age of students who commenced the R425 nursing education program in 2009 was 26 years, minimum age was 17 years, and 55 years was the maximum.

The study revealed that majority (95%) of the respondents of the newly qualified nurses were females and (5%) of respondents were males. The distribution confirmed the general profile as there are more females than males in nursing. The findings revealed that 61% of the respondents had a qualification in diploma qualification and only 39% had a degree. This finding could probably be because the colleges at Gauteng have high numbers of students' intake compared to the universities.

The results revealed that majority 88% of the respondents had 6 to 12 months in community service. This is because any person who is a citizen of South Africa intending to register for the first time as a professional nurse and has met the prescribed requirements must perform remunerated community service (SANC 2007:1). Community service is done for full twelve months in the public health establishment. If a period of community service is interrupted within six calendar months or more such period must be made up within a maximum period of 2 years (SANC 2007:3). The community service certificate expires after 2 years and in view of this many newly qualified professional nurses are obliged to do their community service within the first year of completion of the R425 nursing education programme.

5.3.2 Competency in cardiotocograph

5.3.2.1   Fetal heart rate and contraction monitoring

As stated above, one of the objectives of the study was to determine and describe competency regarding electronic monitoring of the foetal heart and the uterine contractions and interpretation of the CTG. The findings revealed that majority (91%) of the respondents had knowledge on which probe on the CTG is used for foetal heart rate monitoring and for contraction and 95% of the respondents had the ability to safely put the patient on the CTG machine.

5.3.2.2   CTG Interpretation

The results revealed that majority (94%) of the respondents had the ability to identify the normal foetal heart rate baseline and 88% had the ability to identify the abnormal foetal heart rate baseline on the CTG trace.

However, the study revealed that just above half (54%) of the respondents could interpret a full CTG strip and 42% of respondents had knowledge but were not confident in interpreting a full strip. These findings were in contrary with the study done in Denmark, where it was found that the mean score on a CTG test of knowledge, interpretation skills and decision-making was positively associated with having less than fifteen years of obstetric work experience (Thellesen et al 2017:1080).

The findings of the study revealed that less than half (43%) of the respondents had the ability to identify different types of decelerations and only 38% of the respondents were competent in identifying differentiating between the early and variable decelerations. It was also revealed that few (21%) of the respondents were competent in managing a patient with late decelerations and only 17% of the respondents were competent in managing a patient with variable decelerations. This is a concern considering that CTG was developed in order to enable obstetricians and midwives to analyse the changes of foetal heart rate during labour in order to make interventions on time to avoid intrapartum hypoxic-ischaemic injury (Pinas & Chandraharan 2016:33).

The majority (96%) of the respondents would like to be trained on the skills in order to enhance knowledge regarding monitoring and interpretation of the CTG. This shows a good attitude of the newly qualified professional nurses because it gives them an opportunity to improve their skills.

5.3.3 Competency in partograph

The results of the study indicated that majority (88%) of the respondents had knowledge on the purpose of using a partograph during labour and 83% of the respondents had knowledge regarding foetal heart rate monitoring in latent and active phase of labour.

5.3.3.1 *Foetal well-being*

The findings of the study indicated that majority (98%) of the respondents had knowledge on the normal colour of the amniotic fluid and 56% of the respondents had knowledge on how amniotic fluid is recorded and could identify abnormalities during interpretation of the partograph.

The results revealed that 59% of the respondents were able to identify and record caput succedaneum and only 37% of the respondents had the ability to identify various moulding, identify abnormalities and record correctly. Moulding protects the brain from compression. Moulding is assessed each time during per vaginal examination. The change in shape is made possible by the bones as they override at the sutures thus reducing the size of the presenting diameters (Dippenaar & Da Serra 2013:340). Determining the degree of moulding by the midwife is very important because it can influence the foetal outcome and a midwife is expected to be competent in this skill.

5.3.3.2 *Progress of labour*

The findings indicated that majority (87%) of the respondents had knowledge on how often progress of labour should be monitored and 84% of the respondents had the ability to record information on progress of labour.

The findings indicated that 68% of the respondents had the ability to identify and classify contractions and 85% of the respondents had the ability to record contractions on the partograph.

The findings indicated that 57% of the respondents were able to identify and measure descent of the presenting part and 66% of the respondents had the ability to record the descent of the presenting part on the partograph. The findings indicated that 70% of the respondents had the ability to identify normal and abnormal foetal presentations.

The results revealed that few (27%) of the respondents had the ability to assess cervical effacement using the bishop score and 57% of the respondents knew how effacement should be recorded on the partograph. It was also revealed that only 35% of the respondents were able to differentiate normal from abnormal cervical effacement.

The findings indicated that majority (85%) of the respondents were competent in assessing cervical dilatation and 64% of the respondents had the ability to identify abnormal cervical dilatations and interpretation in relation to the progress of labour. The findings indicated that the majority (84%) of the respondents had the ability to record cervical dilatation findings on the partograph. This finding was good because the rate of cervical dilatation is the main parameter for recording progress of labour. It serves as an early warning system and assist in making an early decision on transfer, augmentation and termination of labour (Rani & Laxmi 2016:315). Another study done in Malawi revealed that health care providers did not accurately record all the parameters on the partograph to monitor the progress of labour as per the national guidelines in Malawi. Cervical dilatation was fully recorded in 75.5% of the partograph and this agrees with the findings reported in Tanzania and Uganda (Mandiwa & Zamawe 2017:3). The finding that there were some aspects of the partograph that the respondents did not have knowledge on will be related to above finding with the assumption that the parameters that were not recorded accurately were not known.

The findings revealed that 70% of the respondents reported that they had the ability to interpret the recordings on the action line of the partograph.

5.3.3.3   Maternal well-being

The findings of the research indicated that the majority (95%) of the respondents knew how often maternal vital signs should be monitored in labour and 96% of the respondents had the ability to record fluid balance and urinalysis. The results also revealed that the majority 96% of the respondents had the ability to record given medication on the partograph. This is a good finding because it means that the newly qualified professional nurses will be able to monitor and record the maternal well-being and this may differs with the findings by Bedwell et al (2017:5) which revealed that sections in the partograph which are most likely to be completed are those relating to progress and foetal well-being and this may reflect ease of use in completing particular sections, or respondents understanding of the partograph.

5.3.3.4   Interpretation of recorded partograph and management

The findings indicated that majority 91% of the respondents were able to assess recorded foetal and maternal wellbeing on the partograph. Ninety-one percent of the respondents had competence in identifying prolonged labour on a recorded partograph but only 48% of the respondents had the ability to manage a patient with prolonged labour. Prolonged labour is a leading cause of death among mothers and newborns in the developing world. Early detection of prolonged or obstructed labour greatly contributes to the prevention of complications such as post-partum haemorrhages, ruptured uterus, puerperal sepsis and obstetric fistula (Mezmur et al 2017:2). Thus, it is a concern that less than 50% newly qualified professional nurses could manage prolonged labour. This is supported by the research conducted in Ethiopia by Abede et al (2013:26) cited in Muzeya (2015:3) which revealed that the level of knowledge of the components of the partograph was very poor and approximately a third of the partograph was very poor

The results revealed that 46% of the respondents had the ability to identify cephalo-pelvic disproportion or obstructed labour and 52% of the respondents had the ability to discern as to when to report or transfer the patient with an obstetric problem.

The findings indicated that the majority (95%, n=80) of the respondents would like to be trained on the skills that they were not competent.

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5.3.4 Competency in third stage of labour

The findings of the study indicated that majority (91%) of the respondents could passively manage third stage of labour and 71% of the respondents had the ability to identify signs of placental separation and placental descent on a patient.

The results of the study indicated that the majority (95%) of the respondents could actively manage third stage of labour and 82% of the respondents had the ability to identify when to administer oxytocin or uterotonic drugs. This is a good finding because the guidelines for maternity care in South Africa also recommend the active method of managing the third stage of labour in order to prevent excessive bleeding (National department of Health 2015:50). This may lead to the assumption that if the majority of the newly qualified professional nurses have the ability to implement active management of labour then they will be able to follow the maternity guidelines.

This finding is in contrary with the research results of the study done in Ethiopia by Abede, Birhanu, Awoke and Ejigu (2013:26) cited in Muzeya (2015:3) that the nurse midwives had knowledge of obstetric care issues, but there were still gaps in certain areas such as active management of the third stage of labour.

The findings of the study indicated that 93% of the respondents had the ability to do controlled cord traction during delivery of the placenta and 76% of the respondents reported that they have knowledge regarding measures to stimulate uterine contractions. Eighty-eight percent of the respondents had knowledge regarding the importance of measuring the total blood loss and 81% of the respondents reported that they know abnormal blood loss.

The results of the study indicated that 76% of the respondents reported that they had the ability to identify post-partum haemorhage and institute management. This finding is good considering the fact that of the main causes of maternal mortality is PPH which accounts for 34% of maternal death. It is also the most common complication of third stage of labour (Felarmine et al 2016:2).

Eighty nine percent of the respondents reported that they had the ability to examine the placenta. Ninety two percent of the respondents knew the importance of placenta examination. The findings of the study also indicated that 75% of the respondents could identify abnormalities on the placenta during examination.

The findings indicated that the majority 95% of the respondents would like to be trained on the skills that they were not competent

5.4   CONCLUSIONS

The objectives of the study as mentioned above has been achieved and each objective will be evaluated, and conclusions discussed.

5.4.1 To determine and describe the self-reported clinical competence of the newly qualified professional nurses in the following critical midwifery skills

5.4.1.1   Electronic monitoring of the foetal heart and the uterine contractions

In this study the newly qualified professional nurses had adequate knowledge regarding electronic monitoring of foetal heart rate and uterine contractions.

5.4.1.2   Interpretation of the CTG

Regarding interpretation of the CTG, the newly qualified professional nurses had knowledge about normal and abnormal foetal heart rate baseline, however, just above 40% had knowledge but were not confident in interpreting a full strip of CTG. They had no knowledge in identifying different types of decelerations, differentiating between early and variable decelerations and management of late and variable decelerations. Most of the respondents would like to be trained on the skills in order to enhance knowledge regarding monitoring and interpretation of the CTG.

5.4.1.3 Monitoring and management of the progress of labour and interpretation of a partograph

Regarding monitoring and management of the progress of labour and interpretation of the partograph the newly qualified professional nurses had knowledge about the purpose of using partograph and foetal monitoring in latent and active phase of labour. They had knowledge about the normal colour of amniotic fluid, how it is recorded, and could identify abnormalities during interpretation. They had knowledge about caput succedaneum, however they had no knowledge of moulding.

With progress of labour the newly qualified nurses had knowledge on monitoring and recording of progress of labour, they could classify and record contractions, identify, measure and record descent of the presenting part, identify normal and abnormal foetal presentations, assess and record cervical dilatation, identify abnormal cervical dilatations and interpretation in relation to progress of labour, record effacement. However, they did not have the knowledge to assess cervical effacement using the bishop score, differentiate between normal and abnormal cervical effacement.

With maternal well-being, the newly qualified professional nurses had knowledge on how often maternal well-being should be monitored in labour. They had the ability to record fluids, urinalysis and medication on the partograph. They had the ability to interpret the recordings on the action line of the partograph.

Regarding interpretation of recorded partograph and management. The newly qualified professional nurses had knowledge as to when to report or transfer the patient with an obstetric problem, identifying prolonged labour, however they did not have knowledge of management thereof. They did not have knowledge in identifying CPD or obstructed labour. Most of the respondents would like to be trained on the skills that they were not competent.

5.4.1.4 Management of 3rd stage of labour

Regarding the competency on management of 3rd stage of labour, it was found that the newly qualified nurses had knowledge to passively manage third stage of labour, identify signs of placental separation and placental descent on a patient, actively

manage third stage of labour, knew when to administer oxytocin or uterotonic drugs, controlled cord traction during delivery of the placenta, measures to stimulate uterine contractions, knew the importance of placenta examination, had ability to examine the placenta, identify abnormalities, importance of measuring the total blood loss and abnormal blood loss.

5.4.2 To make recommendations regarding the enhancement of clinical competence of the newly qualified professional nurses in the specified midwifery skills, according to the study findings

This objective will be discussed under recommendations in item 5.5 below.

5.5   RECOMMENDATIONS

The recommendations are based on the research findings as discussed above.

5.5.1 Recommendations for practice

- The newly qualified professional nurses who are placed in maternity wards should be supported during the first one-two years of practice.
- A mentor can be allocated to assist on the skills that they are lacking.
- On-going workshops or in-service training within the facilities to enhance the skills and improve where there is a problem.
- CTG, partograph, and third stage of labour should be compulsory skills in the area of practice for continuous professional development (CPD) in the first two years of experience for nurses working in maternity.

5.5.2 Recommendations for nursing education

- It is suggested that the nursing education institutions include CTG, partograph, and third stage of labour on items for assessment at the end of the programme.
- Since the programme R425 is ending in 2019, the three skills i.e. CTG, Partograph, and third stage of labour to still be included into the new curriculum since the three skills are important in midwifery.

5.5.3 Recommendations for research

- The same study can be repeated in other provinces in South Africa and this will enable generalisation of the findings.
- A study on how the experienced professional nurses view the competence of the newly qualified nurses can be conducted.
- Competency of newly qualified professional nurses on other midwifery skills can be studied.

5.6 CONTRIBUTIONS OF THE STUDY

The findings have given a picture of knowledge regarding the competency of the newly qualified professional nurses in certain midwifery skills. There is potential to the improvement of care in the clinical facilities and in the nursing education. If the recommended on-going workshops or in-service training are implemented that can assist newly qualified nurse in enhancing their competencies. The mentor assigned to a newly qualified professional nurse may be able to identify gaps on skills incompetence, and a plan to address shortfalls may help improve care. The study revealed a need for further studies related to competency of the other midwifery skills that were not studied.

5.7 LIMITATIONS

The study only included the newly qualified professional nurses who were working in the four sampled public hospitals in Gauteng Province. The reason for only including the newly qualified professional nurses was that they had recently completed all the requirements for registration as Midwives and were currently practicing as midwives. It was not feasible to include all the newly qualified professional nurses in all the provinces of South Africa and therefore the study cannot be generalised to the entire country.

5.8 CONCLUDING REMARKS

The main aim of the study was to determine and describe the self-reported competence of the newly qualified professional nurse in specific midwifery skills. The results

revealed that the newly qualified professional nurses were competent in most of the skills but there were some of the skills which they were not competent and would require attention or improvement from both the practice and the nursing education system. Competency improvement is required on the following skills; identifying different types of decelerations, differentiating between early and variable decelerations, management of late and variable decelerations, moulding, cervical effacement, management of prolonged labour, and identification of CPD or obstructed labour.

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ANNEXURES

Annexure A: Ethical Clearance Certificate

UNISA | university of south africa

RESEARCH ETHICS COMMITTEE: DEPARTMENT OF HEALTH STUDIES
REC-012714-039 (NHERC)

6 September 2017

Dear Mrs MM Mafunzwaini

Decision: Ethics Approval

HSHDC/704/2017

Mrs MM Mafunzwaini

Student: 3291-046-0

Supervisor: Dr MG Makua-
Qualification: D Litt et Phil
Joint Supervisor: -Dr JM Mathibe-Neke

Name: Mrs MM Mafunzwaini

Proposal: Self –reported competence of newly qualified professional nurses in specific midwifery skills

Qualification: MPCHS94

Thank you for the application for research ethics approval from the Research Ethics Committee: Department of Health Studies, for the above mentioned research. Final approval is granted from 6 September 2017 to 6 September 2019.

The application was reviewed in compliance with the Unisa Policy on Research Ethics by the Research Ethics Committee: Department of Health Studies on the 6 September 2017.

The proposed research may now commence with the proviso that:

1) The researcher/s will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.

2) Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study, as well as changes in the methodology, should be communicated in writing to the Research Ethics Review Committee, Department of Health Studies. An amended application could be requested if there are substantial changes from the existing proposal, especially if those changes affect any of the study-related risks for the research participants.
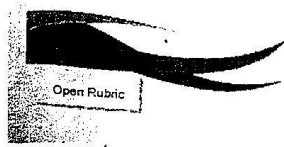
Open Rubric

3) The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study.

4) [Stipulate any reporting requirements if applicable].
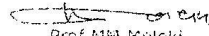
Note:

The reference numbers [top middle and right corner of this communiqué] should be clearly indicated on all forms of communication [e.g. Webmail, E-mail messages, letters] with the intended research participants, as well as with the Research Ethics Committee, Department of Health Studies.

Kind regards,

Prof JE Maritz
CHAIRPERSON
maritje@unisa.ac.za

Prof MM Moleki
ACADEMIC CHAIRPERSON
molekmm@unisa.ac.za

Approval template 2014

Annexure B: Tshwane Ethical Committee Clearance Certificate

GAUTENG PROVINCE
REPUBLIC OF SOUTH AFRICA

Enquiries: Dr. Lufuno Razwiedani
Tel: +27 12 451 9036
E-mail: lufuno.razwiedani@gauteng.gov.za

TSHWANE RESEARCH COMMITTEE: CLEARANCE CERTIFICATE

MEETING: 09/2017
PROJECT NUMBER: 04/2018
NHRD REFERENCE NUMBER: GP_201710_024

TOPIC: Self-reported Competence of Newly Qualified Professional Nurses in Specific Midwifery Skills

Name of the Researcher:	Mashudu Mercy Mafunzwaini
Supervisor:	Dr M.G. Makua
Co-supervisor:	Dr Mathibe-Neke J M
Facility:	Pretoria West Hospital
	Dr. George Mukhari Academic Hospital
	Kalafong Provincial Tertiary Hospital
	Steve Biko Academic Hospital
Name of the Department:	UNISA

NB: THIS OFFICE REQUEST A FULL REPORT ON THE OUTCOME OF THE RESEARCH DONE AND

NOTE THAT RESUBMISSION OF THE PROTOCOL BY RESEARCHER(S) IS REQUIRED IF THERE IS DEPARTURE FROM THE PROTOCOL PROCEDURES AS APPROVED BY THE COMMITTEE.

DECISION OF THE COMMITTEE: **APPROVED**

P. Silwimba
Deputy Chairperson: Tshwane Research Committee
Date: 19/01/2018

Ms. M. Lerutla
Acting Chief Director: Tshwane District Health
Date: 23/01/2018

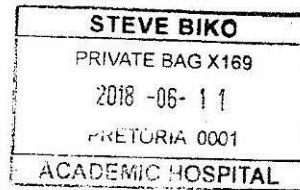## Annexure C: Permission letter from Steve Biko Academic Hospital

GAUTENG PROVINCE
REPUBLIC OF SOUTH AFRICA

STEVE BIKO ACADEMIC HOSPITAL

Enquiries:	Mrs. E.A. Pieterse
Tel:	012 354 5501
Fax:	012 354 5500
Email:	Elsa.Pieterse@gauteng.gov.za

Mrs. M.M. Mafunzwaini
P.O. BOX 57198
Arcadia
0007

STEVE BIKO
PRIVATE BAG X169
2018 -06- 1 1
PRETORIA 0001
ACADEMIC HOSPITAL

RE : APPLICATION – RESEARCH AT STEVE BIKO ACADEMIC HOSPITAL

"SELF – REPORTED COMPETENCE OF NEWLY QUALIFIED PROFESSIONAL NURSING SPECIFIC MIDWIFERY SKILLS."

Your letter regarding the above-mentioned refers :

1. The Chief Executive Officer hereby grants permission for the above-mentioned research to be done at Steve Biko Academic Hospital.

2. The study may only take place with the knowledge of the Manager of the Area, and should not interfere with patient care or any ward activities.

3. Please provide one copy of the results of your study to Mrs. A.M. Mowayo, Senior Manager Nursing.

Good luck with the proposed project.

....
MRS. E.A. PIETERSE
NURSING DIRECTORATE
2018-06-11

Annexure D: Permission letter from Dr George Makhari Hospital

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

Dr. George Mukhari Academic Hospital

Office *of the Director Clinical Services*
Enquiries : Dr. C Holm
Tel :   (012) 529 3691
Fax :   (012) 560 0099
Email:Christene.Holm @gauteng.go.za
keitumetse.mongale@gauteng.gov.za

To   Mrs MM Mafunzwaini
Department of Health Studies
University of South Africa
City of Tshwane
PO Box 392
Unisa
0003
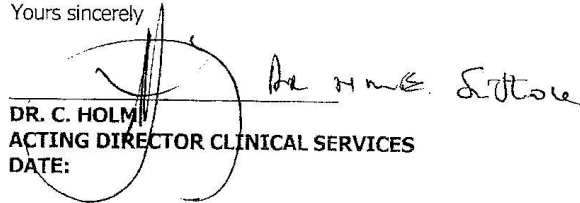
Date   : 01 December 2017

PERMISSION TO CONDUCT RESEARCH

The Dr. George Mukhari Academic Hospital hereby grants you permission to conduct research on "Self-reported competence of newly qualified professional nurses in specific midwifery skills" at Dr George Mukhari Academic Hospital

This permission is granted subject to the following conditions:

☑ That you obtain Ethical Clearance from the Human Research Ethics Committee of the relevant University

☑ That the Hospital incurs no cost in the course of your research

☑ That access to the staff and patients at the Dr George Mukhari Hospital will not interrupt the daily provision of services.

☑ That prior to conducting the research you will liaise with the supervisors of the relevant sections to introduce yourself (with this letter) and to make arrangements with them in a manner that is convenient to the sections.

☑ Formal written feedback on research outcomes must be given to the Director: Clinical Services

☑ Permission for publication of research must be obtained from the Chief Executive Officer

Yours sincerely

DR. C. HOLM
ACTING DIRECTOR CLINICAL SERVICES
DATE:

Annexure E: Permission letter from Kalafong Hospital
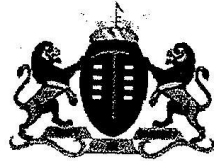
GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

KALAFONG HOSPITAL
PRIVATE BAG X396
PRETORIA
0001

ENQUIRIES : **MS NT LEDIGA**
TEL   : **012 318 6995**
FAX   : **012 373 6791**
EMAIL   : **Nelly.Lediga@gauteng.gov.za**
REF   : **KPTH 79/2017**

TO: **MRS MM MAFUNZWAINI**

RE: PERMISSION TO CONDUCT RESEARCH

TITLE: SELF-REPORTED COMPETENCE OF NEWLY QUALIFIED PROFESSIONAL NURSES IN SPECIFIC MIDWIFERY SKILLS

Permission is hereby granted for the research to be conducted at **Kalafong Provincial Tertiary Hospital.**

This is done in accordance to the "Promotion of Access to Information Act. No 2 of 2000".

Approved:

DR K.E LETEBELE-HARTELL
SENIOR MANAGER: MEDICAL SERVICES
DATE: 06/12/2017

Annexure F: Permission letter from Pretoria West Hospital

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

Annexure 1

Declaration of intent from the clinic manager or hospital CEO

I give preliminary permission (name of researcher) to do his or her (Ms Mashudu Mercy)
                                                                     Mafunzwaini)

research on _Self-reported competence of newly qualified_
(research topic) in _Professional Nurses in Specific Midwifery_
Skills.

_____ (name of clinic) or

_____ (name of CHC) or

_____ Pretoria West Hospital _____ (name of hospital).

I know that the final approval will be from the Tshwane/Metsweding Regional Research Ethics
Committee and that this is only to indicate that the clinic/hospital is willing to assist.

Other comments or conditions prescribed by the clinic or CHC manager or hospital CEO:

Please share the results with the hospital

_____
Signature
Clinic Manager/CHC Manager/CEO

29 | 11 | 2017
Date

Annexure G: Sample of letter requesting permission to conduct research in th four hospitals

UNISA | university of south africa

04/06/2018

The Nursing Service Manager

Kalafong Hospital

Private Bag x 396

Pretoria

0001

Dear Madam

I, Mashudu Mafunzwaini am doing research supervised by Dr MG Makua and Dr JM Mathibe-Neke, both senior lecturers at the Department of Health Studies towards Master of Arts in Nursing at the University of South Africa. I request permission to conduct a study entitled: *Self-reported competence of newly qualified professional nurses in specific midwifery skills.*

The aim of this study is to determine and describe the competence of newly qualified professional nurses in specific midwifery skills. A quantitative descriptive design will be used with a structured questionnaire as data collection instrument. The newly qualified professional nurses will be given a questionnaire to complete, asking them to rate their level of clinical competence in the specified midwifery skills.

The benefits of this study are that the findings of the study will be shared with the Department of Health and if the researcher identifies areas of concern in the newly qualified professional nurses' clinical competence the remedial action will be suggested accordingly.

There are no risks anticipated in this study and participation is voluntary

Feedback procedure may entail information session of the research findings to the hospital personnel and management and providing a copy of the dissertation to the hospital library

Attached find the following:

- Copy of the ethical clearance certificate from the Department of Health Studies, Higher Degrees Committee, UNISA.
- Copy of the permission letter from Tshwane Research Committee with the NHRD Reference Number
- Copy of the approved research proposal and accompanying annexures.
- Proof of my registration with UNISA for 2018.
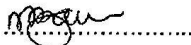
Researcher's contact details are: Mashudu Mafunzwaini at 071 604 3823/012 420 1003, email address: mafunzwainim@gmail.com.

Should you need more information about the study you may contact Dr M G Makua, +27124296524, e-mail address makuamg@unisa.ac.za or Dr J M Mathibe-Neke +27124296443, email mathijm@unisa.ac.za or The Chair of the University of South Africa, Department of Health Studies, Research Ethics Committee, Prof J E Maritz, who could be contacted at maritje@unisa.ac.za

Yours sincerely

Researcher's signature

Annexure H: Respondents' consent form

CONSENT FORM FOR PARTICIPATION IN A RESEARCH

Title: Self-reported competence of newly qualified professional nurses in specific midwifery skills

I.. (Name of the participant) hereby acknowledge the following:

I have been invited to voluntarily participate in the above mentioned research.

The researcher Ms Mashudu Mafunzwaini has explained the nature and purpose of the research to me.

I am aware that the research project has been approved by Gauteng Department of Health authorities and the University of South Africa, Higher Degree Committee, Department of Health Studies.

I have been given a chance to ask questions and I fully understand the meaning of taking part.

The research will involve participation through completion of a questionnaire

I am aware that I can withdraw from the research at any time without any negative consequences to me.

There will be no direct material benefits to me.

I am aware that refusing or withdrawing from participation will not have a negative influence in my position at work.

I am aware that the results of the study, including my personal details will be anonymously processed

I am aware that no physical harm is anticipated in this project.

I therefore voluntarily without coercion give consent to be part of the project

Participant's signature....................................Date..............................

Witness's signature....................................Date..............................

Researcher's signature..............................Date..............................

Researcher's contact details: (012) 420 1046 or 071 604 3823

Supervisor: Dr M G Makua 012 429 6524 makuamg@unisa.ac.za Co-supervisor: Dr J M Mathibe-Neke 012 429 6443 mathiim@unisa.ac.za Chair of the Higher Degrees Committee, Department of Health Studies: Prof J E Maritz maritje@unisa.ac.za

Annexure I: Information leaflet for respondents

UNISA | university of south africa

PARTICIPANT INFORMATION SHEET

29/06/2018

Title: Self-reported competence of newly qualified professional nurses in specific midwifery skills

Dear Prospective Participant

My name is Mashudu Mafunzwaini and I am doing research towards a Master's Degree supervised by Dr MG Makua and Dr JM Mathibe-Neke, senior lecturers in the Department of Health Studies at the University of South Africa. We are inviting you to participate in a study entitled: Self-reported competence of newly qualified professional nurses in specific midwifery skills

WHAT IS THE PURPOSE OF THE STUDY?

The purpose of this study is to determine and describe the competence of newly qualified professional nurses in specific midwifery skills. This knowledge will assist the researcher to identify areas of concern in the newly qualified professional nurses' clinical competence.

WHY AM I BEING INVITED TO PARTICIPATE?

You have been nominated to participate because you are newly qualified professional nurses you have just completed the Midwifery requirements to qualify for registration as a Midwife.

WHAT IS THE NATURE OF MY PARTICIPATION IN THIS STUDY?

The study involves completion of a questionnaire which will be about your competence level regarding specific midwifery competencies.

CAN I WITHDRAW FROM THIS STUDY EVEN AFTER HAVING AGREED TO PARTICIPATE?

You are under no obligation to consent to participation and there is no penalty or loss of benefit for non-participation. If you do decide to take part, you are free to withdraw at any time and without giving a reason except if such withdrawal intent is after you have submitted the non-identifiable completed scale.

WHAT ARE THE POTENTIAL BENEFITS OF TAKING PART IN THIS STUDY?

This study may not benefit you directly and immediately but may have future implications on practice, since it may lead to better skills in the midwifery students, using recommendations for improvement from this study.

ARE THERE ANY NEGATIVE CONSEQUENCES FOR ME IF I PARTICIPATE IN THE RESEARCH PROJECT?

There are no foreseeable risks of harm or side-effects to the potential participants.

WILL THE INFORMATION THAT I CONVEY TO THE RESEARCHER AND MY IDENTITY BE KEPT CONFIDENTIAL?

Anonymity will be ensured since your name will not be recorded anywhere and no one will be able to connect you to the answers you give. The anonymous data may be used for other purposes, such as a research report, journal articles and/or conference proceedings. A report of the study may be submitted for publication, but individual participants will not be identifiable in such a report. Confidentiality is assured since no one apart from the researcher and identified members of the research team, will know about your involvement in this research. Your answers will be given a code number or a pseudonym and you will be referred to in this way in the data, any publications, or other research reporting methods such as conference proceedings.

Your answers may be viewed by the research supervisor, for making sure that research is done properly.

HOW WILL THE RESEARCHER(S) PROTECT THE SECURITY OF DATA?

Collected data will be saved in the computer files which are password protected, and no unauthorized persons will have access to the computer. All evidences of data collected will be stored in a locked locker and no unauthorized persons will have access to the keys. All the information will be stored for a period of five years and after that hard copies will be destroyed by shredding and the electronic copies will be deleted permanently from the computer

WILL I RECEIVE PAYMENT OR ANY INCENTIVES FOR PARTICIPATING IN THIS STUDY?

Your participation in this study is totally voluntary with no forms of compensation.

HAS THE STUDY RECEIVED ETHICS APPROVAL

This study has received written approval from the Higher Degrees Committee of Health Studies Department of UNISA. The researcher will avail a copy of the approval letter if you so wish.

HOW WILL I BE INFORMED OF THE FINDINGS/RESULTS OF THE RESEARCH?

If you would like to be informed of the final research findings, please contact: 0716043823/0124201046, email address: mafunzwainim@gmail.com. The findings will be accessible from midyear 2019. Should you require any further information or want to contact the researcher about any aspect of this study, please contact 0716043823.

Should you have concerns about the way in which the research has been conducted, you may contact Dr M G Makua, +27124296524, e-mail address makuamg@unisa.ac.za or The Chair of the University of South Africa, Department of Health Studies, Research Ethics Committee, Prof J E Maritz, who can be contacted at maritje@unisa.ac.za.

Thank you for taking time to read this information sheet and for participating in this study.

Thank you

....
Mashudu Mafunzwaini

Annexure J: Questionnaire

QUESTIONNAIRE

A questionnaire on self–reported competence of newly qualified professional nurses in specific midwifery skills

Please fill the following questionnaire. The questionnaire consists of four sections;

Section A – Demographic data

Section B – Competency on Cardiotocograph

Section C – Competency on Partogram

Section D – Competency on management of third stage of labour

Section A: Demographic data

Age	20-24		25-29		30-39		40- 60		
Gender	Female				Male				
Qualification	Diploma				Degree				
Number of months in community service	0-6		6-12		12-24				

COMPETENCIES

To assess yourself on each competency, use the following rating scale:

NO = No, I do not have adequate knowledge or skills, nor do I feel confident to meet the requirements of this competency.

YB = Yes, but - I know enough or can do this competency if I had to; however I am not confident doing so and would like to learn how to do it better. I need to improve my knowledge, skills, attitudes and critical judgments.

YS = Yes, I have the knowledge, skills, attitudes and judgments to adequately meet all the requirements for this competency. I function independently, providing high quality nursing health services and client care.

NA = Not applicable, this competency does not apply to me; it may be outside my legislated scope of practice, or not part of my current nursing practice.

TRAINING

To assess if you will need training if there are skills you are not competent

YS = Yes, I will need to be in-service trained on the skills that I am not competent

NO = No, I have the required competency and there is no need for in-service training

Please tick the appropriate response that best describe your competence of the specific midwifery skills

Section B

Competency on Cardiotocograph

Indicate by means of a √ on the appropriate block, the best rating which indicate your ability to monitor and interpret the cardiotocography

No	Competency	NO	YB	YS	NA
1.	I have knowledge on which probe on the CTG machine is for fetal heart rate and for contraction				
2.	I have the ability to safely put the patient on the CTG				
3.	I can identify the normal fetal heart rate baseline				
4.	I can identify the abnormal fetal heart rate on a CTG trace				
5.	I have the ability to interpret CTG strip				
6.	I can identify different types of decelerations on a CTG trace				
7.	I can differentiate between the early and variable decelerations				
8.	I can manage a patient with late decelerations				
9.	I can manage a patient with variable decelerations				
	Training				
10.	Will you avail yourself to training if made available to enhance competence where not competent				

Section C – Competency on Partogram

Indicate by means of a √ on the appropriate block, the best rating which indicate your ability to monitor and interpret the Partogram

No	Competency	NO	YB	YS	NA
1.	I have knowledge on the purpose of using a partogram during labour				

2.	I have knowledge on how often should fetal heart rate be monitored both in latent and active phase				
3.	I know the normal colour of amniotic fluid				
4.	I know how amniotic fluid is recorded and I can identify abnormalities when interpreting the partograph				
5.	Ability to identify and record caput succedaneum				
6.	I can identify various mouldings, identify the abnormalities and record correctly				
7.	I have knowledge on how often should progress of labour be monitored				
8.	I have the ability to record information on progress of labour				
9.	I have the ability to identify and classify contractions				
10.	I have the ability to record contractions				
11.	I have the ability to identify and measure the descent of the presenting part				
12.	I have the ability to record the descent of the presenting part				
13.	I have the ability to identify normal and abnormal fetal presentations				
14.	I have the ability to assess cervical effacement using the bishops score				
15.	I know how effacement should be charted				
16.	I have the ability to record cervical effacement				
17.	I can differentiate normal from abnormal cervical effacement				
18.	I have the ability to assess cervical dilatation				
19.	I have the ability to identify abnormal cervical dilatations and interpret in relation to the progress of labour				

20.	I have the ability to record cervical dilatation findings on the partogram				
21.	I have the ability to interpret the recordings on the action line of the partogram				
22.	I have knowledge on how often should maternal vital signs be monitored				
23.	I have the ability to record fluid balance and urinalysis				
24.	I can assess the recorded foetal and maternal wellbeing on the partogram				
25.	I have the ability to record given medication on the partogram				
26.	I have the ability to identify prolonged labour on the Partogram				
27.	I have the ability to manage a patient with prolonged labour				
28.	I have the ability to identify cephalo-pelvic disproportion (CPD) or obstructed labour on the Partogram				
29.	I have the ability to discern as to when to report or transfer the patient with an obstetric problem				
	Training				
30.	Will you avail yourself to training if made available to enhance competence where not competent		▓▓▓		▓▓▓

Section D – Competency on management of third stage of labour

Indicate by means of a √ on the appropriate block, the best rating which indicate your ability to manage third stage of labour

No	Competency	NO	YB	YS	NA
1.	I have the ability to passively manage third stage of labour				
2.	I can identify signs of placental separation and placental descent on a patient				
3.	I have the ability to actively				

	manage third stage of labour on a patient				
4.	I have the ability to identify when to administer oxytocin or uterotonic drug				
5.	I have the ability to do controlled cord traction during delivery of the placenta				
6.	I have knowledge of the measures to stimulate uterine contraction				
7.	I know the importance of measuring the total blood loss				
8.	I know the abnormal blood loss				
9.	I have the ability to identify post-partum haemorhage and to institute emergency management				
10.	I have the ability to examine the placenta				
11.	I have knowledge of the importance of placenta examination				
12.	I have the ability to identify abnormalities on the placenta during examination				
	Training				
13.	Will you avail yourself to training if made available to enhance competence where not competent				

Annexure K: Letter from the statistician

Letter of Attestation of Statistical Assistance.

TO WHOM IT MAY CONCRN.

I, **SAS Olorunju, a Specialist Biostatistician**, attest that I assisted the Candidate Mrs Mashudu Mercy Mafunzwaini in the processing of her Research Data titled **"Self-reported Competence of Newly Qualified Professional Nurses in Specific Midwifery Skills"**

I confirm that all analyses related to this research was undertaken by me and that I am a qualified biostatistician of over 35 years' experience. I have taught, mentored and supervised several Post-graduates in Research Methods in several establishments in South Africa since 2004. These include University of Pretoria, Tshwane University of Technology, Wits University and University of Northwest in Mafikeng particularly in the School of Nursing.

Analysis of Data.

Analysis presents Cronbach Reliability adequacy of her research tool using the questionnaire to evaluate the internal consistency. Thereafter, summary statistics providing frequencies and proportions of her results generally and by sub-domains was presented in tables.

Additionally, analysis was provided as represented in the thesis as considered by me to answer the objectives of the Research.

Compliance measures were presented by demographic characteristics and by sub-domains

I.   Partogram.

ii.   Cardiotocograph

iii.   Third Stage.

Software Used: Excel 2016 to capture the data from the questionnaire:

Stata 15: For Statistical Analyses.

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Biostatistics Unit,
South African Medical Research Council
Tel: +27 12 339 8553

Annexure L: Turnitin originality report

Dissertation By MAFUNZWAINI Mashudu Mercy

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Ugwumadu, A, P Steer, B Parer, B Carbone, C Vayssiere, G Maso, and S Arulkumaran. "Time to optimise and enforce training in interpretation of intrapartum cardiotocograph", BJOG An International Journal of Obstetrics & Gynaecology, 2016.