
# Effectiveness of 20 Hour Lactation Management Course (LMC) in improving the Breastfeeding knowledge of Professional Nurses in a Tertiary Hospital in Gauteng

**BY**

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**MASTER OF SCIENCE IN NURSING EDUCATION**

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## Declaration

I, **Nomonde Makhudu**, declare that this research report and the work presented in it is my own and has been generated by me as the result of my own original research.

I further declare that:

i. This work was done wholly or mainly while in candidature for the Nursing Education degree at University of the Witwatersrand;

ii. Where any part of this research report has previously been submitted for a degree or any other qualification at Wits or any other institution, this has been clearly stated;

iii. Where I have consulted the published work of others, this is always clearly attributed and referenced;

iv. Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this research report is entirely my own work;

v. I have acknowledged all main sources of assistance;

vi. None of this work or its parts has been published or submitted before.

**Signed**.....

**Nomonde Makhudu**

**Dated: 25 October 2017**



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I would humbly like to acknowledge the Almighty who gave me the courage, wisdom and strength to complete this study.

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## Dedication

This study is dedicated to all midwives and nurses who work tirelessly in ensuring that we provide the best services to our valued clients/health care users.

## Abstract

**Background:** In-service training, such as the Lactation Management Course (LMC), is a form of ongoing professional development for staff members; however, there is no formal way of measuring or of assessing its effectiveness. It is not known if the training improves the service delivery of practices that promote breastfeeding and improvement of the quality of care which will, in turn, improve the breastfeeding rates in the institution (PubMed, 2010).

**Aim:** This study evaluated the effectiveness of the 20-hour LMC training to improve breastfeeding knowledge of professional nurses and midwives working in mother and child units in an academic institution in the Johannesburg region.

**Methodology:** An experimental, pre-test/post-test control group design that involved 47 participants was used to conduct the study (Brink, 2012). The Statistical Package for Social Sciences (SPSS) was used for data analysis. A descriptive statistical analysis, using a paired t- test analysing the means and standard deviations, was conducted and the data from the pre- and post-test results were compared.

**Results:** The study showed that, overall, the professional nurses and midwives' level of knowledge of breastfeeding improved after the training, indicating that the LMC training is an effective way to improve breastfeeding knowledge. This was evident as there was an increase of correct answers post-training in comparison to the pre- training results, even though it was smaller than expected.

**Recommendation:** The recommendation is that LMC training is offered to all professional nurses and midwives working in a mother and child department, and that, where possible, advanced training should be provided to professional nurses and midwives who already possess in-depth knowledge about breastfeeding.

The LMC may need to be reassessed as it not yielding results that bring about the necessary change in practice in the hospital under study.

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## Clarification of Abbreviations

**NDoH:** National Department of Health

**KZN:** Kwa-Zulu Natal

**LMC**: Lactation Management Course

**MBFI:** Mother Baby Friendly Initiative

**MDGs:** Millennium Development Goals

**MOUs:** Midwife Obstetric Units

**PMTCT:** Prevention of Mother to Child Transmission

**SPSS:** Statistical Package for Social Sciences

**UNICEF:** United Nations International Children's Emergency Fund

**WABA:** World Alliance for Breastfeeding Action

**WHO:** World Health Organization

# Chapter 1 Introduction and Background to the Study

## 1.1 Introduction and Background

South Africa is amongst the countries that committed themselves to the United Nations Millennium Development Goals (MDGs) (World Health Organization, 2000) and a many measures were put in place prior to 2015 to ensure that Goals four (4) and five (5) are met. These goals were, respectively, to: 'reduce under-five infant mortality by two-thirds' and 'to improve maternal health' by 2015. (Republic of South Africa, 2013). Goals 3 & 4 are currently covered under Goal 3 of the current Sustainable Development Goals (SGDs) 2030, which is to, 'Ensure healthy lives and promote well-being for all ages.'

The target for South Africa was to reduce the under-five mortality from 77.2/1000 live births in 1990 to 20/1000 live births in 2015. According to Statistics South Africa, the under-five infant mortality rate in 2000 was around 74/1000 live births, dropping to 47/1000 live births in 2007 and to 45.1/1000 live births in 2015 (Statistics South Africa, 2015). The leading causes of infant mortality in South Africa were HIV/AIDS, which accounted for 40% of mortalities in the year 2000, and malnutrition, which accounted for 30% infant mortalities in the same year (UNICEF, 2013). The figures show a decline in the under-five infant mortality, but the country failed to achieve the target as set by the MDGs. In South Africa, MDG four (4) and five (5) are important as they affect life expectancy for both adults and children. The country is faced with a broad burden of diseases especially, from HIV/AIDS-related infections.

A number of reports from the World Health Organization, UNICEF and Statistics South Africa indicate that babies who are breastfed are less likely to suffer from conditions like vomiting and diarrhoea, both of which are among the leading causes of infant mortality in South Africa (WHO-UNICEF, 2010). According to the Kwa-Zulu Natal Department of Health (KZN DoH), (Zungu, 2012 report, breastfeeding can prevent approximately 13% of all under five (5) deaths. This outweighs other interventions to prevent infant mortality, such as immunisation and Prevention of Mother to Child Transmission of HIV (PMTCT) programmes. The report further

states that, in South Africa, breastfeeding rates remain relatively low, with only 1.5% of infants being exclusively breastfed from birth to 6 months ( Zungu, 2012). Despite evidence that breastfeeding is beneficial to the infant and the evidence of risks of not breastfeeding, breastfeeding rates are found to be low even for non-exposed infants in South Africa. Breastfeeding has been proven to reduce risk of many childhood ailments like type1 and 2 diabetes, infection like otitis media and sudden death syndrome. One of the major factors to not breastfeeding is the issue of working mothers who are forced to return to work before their infants reach 6 months (Stuebe, 2009). This means that with an improvement in breastfeeding rates the country may experience a decline in infant mortality.

One of the measures employed to achieve reduction of infant mortality is the Mother-Baby Friendly Initiative (MBFI), which has proven to improve breastfeeding. MBFI is a global effort, introduced in 1991 by the World Health Organization (WHO) as the Baby Friendly Hospital Initiative (BFHI) aimed at improving mother and child health (World Health Organization, 2009). In a report written by the WHO on ten (10) steps about breastfeeding, it was stated that “exclusive breastfeeding for the first six months of life could save 800 000 child lives per year globally” (WHO, 2015). This proves that a reduction in infant mortality can be achieved through mother-baby friendly practices that protect, promote and support breastfeeding (WHO, 2009).

The MBFI includes the Lactation Management Course, which uses ten (10) steps as its framework (World Alliance for Breast Feeding Action, 2012). The ten (10) steps to successful breastfeeding provide key steps that an institution must incorporate into practice in order to gain mother-baby friendly status. The Lactation Management Course is designed to improve the breastfeeding knowledge of all staff working with mothers and babies. It is recommended by the National Department of Health that all new staff members attend the LMC within six (6) months of starting in a department (Zungu, 2012). Training for those that have been in the facility for more than six (6) months should be prioritised. This does not always materialise as high staff turnover rates mean that many new recruits receive training before those that have been in the facility for a long time.

The LMC is run over three (3) days with 20 hours of theory and three (3) hours of practice, which is done in a clinical area (World Health Organization, 2009). The LMC training assists health facilities in ensuring that they practice the ten (10) Steps to successful breastfeeding. In South Africa the LMC training includes three (3) additional steps defined by the National Department of Health. The additional steps are: Code of marketing of breast milk substitutes (Regulation R991), Mother friendly are and HIV and breastfeeding. It is a requirement that all facilities where mother and child are cared for comply with these steps in order for the facility to be accredited by the National Department of Health (NDoH) as mother- baby friendly. The NDoH is responsible for conducting assessments and accreditation of all health facilities. The facilities are assessed on thirteen (13) items (i.e. the ten (10) steps plus the three (3) additional items) and if a facility is found compliant it is awarded the Mother-Baby Friendly Status. The assessments are conducted by representatives of the National Department of Health who are trained as assessors, using an accredited national assessment tool. Once an institution is accredited as mother-baby friendly, it must ensure that the status is maintained through ongoing practices that promote, protect and support breastfeeding. The NDoH will also continue with regular assessments to monitor such compliance.

UNICEF (2012) states that a woman's confidence and ability to deal with childbirth can be improved or reduced by the nature of the treatment she receives from her childbirth assistance (MBFI-UNICEF, 2012). This confidence may assist the mother in initiating breastfeeding within the first hour of her child's birth and sustain it even when she is no longer under the care of the health care provider. Health care providers, therefore, need to be adequately trained to create an environment that allows the woman to gain confidence during childbirth and beyond. (UNICEF, 2012).

A study done in USA in 2010 (Dodgson, 2010) on breastfeeding education interventions for health professionals, confirmed that breastfeeding education is important in improving the knowledge and confidence of nurses and midwives in supporting mothers in their decision to breastfeed. The twenty (20) -hour Lactation Management Course was amongst the education interventions that were studied by Dodgson (2010) during this study, therefore, it can be concluded that training improves knowledge.

In a study carried out by the Kwa-Zulu Natal Department of Health in 2010, it was established that, although the MBFI was introduced in 1993 in South Africa, the majority of professional nurses and midwives were not yet familiar with mother-baby friendly practices as recommended by the ten (10) Steps to successful breastfeeding (Zungu, 2012). This shows that there is still a great need to train health care professionals on lactation matters. In another study, conducted in Europe in 2008, on protection, promotion, and support of breastfeeding, it was concluded that pre-training, in-service training and refresher courses on lactation management are needed to ensure that health care providers are well informed on issues of lactation. In the same study, it further stated that health care providers should be encouraged to attend training on advanced lactation management, which would assist them in acquiring knowledge in practices that protect, promote and support breastfeeding (EU project on Promotion of Breastfeeding in Europe, 2008).

A tertiary hospital in Gauteng has been working towards attaining the Mother-Baby Friendly Status through the training of nurses and midwives, using the twenty (20) -hour LMC. In an assessment done in July 2013, the hospital was found to be compliant on only 6 of the thirteen (13) items, and at that time 35% all categories of the nursing staff had received the twenty (20) hour LMC training.

By 2014 the institution had trained around 50% of the nursing staff working in mother and child units, however, an assessment in that year showed that the institution had deteriorated from passing six (6) steps to only passing three (3) steps (hospital Internal Assessment Report, 2013/4). Support visits by Johannesburg Health District representatives were carried out and this resulted in the MBFI committee developing an orientation programme. This programme covers the ten (10) Steps to successful breastfeeding plus the three (3) additional items and is part of the orientation programme in all units caring for mother and baby. The steps that were not achieved had to do with clinical practices and institutional systems, for an example step five (5) deals with hand expression skill and milk storage and step eight (8) pertains to availability of lodger facilities for mothers. The details of the assessment outcomes are illustrated on the table below.

**Table 1.1: Illustration of Assessment Outcomes**

| Step No. | WHO Ten (10) Steps to Successful Breastfeeding | Outcome in 2013 Assessment | Outcome in 2014 Assessment |
|---|---|---|---|
| 1. | Have a written breastfeeding policy that is routinely communicated to all health care staff. | Achieved | Achieved |
| 2. | Train all health care staff in the skills necessary to implement this policy. | Not achieved | Not achieved |
| **Step No.** | **WHO Ten (10) Steps to Successful Breastfeeding** | **Outcome in 2013 Assessment** | **Outcome in 2014 Assessment** |
| **3.** | Inform all pregnant women about the benefits and management of breastfeeding. | Achieved | Achieved |
| **4**. | Help mothers to initiate breastfeeding within half an hour of birth. | Not achieved | Not achieved |
| **5.** | Show mothers how to breastfeed, and how to maintain lactation even if they should be separated from their infants. | Not achieved | Not achieved |
| **6.** | Give newborn infants no food or drink other than breast milk, unless medically indicated. | Achieved | Not achieved |
| **7.** | Practice rooming-in - that is, allow mothers and infants to remain together – twenty- four (24) hours a day. | Achieved | Achieved |
| **8.** | Encourage breastfeeding on demand. | Not achieved | Not achieved |
| **9.** | Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants. | Achieved | Achieved |

| | | | |
|---|---|---|---|
| **10.** | Foster the establishment of breastfeeding support groups. | Not achieved | Not achieved |
| ***Item*** | ***Three (3) Additional Items*** | | |
| **1.** | HIV and Breastfeeding | Achieved | Not achieved |
| **2.** | Code of Marketing of Breast Milk Substitutes | Not achieved | Not achieved |
| **3.** | Mother Friendly Care | Not achieved | Not achieved |
| **Total** | | **6/13** | **3/13** |

The tertiary hospital in Gauteng used in this study is failing to improve its level of MBFI compliance, despite staff receiving orientation and undergoing the twenty (20) -Hour LMC training. This research study assisted in determining, as a first step, whether the twenty (20) -hour LMC training is improving breastfeeding knowledge of professional nurses and midwives working in mother and child units in the hospital.

## 1.2 Problem Statement

Despite professional nurses and midwives at the study site, a tertiary hospital in Gauteng Johannesburg region attending the lactation management course, the hospital has not attained accreditation as the mother-baby friendly hospital. The NDoH requires all hospitals to attained MBF status in order to improve health outcomes.

Undergoing LMC training by professional nurses and midwives should assist in knowledge acquisition, and the knowledge gained should be applied in clinical practices to improve compliance (Bhattacharya, 2011). The 20-Hour Lactation Management Course as part of MBFI has been proven to be effective in improving the breastfeeding knowledge of nurses (Bhattacharya, 2011).

It is not known whether undergoing the LMC improves the breastfeeding knowledge of nurses and midwives who are working at the mother and child units at the tertiary hospital in Gauteng Johannesburg region. The only form of evaluation currently done during the LMC training is the post-test which is usually given on the last day of the training, which might only measure information recall of the nurses and midwives as opposed to knowledge acquisition. This research will establish whether or not the LMC is effective in improving the breastfeeding knowledge of nurses and midwives working in this hospital. In this study professional nurse will mean any nurse who is registered by the South African Nursing Council having completed requirements to carry out duties as stipulated in the scope of practice of a registered nurse. This will include all registered nurses and midwives who may or may not have a post basic qualification in Child Nursing, Neonatal Nursing and Midwifery and Neonatal Nursing Science.

## 1.3 Research Question

How effective is the twenty (20) -hour LMC in improving breastfeeding knowledge of the professional nurses and midwives working in mother and child units in an academic institution in the Johannesburg region?

## 1.4 Purpose of the Study

This study evaluated the effectiveness of the twenty (20) -hour LMC in improving breastfeeding knowledge of the professional nurses and midwives working in mother and child units in an academic institution in the Johannesburg region.

## 1.5 Objectives

- To assess breastfeeding knowledge of the professional nurses and midwives prior the LMC training.
- To assess breastfeeding knowledge of the professional nurses and midwives after the LMC training.

## 1.6 Research Design

A quantitative quasi- experimental, pre-test/post-test control group design was utilised to conduct the study.

## 1.7 Population and Sampling

In this study, the population was all the professional nurses and midwives working in mother and child units at a tertiary hospital in Gauteng who had not attended the twenty (20) -hour LMC training programme.
A convenient sampling of willing participants who attended the LMC in the facility over a period of 6 months was used.

## 1.8 Data Collection

A data collection tool from the Wellstart International online self-test module was used. This tool has been validated and revised twice (Naylor, 2013). The tool has two (2) parts: Part one (1) contains demographic information of the participants; Part 2 pertains to knowledge, with twenty-eight (28) multiple choice questions. Two (2) questions were removed because they assessed information that was not covered in the LMC, resulting in a total of twenty-six (26) questions. The data collection tool is attached as Annexure 4).

## 1.9 Data Analysis

A marking tool, which assisted with the analysis, was also used and is provided as Annexure 5). This marking tool was provided by Wellstart International together with the data collection tool. The data was analysed using the Statistical Package for Social Sciences (SPSS). A descriptive statistical analysis was done using a paired t-test looking at means and standard deviations (Saunders, 2012). Any percentage of improvement of breastfeeding knowledge was acknowledged. The participants' demographics were analysed in terms of area of work and relevant work experience.

## 1.10 Validity and Reliability

- The LMC was presented by an accredited MBFI assessor and trainer who used the manual prescribed by the World Health Organization.
- In order to ensure reliability, the sample was representative of the entire population (Brink, 2012).
- The data collection tool used was the fourth edition of pre-test/post-test questionnaire created and tested by Wellstart International. This validated tool has been proven reliable in a number of studies (Naylor, 2014).
- Demographic related questions were added, and some words were modified to suit the South African context.

# Chapter 2 Literature Review

## 2.1 Introduction

This chapter provides an overview of studies pertaining to breastfeeding knowledge. These are presented in sub-topics:

- Background information about the Mother-Baby Friendly Initiative (MBFI)
- Lactation Management Course
- LMC training trends
- Breastfeeding rates
- Breastfeeding trends in South Africa
- Breastfeeding knowledge of professional nurses and midwives
- Theoretical framework of knowledge.

## 2.2 Background information about MBFI

The Mother Baby Friendly Initiative is a global effort, which was launched by the World Health Organization (WHO) and UNICEF, and is aimed at ensuring that practices that protect, promote and support breastfeeding are implemented by all facilities that care for mothers and babies (WHO and UNICEF, 2010). This launch took place in 1991, following the Innocenti Declaration of 1990 (MBFI-UNICEF, 2010). This initiative to promote breastfeeding was informed by scientific evidence that proved that breastfeeding saves the lives of children under five (5) years of age. The scientific evidence further proved that breast milk provides babies with fundamental good nutrition that protects them from many life-threatening conditions (UNICEF, 2012). The life-threatening conditions cited by UNICEF included vomiting, diarrhoea and infections caused by exposure to the Human Immune Virus (HIV). These are currently the leading causes of infant morbidity and mortality in the country. In a study entitled 'Breastfeeding: maintaining an irreplaceable immunological resource', it was discovered that breastfeeding reduces infant mortality of under-fives by 13% (Labbok, 2014).

According to the 'Global strategy for infant and young child feeding,' published by WHO and UNICEF in 2010, malnutrition, due to inappropriate feeding practices, accounts for 60% of the 10.9 million infant deaths annually. Feeding practices that lead to malnutrition include the inappropriate introduction of non-nutritious complementary feeds to babies within the first year of life, which interferes with breastfeeding (WHO and UNICEF, 2010).

These findings show that breastfeeding is proven to be effective in the reduction of infant morbidity and mortality and that there is a need for knowledgeable, motivated health care providers, who have a positive attitude towards breastfeeding even though they may have no personal breastfeeding experiences (UNICEF, 2012). The MBFI practices should be taught to all health care professionals working with mothers and babies through a well-planned, updated training programme twenty '(20) hour Lactation Management Course' (LMC), which is based on current research and global experiences as outlined by UNICEF (2012). The main purpose of this training is to inform health care professionals about practices that protect, promote and support breastfeeding, so that they are able to provide relevant, safe information to the health care users and their families (Sunguya, 2013).

## 2.3 Lactation Management Course

The 20-hour Lactation Management Course (LMC) is a component of the MBFI, and is a course presented by trained facilitators, following a globally utilised manual. It uses the ten (10) steps to successful breastfeeding plus three (3) additional items as its frame work (World Alliance for Breast Feeding Action, 2012). The ten (10) steps to successful breastfeeding are utilised globally and should be applied as outlined below, together with the three additional items.

**Ten Steps to Successful Breastfeeding are:**

Every facility providing maternity services and care for newborn infants should:

- *Have a written breastfeeding policy that is routinely communicated to all health care staff.*
- *Train all health care staff in the skills necessary to implement this policy.*

- *Inform all pregnant women about the benefits and management of breastfeeding.*
- *Help mothers to initiate breastfeeding within half an hour of birth.*
- *Show mothers how to breastfeed, and how to maintain lactation even if they should be separated from their infants.*
- *Give newborn infants no food or drink other than breast milk, unless medically indicated.*
- *Practice rooming-in - that is, allow mothers and infants to remain together – twenty- four (24) hours a day.*
- *Encourage breastfeeding on demand.*
- *Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants.*
- *Foster the establishment of breastfeeding support groups.*

**The three additional items are:**

- *HIV and infant feeding*
- *Code of Marketing of breast milk substitute*
- *Mother friendly care.*

The twenty (20) -Hour LMC runs over three (3) days with twenty (20) hours of theory and three (3) hours of clinical practice which includes: hand expression, proper positioning and attachment of baby to breast for effective breastfeeding and demonstration of formula feed preparation to mothers who opt to give formula feeding as the method of choice for their babies. The clinical practice takes place during visits to clinical areas and the trainees are guided through some of the practices outlined above, for an example ‘hand expression’. It is a requirement that all health care providers be orientated on MBFI practices, and be fully trained within the first six (6) months of employment (World Health Organization, 2009). The training assists the health care providers to incorporate the MBFI practices into their daily clinical care.

In a study conducted in Australia, on the efficacy of continuing breastfeeding education concluded that the Lactation Management Course is an effective way of improving knowledge, clinical/counselling skills and practices of nurses and midwives (Damstra, 2012).

## 2.4 LMC Training Trends

The institution under study in this research had 254 clinical staff members working in the mother and child units. In September 2015, only 50% of professional nurses and midwives had received training on lactation management, and there were no training records for the other categories of nurses at that time (the hospital LMC Training Stats, 2015).

The requirement by the WHO 'Ten (10) steps to successful breastfeeding' is that at least 80% of all clinical and non-clinical staff members where mother and baby are cared for should be trained on LMC, and 100% of all such staff, including professional nurses and midwives, should be orientated on lactation management matters (WHO, 2010).

In South Africa, there is no clear record of LMC training trends as these are kept by individual health facilities. In Gauteng Province, most Regional Hospitals and Midwife Obstetric Units (MOUs) are already accredited as mother- baby friendly facilities, but all four (4) Tertiary Hospitals are not accredited; the hospital selected for this study is one of the non-accredited hospitals in the province.

## 2.5 Breastfeeding Rates: Worldwide and South Africa

Breastfeeding as a method of infant feeding has been proven to be the best. MBFI promotes breastfeeding, and breastfeeding reduces infant mortality as desired by the Millennium Development Goals.

Exclusive breastfeeding is a recommendation by the WHO (WHO–UNICEF, 2010). Breastfeeding should be initiated with all newborn babies within the first hour of life, and those babies should be exclusively breastfed for 6 months. Breastfeeding should then be continued for up to two (2) years after the introduction of complementary feeds at 6 months (WHO-UNICEF, 2010; Lactation Management Course Manual, 2010).

The monitoring of breastfeeding in South Africa is done from birth (at birth indicator), three (3) days post-delivery (three (3) -day indicator), at fourteen (14) weeks (fourteen (14) -week indicator) and at six (6) months (Infant and Young Child

Feeding Policy, 2010). This monitoring is done by primary health care professional nurses and midwives in MOUs in the hospital and in the local clinics, as guided by the Expanded Programme on Immunisation (EPI) guidelines and primary health care guidelines. Despite this monitoring, there is no data published on breastfeeding rates in South Africa, possibly due to poor data collection methods and procedures.

Breastfeeding rates globally are at an average of 38% (Kio, 2015), with the European countries leading in exclusive breastfeeding, while Africa has the lowest breastfeeding rates (Wanjiku, 2015). MDG report on breastfeeding rates worldwide indicated that the top five (5) countries are all in Europe, with breastfeeding initiation rates percentages ranging from 82% - 89% (Danielle, 2015). The bottom five (5) countries, were all African countries with exclusive breastfeeding rates for four (4) months averaging 22%, with Nigeria for instance having an average of 17% of exclusive breastfeeding within the first six months of life (Kio, 2015). This report also revealed that most mothers in sub-Sahara Africa exclusively breastfeed for three to four (3-4) months instead of the six (6) months recommended by the WHO. The long-term goal, as recommended by the WHO guidelines, is to increase exclusive breastfeeding for six (6) months from the current 38% to a minimum of 50% by the year 2025 (WHO, 2015).

Breastfeeding rates in different parts of the world are influenced by a number of factors. Amongst others, the low breastfeeding rates were affected by the mothers' need to return to work at the end of their four (4) months maternity leave (WHO, 2015), the myth of inadequate milk supply, early introduction of solid food (Wanjiku, 2015) and maternal age (Kio, 2015). The younger the mother the lower initiation and maintenance of breastfeeding as the teenage mother will be returning to school few weeks after giving birth. According to Arora 2010, the decision to breastfeed or not to breastfeed is made very early in pregnancy, and the mother's attitude may be influenced by the information she receives from the health facility she uses, the media and her family's attitude towards breastfeeding (Arora et al., 2010). The WHO to improve breastfeeding rates can be reached through extensive health education of health care professionals, and through informing mothers of the benefits of breastfeeding to both the mother and her baby. This information should not only be

offered to mothers but to their families and to the wider community, through the media and community outreach programmes.

South Africa faces similar challenges in terms of lack of information by mothers, but we are faced with additional challenges such as the complications of HIV amongst the population. Following the revision of the Prevention of HIV Transmission from Mother to Child (PMTCT) guidelines in 2010, a study was conducted in Durban that looked at the implications of the new WHO guidelines on HIV exposed infant feeding for child survival in South Africa. The study analysed the introduction of exclusive breastfeeding by HIV-positive mothers on lifelong Anti-Retroviral Treatment (ARV) and the cessation of a free supply of formula (Saloojee et al., 2016). The study revealed that, despite the evidence that babies who are breastfed are less likely to suffer from vomiting and diarrhoea, including those who are HIV-exposed, most mothers still opted to formula feed instead of breastfeeding. This was attributed to the high HIV prevalence in the country (Saloojee et al., 2016). The study further showed that as long as there is a high prevalence of HIV in the country, the breastfeeding rate will continue to be low as most mothers opt to give formula to their babies as they are concerned about HIV transmission to their babies (Saloojee et al. 2016). In recent studies, there is evidence that exclusive breastfeeding for 6 months and breastfeeding with solid food for twelve (12) months lowers the risk of mother-to-infant-HIV transmission (Berman, 2017). The likelihood of transmission of HIV from a mother's breastmilk is reduced when the mother is on anti-retroviral treatment and is breastfeeding exclusively (Kuhn, 2015).

It is evident from literature that breastfeeding rates in the country are affected by rates of HIV infections. In South Africa an initiative to improve breastfeeding rates was introduced when the Department of Health adopted recommendations from 'The Tshwane Declaration' of support of breastfeeding in South Africa (SA Clinical Journal, 2011). This declaration is all inclusive in that it was adopted and is implemented by all stake holders (government, legislators, community leaders, traditional leaders, health care professional, media and all citizens). The declaration is aimed at promoting, protecting and promoting breastfeeding through improving maternal, new-born and child health services. The support of breastfeeding will in

turn improve breastfeeding rates in the country which will reduce infant mortality. The improvement is founded in strengthening the District Health Systems, reintroduction of school health care programmes and speeding up the process of National Health Insurance. It is The Tshwane Declaration which made MBFI and Kangaroo Mother Care (KMC) mandatory and it also promoted use of updated HIV Guidelines in the country which led to cessation of provision of formula to HIV exposed babies unless medically prescribed.

It is evident from literature that breastfeeding rates in the country are affected by rates of HIV infections which brings fear of transmission of HIV from mother to infant, to both the mothers and the health care professional alike. The health care professional need to keep themselves abreast with the current evidence on HIV so that they are confident enough to encourage HIV positive mothers to breastfeed their infants. A recent study conducted in four (4) provinces of South Africa in 2015 on breastfeeding rates, concluded that breastfeeding rates in the country are still very low. Exclusive breastfeeding for 6 months was found to be at 12%. This is because 40% of mothers stop breastfeeding within the first month of the infant's birth and 17% infants are initiated on solids within the first month (Siziba, 2015). The leading cause of these poor rates was the fact that most mothers had to go back to work, which was 29%, followed by the poor health status of the mother at 25%. The perception of inadequate milk supply accounted for 13%. These findings show that a bulk of mothers go through the health institution and receive minimum education on breastfeeding, because all these challenges could be addressed with breastfeeding information.

Even though mothers know about the benefits of breastfeeding and are encouraged to breastfeed, the final choice of infant feeding method lies with the mother. Health care professionals, therefore, have an obligation not to impose personal opinions and preferences on the mother, so that she is able to sustain her infant feeding method of choice even after being discharged from the health facility. Most women will initiate breastfeeding and maintain it for a period of four (4) months if they had the intention to breastfeed during pregnancy (Damstra, 2012). Emphasis therefore should be in encouraging mothers to make decisions about the infant feeding method of choice during the ante-natal period and to ensure that mothers make an

informed decision through detailed education on breastfeeding. Mothers should also be supported throughout the first year of their infant's life, regardless of the infant feeding method they chose. This challenges health care professionals to give relevant information about breastfeeding benefits during the antenatal period. The health care professional should, therefore, be knowledgeable so as to inform all mothers and their families, and be in a position to counsel them according to their needs (Arora, 2010).

## 2.6 Professional Nurses and Midwives' Breastfeeding Knowledge

Literature shows that a woman's confidence and ability to deal with childbirth can be improved or reduced by the nature of the treatment she receives from her childbirth assistance (MBFI-UNICEF, 2012). This confidence may assist the mother in initiating breastfeeding within the first hour of her child's birth and sustain it, even when she is no longer under the care of the health care professional. Health care professionals should, therefore, be trained so they create an environment that allows the woman to gain confidence during childbirth and beyond. (Vinther, 2012). A study conducted in Brazil (Silvestre, 2009) examined breastfeeding knowledge and practice of health care professionals in a public health care service, and concluded that training for all health care professionals should be ongoing, in order to remain updated so that they are in a position to give current, evidence-based and relevant information to mothers and their families (Silvestre, 2009).

According to a study conducted in Cape Town (Daniels, 2011) in-service training on lactation management is vital in expanding breastfeeding knowledge and the MBFI practices of nurses, and early initiation of breastfeeding improves in institutions where more health care workers are trained on breastfeeding policies (Chuang-Ming Li, 2013). A further comparison was made between institutions with formal written policies on breastfeeding and those without written policies, and it was found that training given to staff re breastfeeding knowledge is more likely to improve the institution's breastfeeding rates, due to the improved knowledge of the clinical and

non-clinical staff, including information about breastfeeding policies (Chuang- Ming Li, 2013)..

Training of nurses and midwives on breastfeeding will assist in ensuring that mothers are given relevant information, which will help them with initiation and sustainment of breastfeeding (Mclaughlin, 2010). The training empowers the health care workers with knowledge of practices that promote, protect and support breastfeeding. These practices include initiation of skin-to-skin contact, positioning and attachment and hand expression, which are all covered by the twenty (20) - Hour LMC training.

According to Croatian study which was conducted between 2007 and 2009 on the effectiveness of the WHO- 20 hour LMC in five (5) of their nine (9) maternity hospitals, it was concluded that the training is effective in improving knowledge, however, it was not stated whether such knowledge was transferred into practices that promote mother-baby friendly care (Zakarija-Grkovic & Burmaz, 2010). However training assists the health care worker to have confidence to give advice to women on issues of breastfeeding (Srinivasan, 2014). Lactation Management Course is therefore vital in expanding breastfeeding knowledge and MBFI practices which promote, support and protect breastfeeding (Jacobs, 2011).

The National Department of Health (DoH), in accordance with WHO guidelines, recommends that all new employees be trained in MBFI practices through the twenty (20) hour LMC, within six (6) months of arrival at a maternity facility. Training for those that have been in the facility for more than six (6) months should be prioritised (Kwa-Zulu Natal Department of Health 2012). According to the findings of a study carried out in the Western Cape (Henney, 2011) regarding successes and challenges of the MBFI, one of the challenges identified was the inconsistency from the institutions in the implementation of MBFI practices post accreditation. This inconsistency was believed to be due to nursing staff allowing personal opinions and previous practices to influence the information learned during the twenty (20) hour LMC training (Henney, 2013). Therefore prioritising the training of new staff members on the LMC is important, and ongoing assessment for accreditation is vital to ensure that the acquired knowledge is incorporated into daily clinical practice.

## 2.7 Theoretical Framework of Knowledge Acquisition

Knowledge acquisition, as viewed by theorists like Jean Piaget and Lev Vygotsky, as an active improvement of a person's understanding of the concept(s) involves active thinking and active knowledge search by the individual (Laverak, 2015). This basically means that knowledge acquisition requires the active involvement of the student. There are different ways to measure if learning has taken place; one way is to check the ability of the student to recall the information over a period of time and observing behavioural change on the part of the student (Hughes, 2013).

Adults utilise different strategies to acquire knowledge, and these strategies depend on an individual approach, which may include reading, enquiring and application of prior knowledge in a practical situation, (Kuhn, 2011). Kuhn further explains that adults are able to reflect on their knowledge through an individual cognitive component.

The ability for knowledge retention in this study was seen through the pre-test and post-test which allowed the researcher to determine the participants' ability to recall information. There are many theories of learning/knowledge acquisition that one can explore but the one relevant to this study is the cognitive constructivism theory of learning.

### 2.7.1 Cognitive Constructivism

The cognitive constructivism theory is described by different authors such as Ertmer and Newby (2013) in their study about behaviourism, cognitivism and constructivism, which are viewed as the manner in which students or learners receive, organise, store and recall information they receive through teaching (Ertmer, 2013). They further explain that such knowledge acquisition is influenced by the environment in which the learning takes place; therefore, it is vital that the student should create some tangible meaning from the learning experience. The prior knowledge of the student should always be taken into consideration, as it forms the base upon which the added knowledge will be laid. Furthermore, the students should possess an ability to analyse and process and store the information, and discard what is viewed as not valuable (Ertmer, 2013).

## 2.8 Conclusion

Based on the literature review it can be concluded that breastfeeding remains the better feeding choice for improving infant outcomes in comparison to formula feeding as it reduces infant mortality globally. It also showed that there is a close link between the breastfeeding knowledge of health professionals and the improvement of breastfeeding rates as health professionals gain confidence to give information to mothers and their families.

There is evidence that the low breastfeeding rates are a global challenge, which may be improved through breastfeeding education of health professionals. Breastfeeding rates in South Africa were found to be low, partially as a result of the high prevalence of HIV in the country. There is limited information regarding breastfeeding rates in the country, and most studies looking at the training of health care professionals on breastfeeding were from other countries.

The literature confirmed that training is one of the most effective ways of imparting knowledge to health care professionals with the aim of improving clinical practice. It is, therefore, crucial that health care professionals be knowledgeable about breastfeeding in order to advise mothers, their families and the community about practices that protect, promote and support breastfeeding. The literature also

showed that humans have the ability to improve their knowledge through training, and that this ability is based on individual learning approaches plus a cognitive component.

# Chapter 3 Research Methodology

## 3.1 Introduction

In this chapter, the research design and the justification for selecting it will be discussed. The chapter will also include the research setting, population and sampling, data collection method, ethical considerations and the study limitations.

## 3.2 Research Design

In research, the research design is chosen according to what the researcher is intending to achieve with the study, and the selected design will in turn influence the choice of population, the process of sampling, the data collection methods and the data analysis (Grove, 2013). When a researcher plans to examine the cause and effect of the independent and the dependent variable it is recommended that a quantitative research approach, utilising a quasi-experimental research design, be followed (Grove et al., 2013). A quasi-experimental research design is commonly used when it is not possible for the researcher to have full control of the group under study by including a control group or sampling through randomisation (Brink, 2012).

In this study, it would have been difficult to achieve the inclusion of a control group and randomisation sampling due to the low number of participants, therefore, a quasi- experimental, pre-test/post-test group design was selected as the best method to conduct the study. Quantitative research allows the researcher to utilise a structured systematical method of examining a variable or variables (Grove, 2013) with the aim of arriving at a generalised conclusion. At the start of the 20-hour Lactation Management Course (LMC) training the attendees were requested to volunteer to participate in the study, and the willing participants were asked to write a pre-test questionnaire, after which an intervention in the form of the twenty (20) - hour LMC training was administered to all participants. The trained volunteer participants were then requested to write a post-test, using the same questionnaire, no earlier than one month post-intervention. Writing the post-test immediately after training would have measured information recall as opposed to the intended measurement of knowledge acquisition. The researcher compared the pre- and

post-test results of the participants in order to establish whether the training improved the breastfeeding knowledge of the participants.

## 3.3 Research Question

How effective is the twenty (20) -hour LMC training in improving breastfeeding knowledge of the professional nurses and midwives working in mother and child units in an academic institution in the Johannesburg region?

## 3.4 Research Setting

In research, it is important to establish the research setting as it influences the type of method the researcher will choose (Grove, 2013). In this study, the setting was partially controlled as it took place in a health care institution (Grove, 2013). The site at which the research was done was a tertiary hospital that has not yet been accredited as a mother-baby friendly facility even though it has been assessed three times by the National Department of Health. Administrative difficulty in gaining access to other health facilities resulted in use of only one facility.

## 3.5 Population

In research, the population is the group of people who meet the criteria of a study as outlined by the researcher (Brink, 2012). In this study, the population was the professional nurses and midwives employed at the tertiary hospital under study who were involved in clinical work in the mother and child areas. This population is made up of midwives working in maternity wards and professional nurses working in neonatal and paediatric wards. The population group was selected because they are the individuals who are hands-on in ensuring that the mother-baby friendly practices, which are taught during LMC, are carried out in the mother and child clinical areas. The researcher used only the ‘accessible population’ (Brink, 2012) who were the professional nurses and midwives who attended the twenty (20) -Hour Lactation Management Course (LMC).

### 3.5.1 Sampling

Brink (2012) refers to sampling as “the process the researcher will undertake in selecting the research participants from the greater population and the selected participants should be representative of that greater population in characteristics and interests” (Brink, 2012). The sample should also be able to assist the researcher in collecting enough information regarding the phenomenon under study so that the results can be generalised (Brink, 2012).

A convenience sampling of all the professional nurses and midwives working at the research site who registered for the LMC training, who were willing to participate, was selected. The sampling was done over a period of five months, as training took place once a month in the institution. It should be noted, however, that for the month of April 2016 two sessions of training took place. The inclusion criteria were:

- Participants had to be professional nurses or midwives.
- The professional nurse / midwife had to be working in the mother and child area.
- The professional nurse / midwife had to be attending the LMC training during the data collection time.
- The professional nurses and midwives had to be from the institution under study.
- The professional nurses and midwives had to be willing to sign an informed consent in order to participate in the study.

The exclusion criteria were:

- All other categories of nurses who came for training were excluded from the study.
- All professional nurses and midwives who did not complete the training were excluded from the study.

### 3.5.2 Sample Size

In research, sample size should be representative of the population under study, both in number and in characteristics, as defined in the inclusion criteria (Brink, 2012). It is recommended that the sample size is not less than 10% of the population (Brink, 2012).

The sample size for this study was all the professional nurses and midwives who came for the LMC training who were willing to participate in the study after being informed about the study and invited to participate. After seven (7) sessions of training that took place over a period of six (6) months, a total sample of fifty participants was obtained. A realised sample of forty- seven (47) was achieved, as one participant withdrew during the pre-test and two participants could not write the post-test because one, unfortunately, passed on before writing the post-test and the other one did not finish the training and therefore was not allowed to write the post-test.

## 3.6 Data Collection

A validated data collection tool was used for data collection. This tool is from the Wellstart self-test module and has been revised twice by Wellstart (Naylor, 2013). The tool comprises two (2) parts. Part one (1) contains demographic information which will assist with data analysis. Part two (2) has questions pertaining to breastfeeding knowledge, with twenty-six (26) multiple choice questions. The data collection tool is attached as Annexure 4). The data was planned to be collected from August 2015 to November 2015 as the LMC training was scheduled to happen twice-monthly. As a result of poor training attendance by staff members and loss of a second trainer, the training was scheduled to take place once a month instead of twice -monthly. Data was only collected once in 2015 (i.e. September) then monthly from February 2016 to June 2016. The participants were given both verbal and written information about the study, and an opportunity to ask any questions about the study, and then invited to participate in the study. All those who were willing to participate had to voluntarily sign a consent form before completing the pre-test. The pre-test was written before the training session started and the post- test was written no less than a month after the training.

The researcher decided to administer the questionnaire for both the pre-test and post-test face-to-face, as opposed to using email or a telephonic approach, to ensure that the answering of the questions was done in a semi-controlled environment, which enhances the validity of the data (Brink, 2012). This means that the participants had to write the tests in the presence of the researcher. The

participant answered the pre-test and post-test questionnaire in the seminar room which was used during the training. A promise to update all participants on the findings of the study, on completion of the research report, was made.

## 3.7 Data Analysis Methods

The data collected was captured onto an excel spreadsheet, where values for the scores obtained by the participants from the pre-test and those from the post-test were indicated. All answers per question for both pre-test and post-test were also captured. The researcher was assisted by a statistician to analyse the data. The data was loaded into the Statistical Package for Social Sciences (SPSS). A descriptive statistical analysis, using a paired t-test looking at means and standard deviations, was done and the data from the pre- and post-test results were compared.

## 3.8 Ethical Considerations

In order to ensure the protection of the participants and to ensure no ethical principles were violated, the following was done:

- Ethical approval to conduct the study was sought and granted from the post graduate's assessors committee and the University of the Witwatersrand Human Research Ethics Committee. The permission for both are provided as Annexure 6 and Annexure 7respectively.
- Permission to conduct the study at the selected hospital was requested from and was granted by the Chief Executive Officer of the hospital, in writing, and the conditions stated on the permission were not violated. The letter of permission is provided as Annexure 8.
- The permission to utilise the Wellstart questionnaire as a data collection tool was requested and permission was granted by the authors. The letter of permission is provided as Annexure 9.
- An informed voluntary consent was obtained from all the participants (Brink, 2012). The consent form is provided as Annexure 3.

- All participants were afforded the right to choose to continue or to discontinue the study with no negative consequences to themselves.
- The participants were not required to provide personal details, instead, code names were allocated to each participant, which were used throughout the study to ensure that confidentiality was maintained.
- The answered pre- and post-test questionnaires were kept in a locked cupboard and were only accessed by the researcher, the supervisor, and the statistician so as to maintain confidentiality. The researcher will ensure that the data is kept safe for a minimum of 2 years after the publication of the results, after which they will be destroyed.

## 3.9 Validity and Reliability

Validity and reliability are important to ensure that the data collected by the researcher is of high quality, which, in turn, will influence the results of the study (Brink, 2012). The validity of the data collection instrument as defined by Brink is aimed at ascertaining whether the instrument measures what it is supposed to measure (Brink, 2012). In this study, the Wellstart data collection tool was used to measure the breastfeeding knowledge of nurses and midwives, therefore, the researcher had to ensure that all the questions were relevant to the breastfeeding knowledge of nurses and midwives and that the content covered during the LMC training was also relevant to the Wellstart data collection tool.

The training is standardised and is given using a manual which was developed by the WHO (World Health Organization, 2009). The standardisation of the training manual is to ensure that the training is received by all the participants in exactly the same manner. The LMC training is conducted by a qualified trainer who is also a Mother-Baby Friendly Initiative assessor (MBFI). All MBFI trainers and assessors are expected to attend on-going refresher courses to ensure that they remain aware of current and relevant information, as guided by the WHO training manual and national guidelines on breastfeeding matters.

In order to ensure reliability, an effort was made to ensure that the sample remained representative of the entire population, as discussed above, and that the language

used in the data collection tool did not have any ambiguous meaning that might confuse the participants (Brink, 2012).

The pre-test/post-test tool by Wellstart International is the fourth edition of a validated, reliable tool that has been used in similar studies and online lactation management training (Naylor, 2014).

Besides adding demographic related questions, the questionnaire was not modified to ensure that its validity was retained; however, after agreement with the supervisor, some words were modified to suit the South African context, for an example the spelling of oestrogen was changed from ‘estrogen’ to ‘oestrogen’.

# Chapter 4 Presentation of Findings

## 4.1 Introduction

In this chapter the results of the study will be looked at under the following sub-headings:

- Study sample
- Demographic data of the participants
- Comparison of scores between the pre-test and post-test results
- Comparison of the pre-test and. post-test correct answers per question
- Comparison of the pre- and post-test results per participants
- Comparison of the pre- and post-test results by years of experience per participant.

The presentation of the findings will aim to answer the following research questions:

- What was the pre-test knowledge of the participants?
- What was the post-test knowledge of the participants?

The presentation of the results will be in a form of tables and figures based on the data collected from the 47 professional nurses and midwives, working at the Mother and Child Departments in a tertiary hospital in the Johannesburg Region, who participated in the study.

## 4.2 Sample

A total of 50 participants took part in the study. Three of the original participants were not included in the data analysis as they could not complete both the pre- and post-tests. One participant withdrew from the study during the pre-test, but was allowed to continue with the training, in accordance with ethical considerations that participants have a right to discontinue their participation in the study at any given point with no negative consequences. A second participant demised before she could write the post-test. A third participant could not finish the training as she had to go back to the clinical area on the second day of the training, due to staff shortage,

and as a result she could not be included in the post-tests. Therefore, a total of forty-seven (47) participants completed both the pre-test and the post-test questionnaires, which gave a 94% completion rate from the original participants.

## 4.3 Demographic Data

The results of the demographic data of the forty-seven (47) participants are presented below under clinical areas and years of experience.

### 4.3.1 Comparison of data per clinical area

The composition of the sample, according to clinical areas, is illustrated in Table 4.1 below.

**Table 4.1: Classification of the Participants by Area of Practice**

| Area of Practice | Sample size | Percentage |
|---|---|---|
| Maternity Wards | 21 | 44.7% |
| Neonatal Wards | 10 | 21.3% |
| Paediatric Ward | 16 | 34% |
| Total | 47 | 100% |

Table 4.1 shows that 44.7% of the participants were from the Maternity Wards, which include the Antenatal ward, the Labour ward, and 3 postnatal wards. This group formed the majority of the participants. Participants from the Neonatal Wards accounted for 21.3% of the participants, and that included the Neonatal Intensive Care Unit / Paediatric Intensive Care Unit, the Neonatal High Care ward and the Neonatal Low Care ward. The remaining 34% participants, out of the 47, were from the Paediatric wards, which comprised medical wards, surgical wards, and an Out Patients' Department. Even though there was an unequal number of participants from different wards, all participating areas in the mother and child departments were represented.

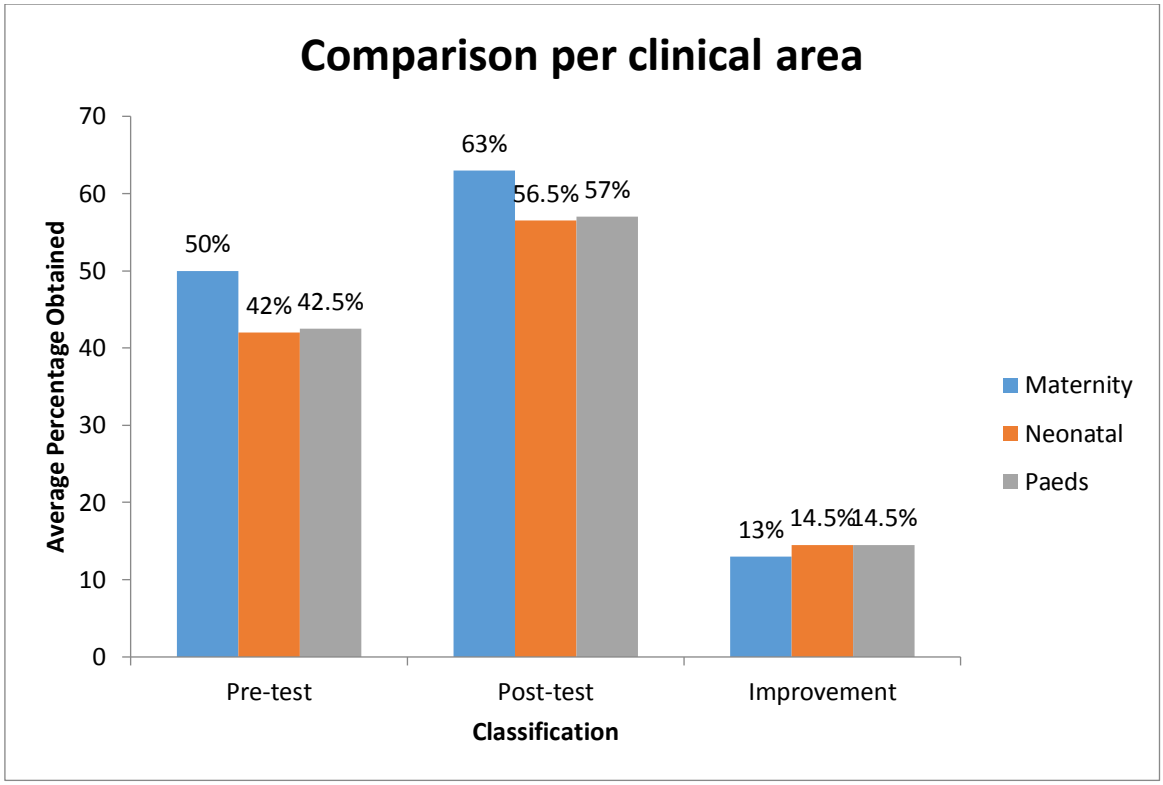


**Figure 4.1: Average Score & Improvement per Areas of Practice**

The results show that participants from the maternity areas had a higher level of knowledge with an average of 50% and 63% for pre-test and post-test as shown in Figure 4.1 above. However, the percentage of knowledge improvement for the maternity areas was 1.5% less than that of the neonatal and paediatric areas, both of which had a 14.5% improvement.

For the maternity areas, the participant with the lowest pre-test score obtained 6/26; this participant had four years of experience. The lowest score for the post-test in maternity was 9/26; this was a different participant who also had four years of experience. The highest score in the maternity area in the pre-test was 24/26 and 26/26 for the post-test, both by the same participant. This participant had 16 years of experience. For the neonatal areas, the lowest pre-test score was 3/26 and for the post-test it was 11/26 by the same participant with five years of experience. The highest score in the neonatal areas for pre-test was 15/26 by a participant with only three months' experience, and for the post-test, the highest score was 17/26, obtained by 2 different participants, with six years and 20 years of experience respectively. For the paediatric areas the lowest score for the pre-test was 6/26 by

a participant with two years of experience, and the same participant again obtained the lowest score for post-test, scoring 11/26. The highest score for a pre-test in the paediatric areas was 16/26 and for post-test it was 23/26 by the same participant, who had three years of experience. There was another participant with 14 years of experience from the paediatric areas who also obtained a score of 23/26 during the post-test.

**Table 4.2: Lowest and Highest Scores per Area of Practice**

| **Area** | **Lowest Score** | **Experience** | **Highest Score** | **Experience** |
|---|---|---|---|---|
| Maternity – Pre-test | 6/26 | 4 years | 24/26 | 16 years |
| Maternity – Post-test | 9/26 | 4 years<br>(different from above) | 26/26 | 16 years (same participant as above) |
| Neonatal – Pre-test | 3/26 | 5 years | 15/26 | 3 months |
| Neonatal – Post-test | 11/26 | 5 years<br>(same participant as above) | 17/26 | 6 years<br>20 years |
| Paediatric – Pre-test | 6/26 | 2 years | 16/26 | 3 years |
| Paediatric – Post-test | 11/26 | 2 years<br>(same participant as above) | 23/26 | 3 years<br>(same participant as above)<br>14 years |

### 4.3.2 Comparison of data by years of experience

The participants were further classified according to the professional nurses' / midwives' years of experience as outlined in the table below.

**Table 4.3: Classification in Years of Experience**

| Years of experience | Number of Participants | Percentage |
|---|---|---|
| **0 - 5 Years** | 31 | 66% |
| **6 - 10 Years** | 5 | 10.6% |
| **11 - 15 Years** | 4 | 8.5% |
| **16+ Years** | 7 | 14.9% |
| **Total** | 47 | 100 |

Table 4.3 above and Figure 4.2 below show the classification of the participants according to their years of experience as professional nurses or midwives. The classification shows that 31 (66%) of the participants had between 0-5 years' experience, 7 (14.9%) of participants had 16+ years' experience, whilst 5 (10.6%) participants had 6-10 years of clinical work experience, and the smallest group was that of the participants with 11-15 years of experience, which only accounted for 4 (8.5%) of the total sample. The results, therefore, will mainly be represented by the outcomes from the professional nurses and midwives who have completed training in the last 5 years.

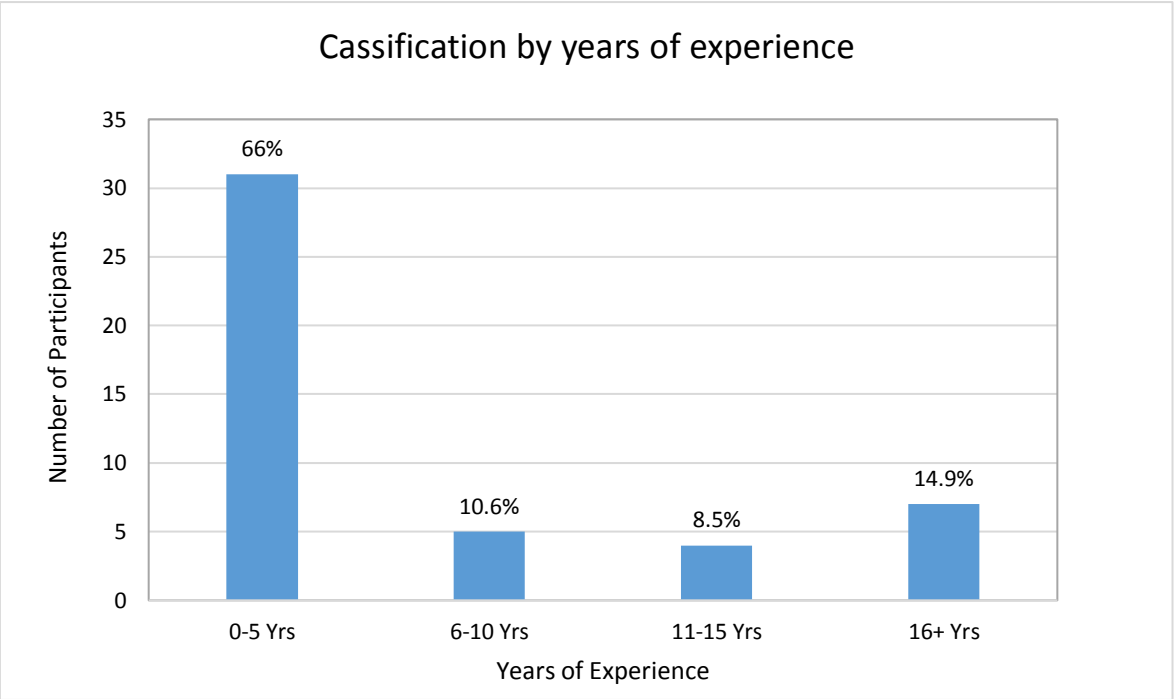


**Figure 4.2: Classification of the Participants by Years of Experience as Professional Nurses**

## 4.4 Pre-test/Post-test Comparison

Table 4.4 below shows the minimum, mean and maximum scores obtained for the pre- and post-tests. Overall, there was an improvement in the scores from the pre- to the post-test.

**Table 4.4: Pre-Test Post-Test Results in Comparison**

| | Minimum Score | Mean Score | Maximum Score |
|---|---|---|---|
| **Pre-test** | 3/26 | 12 | 24/26 |
| **Post- test** | 9/26 | 16 | 26/26 |

From Table 4.4 it can be seen that the minimum mark obtained by the participants during the pre-test was 3/26 and the maximum score was 24/26. The average score for the pre-test was 12/26. The minimum mark obtained by the participants during the post-test was 9/26 and the maximum mark was 26/26. The average score during the post-test was 16/26. The average percentage for the pre-test was 45.7% which

was less than the generally accepted pass mark of 50%. The post- intervention average percentage was 60.5 % showing an improvement of 14.8% from the pre-test average.

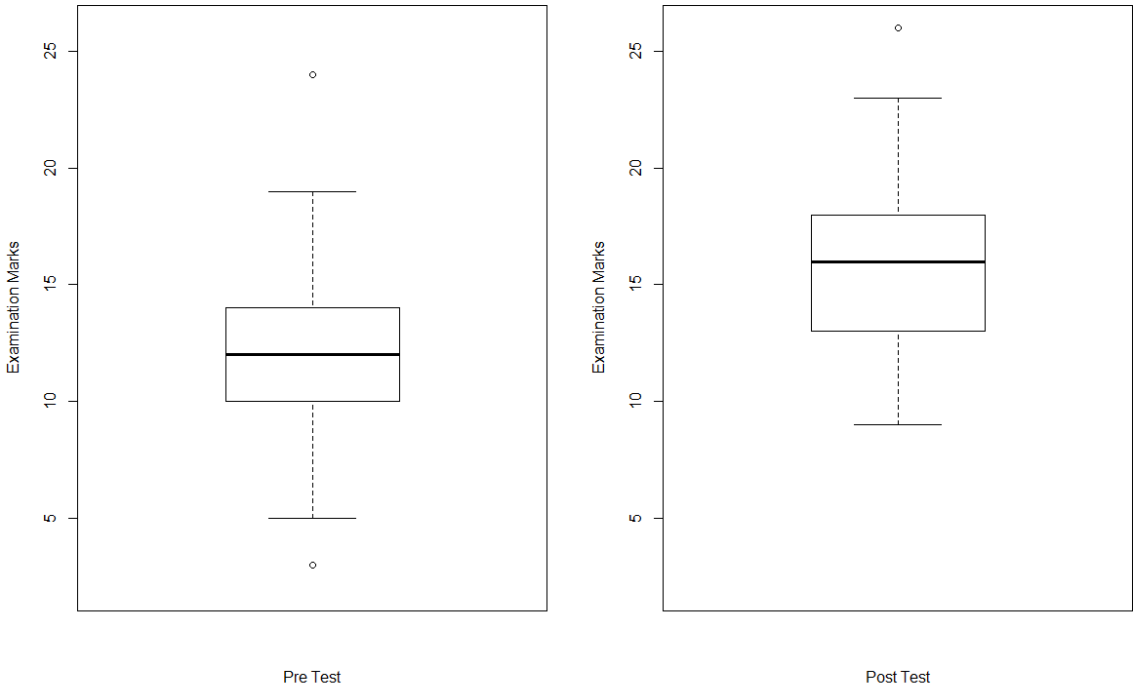


**Figure 4.3: Pre-Test/Post-Test Mean Score Comparison**

From the box plot diagram above (**Error! Reference source not found.**), it is vident that there was a change in the average scores of the participants after the training intervention. The average score for the pre-test was 12 and for the post-test it was 16. The mean score after the training intervention had improved by 4 points in comparison to the pre-test average score. The minimum score obtained by the participants before the intervention was 3 and after the intervention, the minimum score obtained was 9, which showed an improvement of 6 marks. The maximum score for the pre-test was 24 and for the post-test it was 26. The maximum scores for both the pre-test and the post-test were obtained by the same participant. These results show that the training intervention improved the average score, the minimum score and the maximum scores.

A box plot (or box and whiskers plot) divides the scores into quartiles, that is ¼ (25%) of scores are below the bottom of the box, ¼ (25%) of the scores are in the bottom of the box, ¼ (25%) of the scores are in the top of the box, and the last ¼ (25%) are above the top of the box. In this case this means that for the pre-test ¼ (25%) of the scores are below 10, ¼ (25%) of the scores are between 10 and 12, ¼ (25%) of the scores are between 12 and 14, and the last ¼ (25%) of the scores are above 14. The "whiskers" or end lines, in this case, represent one standard deviation away from the mean. Any scores that fall outside of the box and whiskers are shown as dots above and below the construct.

From these two box plots it can be seen that the difference in scores in the pre-test for the middle 50% of participants was fairly close – between 10/26 and 14/26 – but after the LMC the results for the post-test shows that the range had widened slightly - 13/26 to 18/26, with the range in the second quartile increasing by 1.

In the post-test box plot, only the maximum score fell outside of the box and whiskers "range" as an outlier, whereas for the pre-test, both the lowest and highest scores were outside of the box plot "range".

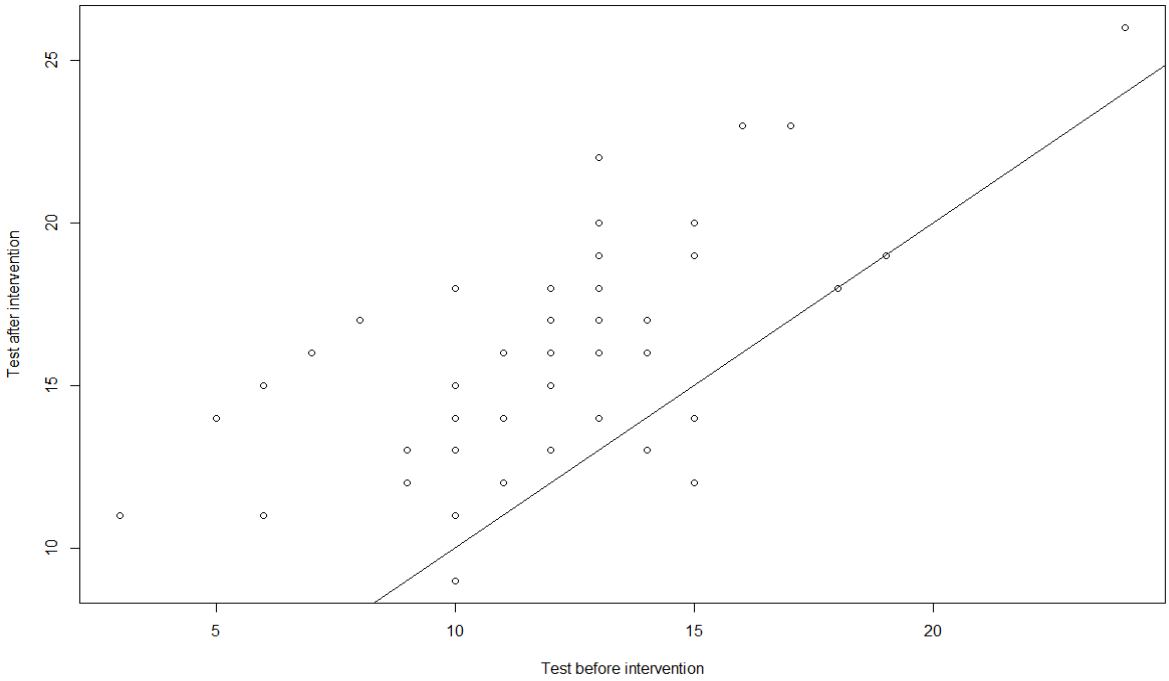


**Figure 4.4: Comparison of Scores**

The scatter plot (Figure 4.4) of the test scores after the training intervention shows that 90.3% of the points lie above the 45-degree, line which is an indication that there was a significant increase in the marks after the training intervention.

Null Hypothesis ($H_o$): There is no difference in the average test marks before and after intervention programme.

Alternative Hypothesis ($H_1$): There is a difference in the average test mark before and after intervention programme.

The results prove that the alternative hypothesis is true as shown by the discussions and the graphs above. The hypothesis proves that the 20-hour LMC programme was an effective way of improving the breastfeeding knowledge of the nurses.

## 4.5 Comparison of Pre-test and Post-test Correct Answers per Question

The pre-test and post-test scores were further compared in terms of the number of correct answers for both tests. The results showed that there were more correct answers obtained during the post-test than the pre-test. This is shown in Table 4.5 and Figure 4.5 below. There was an improvement in 23 (88.4%) of the 26 questions after the training intervention. There were only 2 (7.6%) questions whose correct scores remained the same for both tests, and these were from the same participants for both tests. These were:

- Question 7 which was a question about the benefits of exclusive breastfeeding, with only 6 correct answers for both the pre-test and the post-test.
- Question 16 which was a question was about the code of marketing of breast-milk substitutes, with a total of 4 correct answers for both pre-test and post-test.

One Question – question 23 - scored 2 points less in the post- test than it did in the pre-test. This question also had the highest number of correct answers, with 100% during the pre-test and 95.7% for the post-test. Even though this was the highest scored question, there was a 4.3% decline in correct answers during the post-test. The question was about the breast structure.

The question that had the lowest number of correct answers was question 19. This question was about knowledge of breastfeeding contra-indications. Only 1 (2.1%) of the 47 participants got the answer correct during the pre-test. Fourteen participants answered the question correctly in the post-test, showing an improvement of 29.7% of correct answers.

The findings discussed are illustrated below in Figure 4.5. Table 4.5 below lists the questions and the percentages of participants that got each question correct per test.

**Table 4.5: Questions and Percentages of Correct Answers by Participants**

| Question | Description (Q1 to Q21 = (Multiple Choice Question) | Pre-test Percentage | Post-test Percentage | Improvement Percentage |
|---|---|---|---|---|
| Q1 | How to assess milk transfer | 19.1% | 23.4% | 4.3% |
| Q2 | Highest constituent in human milk | 23.4% | 44.6% | 21.2% |
| Q3 | Hormone responsible for milk ejection | 34% | 61.7% | 27.7% |
| Q4 | Causes of sore nipples | 76.5% | 91.4% | 14.9% |
| Q5 | Hormone responsible for milk synthesis | 65.9% | 83% | 17.1% |
| Q6 | Management of inverted nipples | 38.2% | 53.1% | 14.9% |
| Q7 | Practice that reduces breast milk volume the most | 12.7% | 12.7% | 0% |
| Q8 | Benefits of exclusive breastfeeding for six months | 72.3% | 85.1% | 12.8% |
| Q9 | When to introduce complementary feeds | 89.6% | 95.7% | 6.1% |
| Q10 | Signs of adequate milk intake | 34% | 38.2% | 4.2% |
| Q11 | For how long should infants with a family history of allergies be breastfed? | 85.1% | 89.6% | 4.5% |
| Q12 | Causes of severe breast engorgement | 70.2% | 93.6% | 23.45 |
| Q13 | Causes of poor weight gain | 70.2% | 87.23% | 17.03% |
| Q14 | Management of mastitis | 42.5% | 63.8% | 21.3% |
| Q15 | When is Lactation Amenorrhea Method of contraception less effective? | 31.9% | 36.1% | 4.2% |
| Q16 | What does the International Code of Marketing Breast milk substitutes entail? | 8.5% | 8.5% | 0% |
| Q17 | Signs and symptoms of nipple candidiasis | 34% | 36.1% | 2.15 |
| Q18 | How to improve jaundice in a normal full term infant | 91.4% | 93.6% | 2.2% |
| Q19 | Contra-indications for breastfeeding | 2.1% | 29.7% | 27.6% |

| Question | Description (Q1 to Q21 = (Multiple Choice Question) | Pre-test Percentage | Post-test Percentage | Improvement Percentage |
|---|---|---|---|---|
| Q20 | Why should a mother from an area with no running water and electricity opt for breastfeeding? | 21.2% | 34% | 12.8% |
| Q21 | Promotion of breastfeeding in a hospital setting ( Rooming-in) | 87.2% | 95.7% | 8.5% |
| Q 22 to Q26 = Labelling of breast structures | | | | |
| Q22 | Montgomery's glands | 36.1% | 46.8% | 10.7% |
| Q23 | Supporting tissue and fat | 100% | 95.7% | -4.3% |
| Q24 | Alveoli | 34% | 72.3% | 38.3% |
| Q25 | Areola | 59.6% | 61.7% | 2.1% |
| Q26 | Ducts | 55.3% | 76.5% | 21.2% |

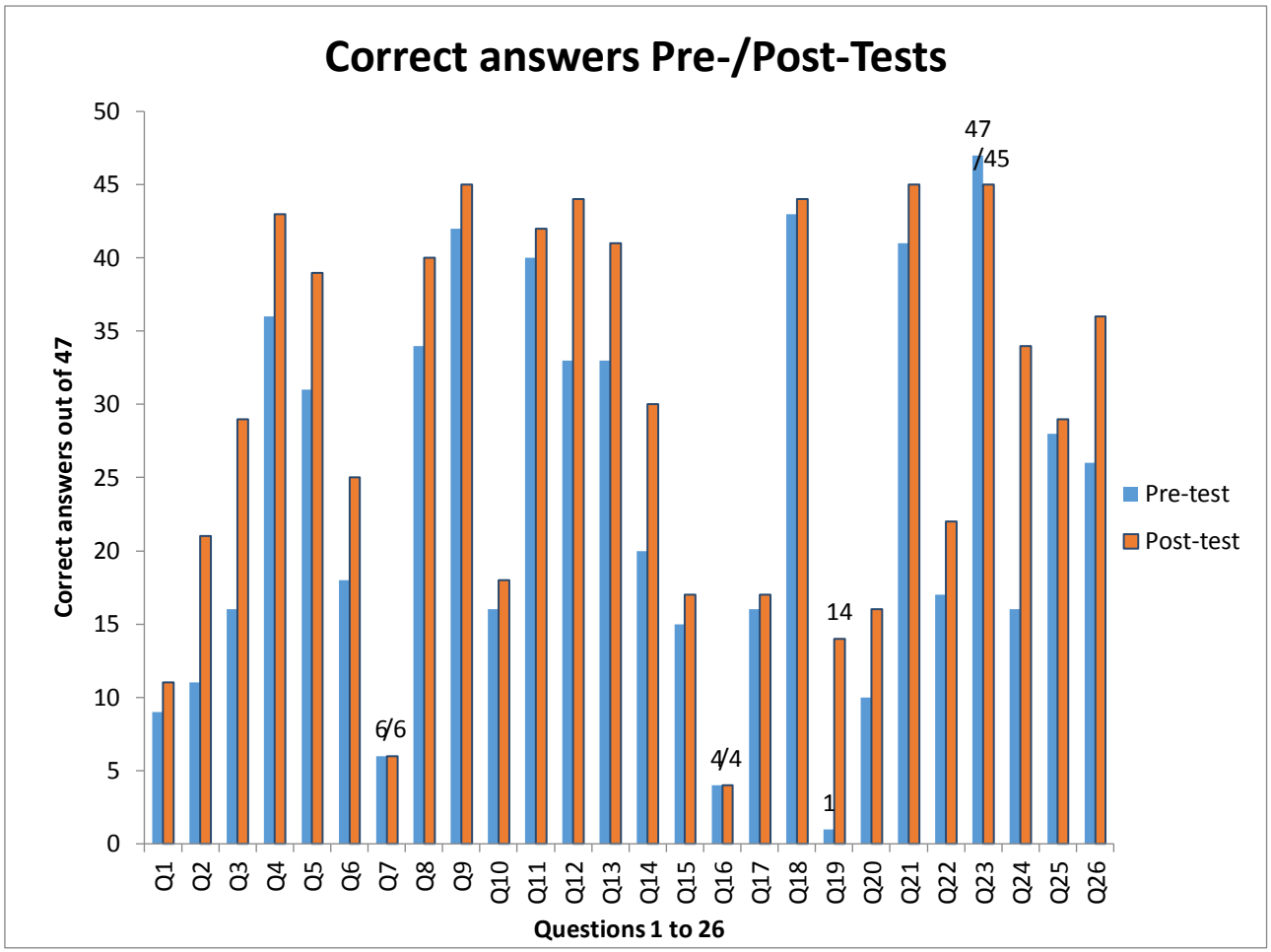


**Figure 4.5: Comparison of Pre/Post-Test Correct Answers per Question**

## 4.6 Comparison of Pre-test and Post-test Correct Answers per Participant

The results were also analysed in terms of correct answers obtained by individual participants for the pre- and post-tests. The findings, as illustrated in Figure 4.6 below, show that the post-test results for the majority of individual participants improved. However, there were five (10.6 %) participants whose post-test scores declined post intervention, and two (4.3%) whose scores remained the same. This means that 85.1% of participants improved on their post-test scores. The participants whose post-test scores declined were: participant A4, with one year's experience; participant A5, with 15 years of experience; participant A8, with four years of experience; participant A11, with 3 months' experience and participant A31, with 3 months' experience. The ones whose scores remained unchanged were

participant A43 and A46, both with six years of experience. This is illustrated in Figure 4.6 below.

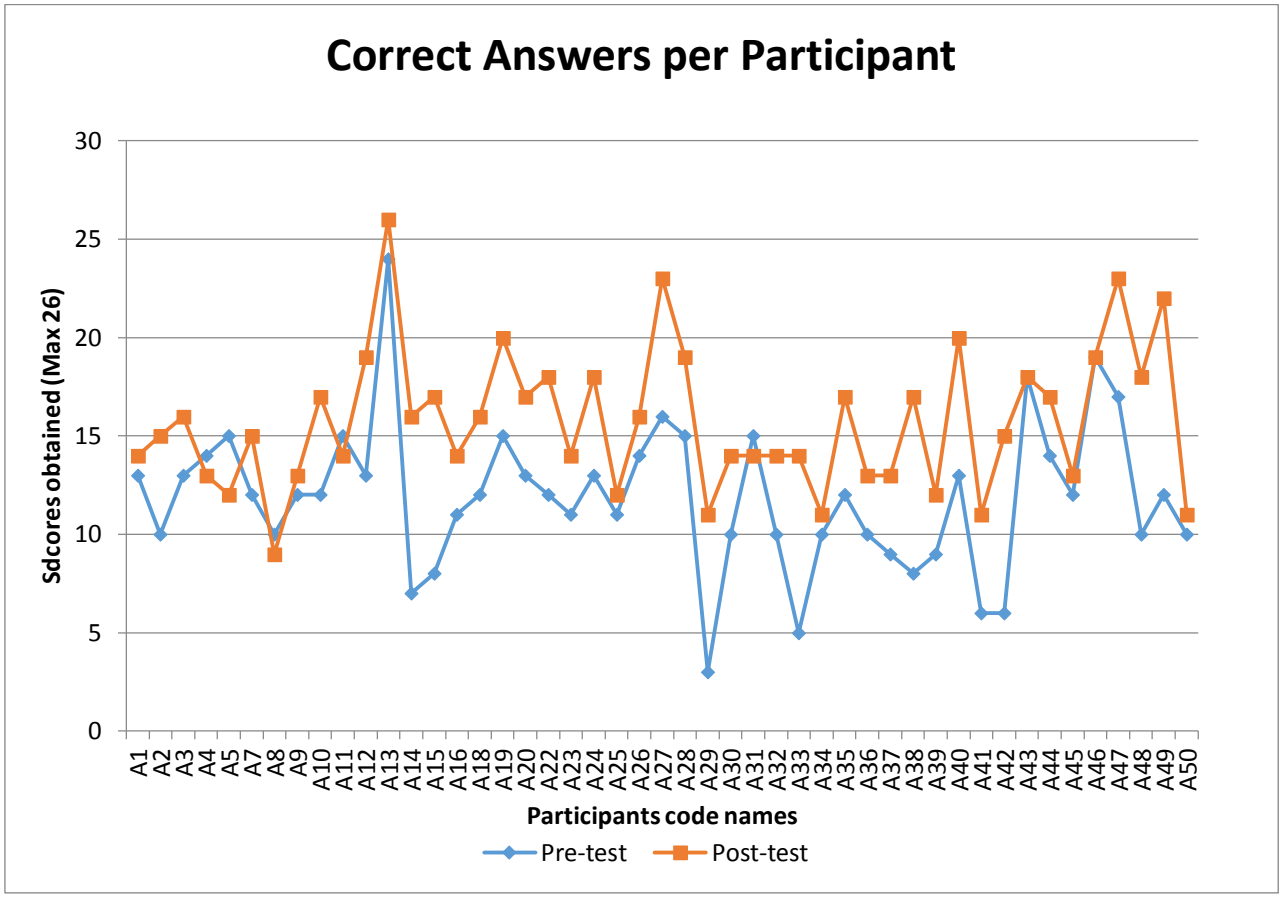


**Figure 4.6: Comparison of Pre-/Post-Test Correct Answers per Participant**

## 4.7 Comparison of the Pre-test and Post-test Results by Years of Experience

Table 4.6 below shows the number of years of experience per participant, pre-test and post-test results and improvement percentages of all the participants.

**Table 4.6: Comparison of Pre-Test/Post-Test Marks in Years of Experience**

| Code name | Years of experience | Pre-test scores | Pre-test percent | Post-test scores | Post- test percent | Improvement percentage |
|---|---|---|---|---|---|---|
| A1 | 26 | 13 | 50.0% | 14 | 53.8% | 3.8% |
| A2 | 3 | 10 | 38.5% | 15 | 57.7% | 19.2% |
| A3 | 2 | 13 | 50.0% | 16 | 61.5% | 11.5% |
| A4 | 1 | 14 | 53.8% | 13 | 50.0% | -3.8% |
| A5 | 15 | 15 | 57.7% | 12 | 46.2% | -11.5% |
| A7 | 16 | 12 | 46.2% | 15 | 57.7% | 11.5% |
| A8 | 4 | 10 | 38.5% | 9 | 34.6% | -3.8% |
| A9 | 35 | 12 | 46.2% | 13 | 50.0% | 3.8% |
| A10 | 4 | 12 | 46.2% | 17 | 65.4% | 19.2% |
| A11 | <1(3 months) | 15 | 57.7% | 14 | 53.8% | -3.8% |
| A12 | 24 | 13 | 50.0% | 19 | 73.1% | 23.1% |
| A13 | 16 | 24 | 92.3% | 26 | 100.0% | 7.7% |
| A14 | 14 | 7 | 26.9% | 16 | 61.5% | 34.6% |
| A15 | 15 | 8 | 30.8% | 17 | 65.4% | 34.6% |
| A16 | 2 | 11 | 42.3% | 14 | 53.8% | 11.5% |
| A18 | 5 | 12 | 46.2% | 16 | 61.5% | 15.4% |
| A19 | 3 | 15 | 57.7% | 20 | 76.9% | 19.2% |
| A20 | 20 | 13 | 50.0% | 17 | 65.4% | 15.4% |
| A22 | <1(2 months) | 12 | 46.2% | 18 | 69.2% | 23.1% |
| A23 | 6 | 11 | 42.3% | 14 | 53.8% | 11.5% |
| A24 | 3 | 13 | 50.0% | 18 | 69.2% | 19.2% |
| A25 | 4 | 11 | 42.3% | 12 | 46.2% | 3.8% |
| A26 | <1(3 months) | 14 | 53.8% | 16 | 61.5% | 7.7% |
| A27 | 3 | 16 | 61.5% | 23 | 88.5% | 26.9% |
| A28 | 4 | 15 | 57.7% | 19 | 73.1% | 15.4% |
| A29 | 5 | 3 | 11.5% | 11 | 42.3% | 30.8% |
| A30 | <1(5 months) | 10 | 38.5% | 14 | 53.8% | 15.4% |
| A31 | <1(3 months) | 15 | 57.7% | 14 | 53.8% | -3.8% |
| A32 | <1(1 month) | 10 | 38.5% | 14 | 53.8% | 15.4% |

| Code name | Years of experience | Pre-test scores | Pre-test percent | Post-test scores | Post- test percent | Improvement percentage |
|---|---|---|---|---|---|---|
| A33 | 1 | 5 | 19.2% | 14 | 53.8% | 34.6% |
| A34 | 4 | 10 | 38.5% | 11 | 42.3% | 3.8% |
| A35 | 2 | 12 | 46.2% | 17 | 65.4% | 19.2% |
| A36 | 27 | 10 | 38.5% | 13 | 50.0% | 11.5% |
| A37 | 4 | 9 | 34.6% | 13 | 50.0% | 15.4% |
| A38 | 4 | 8 | 30.8% | 17 | 65.4% | 34.6% |
| A39 | 4 | 9 | 34.6% | 12 | 46.2% | 11.5% |
| A40 | 6 | 13 | 50.0% | 20 | 76.9% | 26.9% |
| A41 | 2 | 6 | 23.1% | 11 | 42.3% | 19.2% |
| A42 | 4 | 6 | 23.1% | 15 | 57.7% | 34.6% |
| A43 | 6 | 18 | 69.2% | 18 | 69.2% | 0.0% |
| A44 | 6 | 14 | 53.8% | 17 | 65.4% | 11.5% |
| A45 | <1 (5 months) | 12 | 46.2% | 13 | 50.0% | 3.8% |
| A46 | 6 | 19 | 73.1% | 19 | 73.1% | 0.0% |
| A47 | 14 | 17 | 65.4% | 23 | 88.5% | 23.1% |
| A48 | <1 (5 months) | 10 | 38.5% | 18 | 69.2% | 30.8% |
| A49 | 1 | 12 | 46.2% | 22 | 84.6% | 38.5% |
| A50 | <1 (6 months) | 10 | 38.5% | 11 | 42.3% | 3.8% |

Findings from each category of years of experience is outlined in the discussions and figures below:

The findings are compared in terms of correct answers per participant looking at years of experience of the participant, using the 4 categories.

### 4.7.1 Experience of 0 to 5 years

There were 31 participants, the majority of participants, from the below 5 years' experience category.

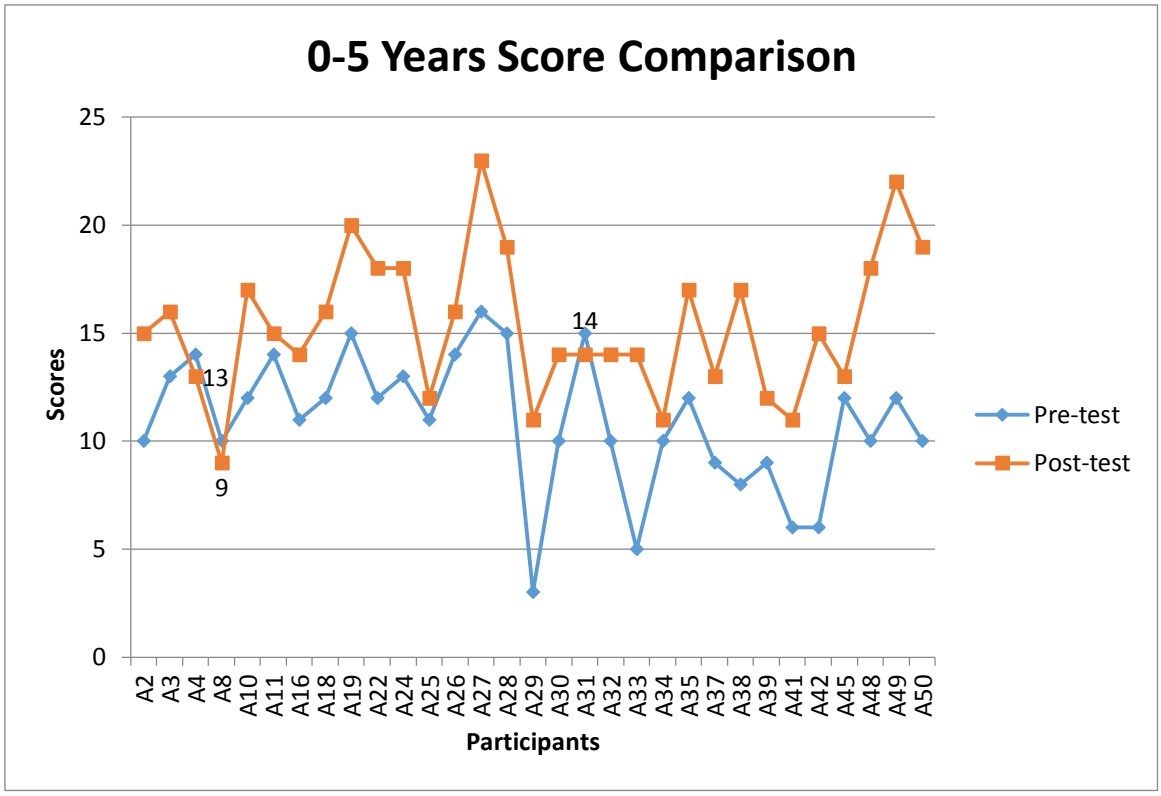


**Figure 4.7: 0-5 Years of Experience Pre /Post-Test Comparison**

From this category, the range results for the pre-test was 13 (16-3) and the participant that scored the lowest marks got 3/26 for the pre-test, and improved his/her mark to 11/26 for the post-test, showing an improvement from 11.5% to 42.3%. In the post test the range was 14 (23-9). The participant that scored the highest mark for the pre-test obtained 16/26, and the same participant scored the highest mark of 23/26 for the post-test, which was an improvement of 26.93%. In the same category, other than four participants whose marks declined, the rest of the participants' scores improved after the intervention. The participants who showed a decline were participant A4 with a decline from 14/26 to 13/26, participant A8 declined from 10/26 to 9/26 and the remaining two A11 and A 31 both declined from 15/ 26 to 14/26 respectively. The remaining 27 (87%) participants' marks improved by an average of 18.7% as shown in Table 4.6 and in Figure 4.7 above.

### 4.7.2 Experience of 6 to 10 years

For the category of 6 to 10 years' experience, there were five (10.6 %) participants in total.

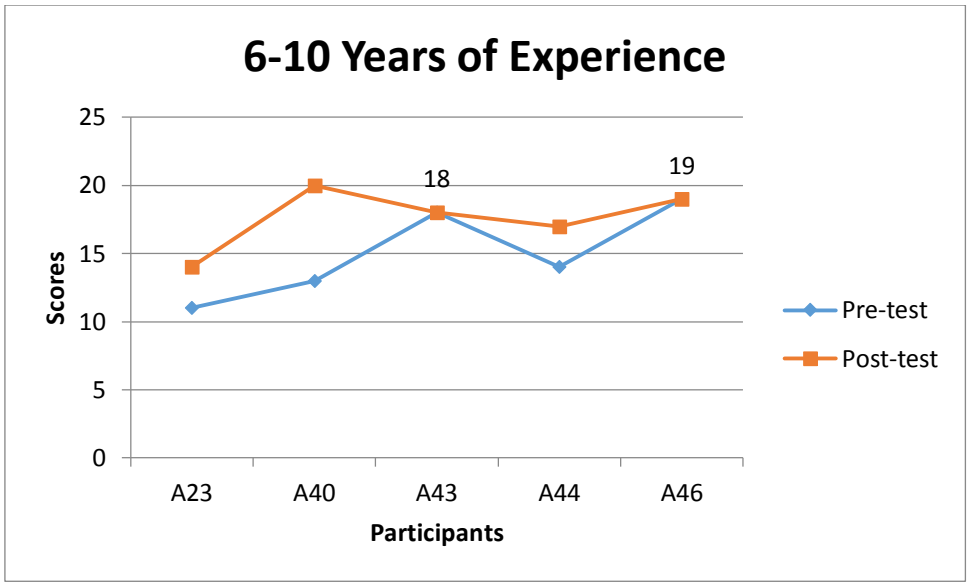


**Figure 4.8: 6-10 Years of Experience Pre-Test and Post-Test Comparison**

The participant who got the lowest score for the pre-test results scored 11/26. The same participant's score improved to 14/26 in the post-test. Even though there was a significant improvement from 42.3% to 53.8%, this mark remained the lowest for the post-test results in this category. The range for the pre-test was 8 (19-11) and for the post-test the range was 6 (20-14).The highest score for the pre-test in this category was 19/26 and the highest for the post-test was 20/26. The participant who got the highest score during the post-test improved from a pre-test score of 13/26 (50%) to 20/26 (76.9%) for the post-test, showing an improvement of 26.9%. It was noted that only three of the five (60%) participants in this category improved their marks post intervention as two participants' scores remained the same for both the pre-test and the post-test with scores which remained at 18 and 19 respectively, as illustrated in Figure 4.8.

### 4.7.3 Experience of 11 to 15 years

The category of 11 to 15 years' experience contained four participants and represented 8.5% of the total number of participants. For pre-test the range was 10 (17-7) and for the post-test the range was 11 (23-12).

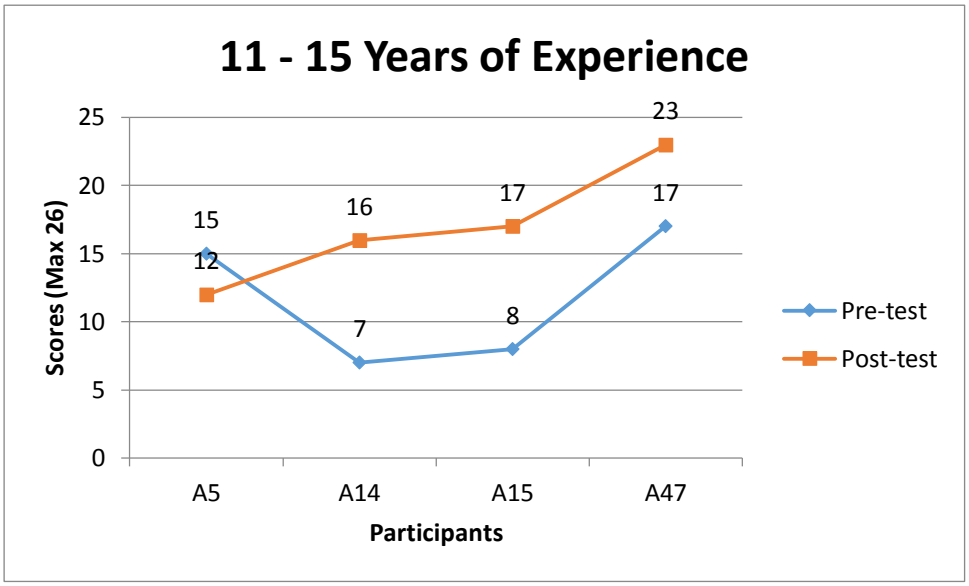


**Figure 4.9: 11-15 Years of Experience Pre-Test and Post-Test Comparison**

The lowest score obtained for the pre-test in this category was 7/26 (26.9%) improving to 16/26 (61.5%) for the post-test. The highest was 17/26 (65.4%), which improved to 23/26 (88.5%) for the post-test. There was one participant whose score declined from 15/26 (57.7 %) to 12/26 (46.1%); this participant had 15 years of experience. This participant lost points on the questions that dealt with the breast structures. This category was the lowest represented category of the four categories. Despite the one participant whose score declined the average percentage for the post-test increased from 45.2% to 65.4%, which was 20.2% improvement. The findings are illustrated in the Figure 4.9 above.

### 4.7.4 Experience of 16 years and above

In the category of 16 years and above there were seven participants, which accounted for 14.9% of the participants. The range for the pre-test was 14 (24-10) and 13 (26-13) for the post-test.

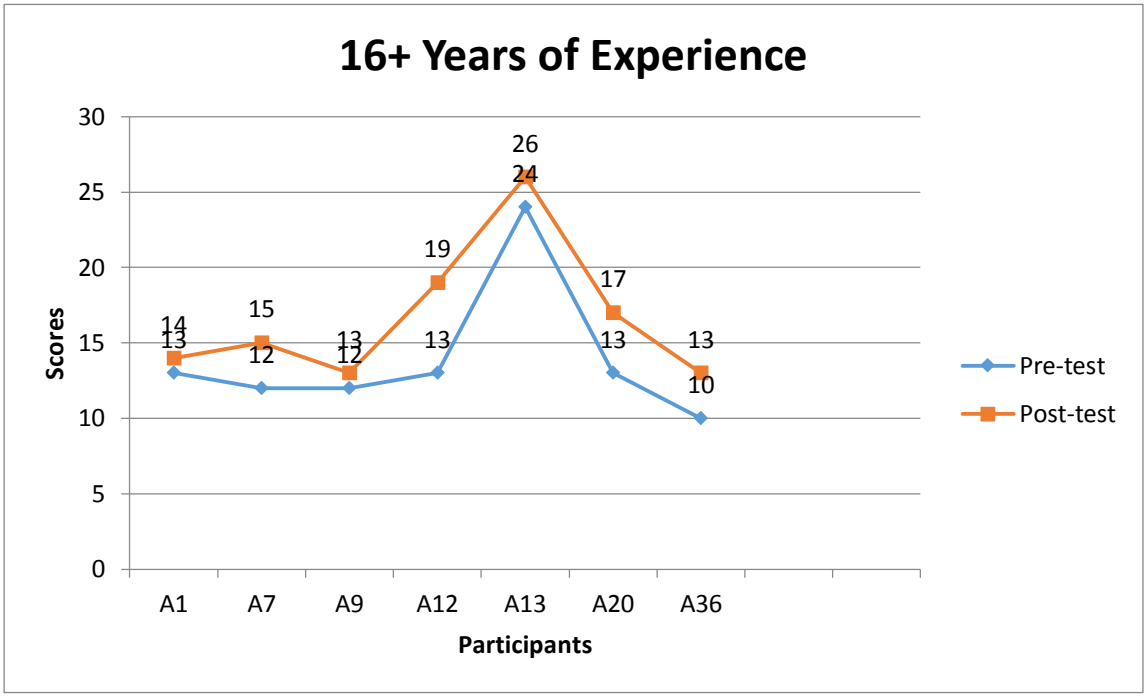


**Figure 4.10: 16+ Years of Experience Pre-Test and Post-Test Comparison**

The years of experience ranged from 16 years to 35 years of experience. Three of the seven participants obtained less than 50% during the pre-test, and a further three received 50% during the pre-test; all of them obtained 50% and above after the intervention. The lowest score for the pre-test was 10/26 (38.5%); this participant improved to a score of 13/26 (50%) for the post-test, which was the lowest post-test score in this category. The participant who obtained the highest score for the pre-test in this category obtained 24/26 (92.3%) and 100% for the post-test. These scores are the highest scores overall for both pre-test and post-test and were interpreted as an outlier.

All the participants' scores in this category improved after the LMC intervention. It was the only group where all scores improved from pre- to post-test. The findings are illustrated in Figure 4.10 above.

## 4.8 Conclusion

The findings shows that the participants from the maternity areas came with a higher level of breastfeeding knowledge than those from the neonatal and paediatric areas. As illustrated in Figure 4.11 below, the participants with the least years of experience (0-5 years) had the lowest level of knowledge among the categories, with an average of 42.2% for the pre-test and 57.9% for the post-test. They had the second highest level of improvement of 15.8%. This category represented 66% of the participants.

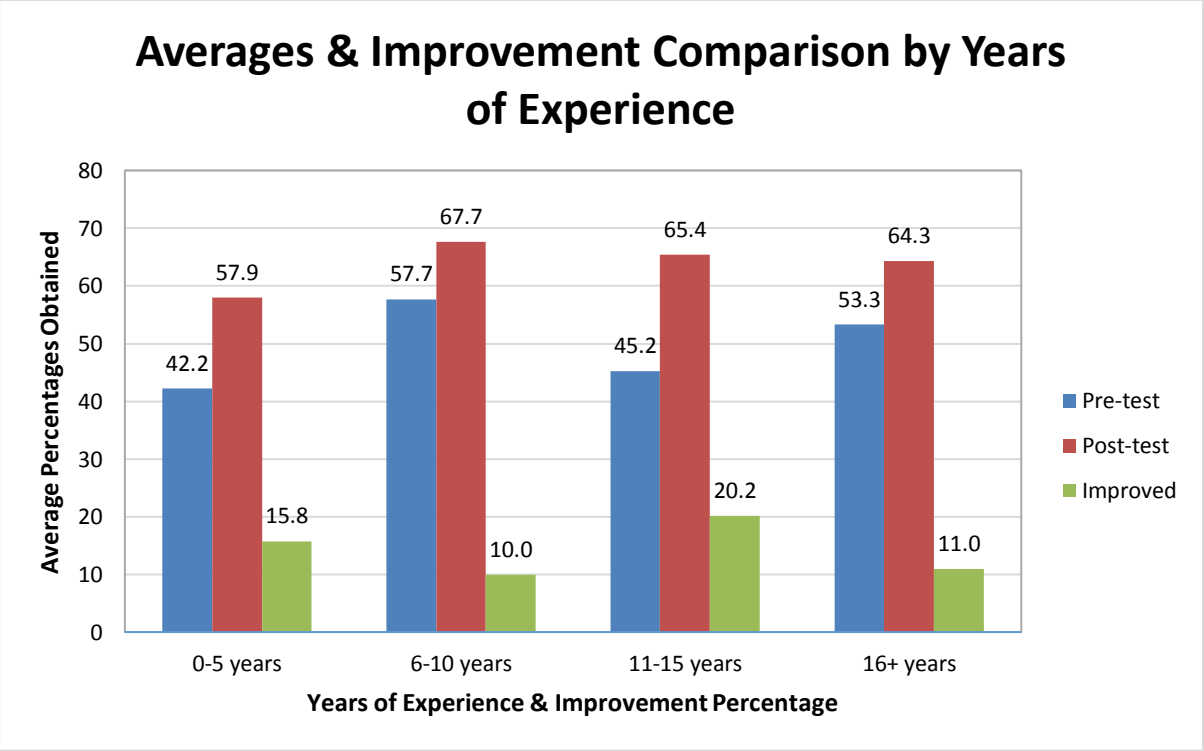


**Figure 4.11: Averages and Improvement Comparison by Years of Experience**

The category which came with highest level of knowledge were the participants with 6-10 years of experience, who had an average of 57.7% pre-test knowledge. Even though they had the lowest improvement of 10%, this category is also the one with the highest average post-test knowledge of 67.7%. The category with the highest post-test improvement was the one with 11-15 years of experience, which improved by 20.2% and had the lowest representation of 8.5%. Overall 85.1% of the participants improved their post-test score, while 4.3% did not improve and 10.6% of participants' scores declined in the post intervention.

### 4.8.1 Paired t-test

**Table 4.7: Confidence Interval**

| | Mean difference | 95% Confidence Interval of the difference | | t | df | p-value |
|---|---|---|---|---|---|---|
| | | lower | upper | | | |
| **Post-test-pre-test** | 3.87234 | 2.936589 | 4.808092 | 8.3298 | 46 | 9.7e-11 |

Table 4.7 above shows the findings as calculated using the paired t-test. Since the p-value is less than 0.001 (9.7e-11), we reject the null hypothesis and conclude that there was a statistically significant improvement in the scores of the participants after the training intervention. In this study, the intervention improved the scores, on average, by 4 points. Based on the 95% confidence interval, the researcher is 95% confident that the mean difference in the scores obtained by the participants before and after the intervention is between 2.936589 and 4.808092. Based on this 95% confidence interval, the researcher can conclude that there is a statistically significant difference in the test scores after the intervention since the confidence interval for the mean difference does not include zero. The findings also show that the LMC training was effective in improving the breastfeeding knowledge of nurses and that the years of experience somehow influenced the knowledge acquisition of the participants.

# Chapter 5 Discussion of Findings, Limitations and Recommendations

## 5.1 Introduction

This chapter discusses the findings of the research in a broader context and attempts to provide meaning to the findings. The limitations, recommendations and conclusion are included.

## 5.2 Discussion

This research has shown that the LMC is effective in improving the breastfeeding knowledge of professional nurses and midwives working in an academic institution in Johannesburg, and has therefore answered the research question and achieved the objectives of the study. The findings were presented in Chapter 4.

Despite the LMC improving the breastfeeding knowledge of the professional nurses and midwives, the institution continues to fail the assessment by the Department of Health for the MBFI accreditation. This would suggest that although the LMC is effective in increasing knowledge it may not be achieving the desired result of changing the practice of the professional nurses and midwives working with mothers and babies in the institution under study.

Pre- and post-testing, which was used in this study, allows the researcher easy interpretation of results, using graphs and identification of trends. However, the researcher may make only limited claims for the findings, as there are a large number of variables related to the participants being assessed and the mode in which the intervention is delivered (Robert, 2016). This allows the researcher to conclude that there has been an improvement in the breastfeeding knowledge of the nurses and midwives, however, the influence that the variables have on the result has not been fully explored. An example, in this study, would be the presentation style of the course trainer.

The institution under study has a high turnover of staff, and due to resource constraints it is difficult to ensure that all new staff are trained within the six month requirement period. The institution may have to find other alternatives to training staff members, without removing them from the clinical area over a prolonged period, as is the case with the LMC. This is supported by the findings in a study conducted in the Western Cape on MBFI challenges, where one of the concerns was that there is not enough human resource to ensure that all staff members are sent for the 20-hour training (Henney, 2013).

### 5.2.1 Overall scores and improvement

The results showed that 40.4% of the nurses achieved 50% or above during the pre-test and the percentage improved to 83.0% post intervention. These findings show that the breastfeeding knowledge of the participants was improved by the intervention, however, this knowledge improvement is not being translated into practice.

The findings indicate that Professional Nurses and Midwives working in the maternity area had higher pre-test knowledge than their colleagues working in the paediatric and neonatal areas. Those working in maternity sections are exposed to breastfeeding matters on a more regular basis than their neonatal and paediatric colleagues and could therefore be expected to have a higher level of entry knowledge. The results also showed that the participants from the neonatal and paediatric areas showed a higher level of improvement by 1.5% more than the ones from the maternity areas. The lower level of entry knowledge afforded them a better opportunity for improvement.

The highest number of participants were the less experienced nurses and midwives. This is the category where most of the newly appointed professional nurses and midwives are found and, therefore, has the greatest need for in-service training. Similarly, the Professional Nurses and Midwives with fewest years' experience had the second highest improvement rate as they came with the lowest level of knowledge. This can also be attributed to them having less exposure to breastfeeding matters in their shorter careers and gaining greater knowledge through the LMC, which put them on par with the pre-knowledge of the more

experienced professional nurses and midwives. The lower level of breastfeeding knowledge also gave them better room to improve their knowledge (Awal, 2012).

The category of 11-15 years' experience had the highest improvement rate of 20.8% and were the least represented participants, accounting for only 8.5% of the participants.

The second highest number of participants, which accounted for 15% of the total participants, were the professional nurses with 16+ years of experience. To a greater extent, in the institution, this category is formed by professional nurses and midwives who are returning from private health institutions or from abroad. According to the findings of a study conducted in South Africa on health care worker migration in 2015, it was concluded that there is an increase in the number of professional nurses / midwives and other health care professionals who return to the country from abroad. This return, according to the study, was attributed to a number of factors which included: the introduction of Occupation Specific Dispensation (OSD) in 2007, which allowed nurses and midwives with specialised qualifications to be paid better, the tighter migration rules and the reduced need for foreign-trained skilled health care professionals outside South Africa (Labonte, 2015). These professional nurses and midwives, even though well experienced, also need in-service training so as to update themselves on breastfeeding knowledge so that their practice is evidence based. According to the results, this group had the second highest pre-test knowledge of 53.3% and the third highest improvement of 11%.

### 5.2.2 Lowest scores

The question that scored the lowest was question 19 which was about contra-indications for breastfeeding, where only 2.1% (1) of participants answered correctly during the pre-test compared to 34% for the post-test. This question was also the most improved question after the intervention, with a 31.9% improvement although less than 50% of the participants correctly the answered the question. It is of concern that the nurses and midwives had low knowledge of contra-indications to breastfeeding, and indicates that the professional nurses and midwives have been using anecdotal or outdated knowledge in their practice.

### 5.2.3 Scores with no improvement

The questions which showed no improvement were questions 7 and 16, which were related to practices that affect milk volume and the International code of marketing breast milk substitutes respectively. The score and the participants were unchanged from the pre-test to the post-test, indicating that their correct answers were based on pre-knowledge. The poor knowledge on improvement of milk supply may be accredited to inadequate training on breastfeeding as a student and also non-exposure of the professional nurses to the problem, as mothers are generally discharged within 3 days post birth before copious milk production occurs. The Code of Marketing of breast milk substitutes may not be common knowledge to the professional nurses, even though it impacts on their practice; they are not allowed to accept free handouts such as pens or calendars from companies that produce/promote breast milk substitutes.

It may be concluded that failure of the participants to improve their score for these questions shows that the training intervention failed to improve their knowledge, this could be due to the course content or the delivery of the material by the course trainer.

### 5.2.4 High Scores

The majority of the professional nurses possessed greater knowledge on breast structure (question 23), rooming-in (question 21), the introduction of complementary feeds (question 9) and family allergies and breastfeeding (question 11). Participants achieved more than 80% during the pre- and post-tests in these questions. The reasons for the high scores could be that these are some of the topics that form part of the nurses' daily practice and that these professional nurses give health education to the mothers and such knowledge has been internalised over a period of time.

The findings showed that the one participant who obtained the highest score for both pre-test at 92.3% and 100% for the post-test had experience of more than 15 years in the maternity area. The LMC improved this participant's knowledge by 6.7%. The results also showed that there were two participants whose scores remained the same before and after the intervention, remaining at 69% and 73% respectively. These participants both came with high level of breastfeeding

knowledge and the LMC did not improve their knowledge. According to the report given by Intra-health in their article on the transfer of learning, the lack of knowledge improvement could be attributed to the fact that the training did not provide new information to the participants (Murphy, 2015). In this article Intra-health further argues that even if people are given good training, if they fail to put new knowledge into practice they will soon lose that knowledge, and when tested it could be found that they have not improved on their previous knowledge. It may be concluded that the failure to improve may be as a result of the presentation of the LMC training by the trainer, which failed to provide the participants with new knowledge.

### 5.2.5 Decline in post-test scores

The findings showed that 10.6% (5) of the participants scored less in their post-test scores than they did in the pre-test. Three of these five participants were from the paediatric areas and two of them were from the postnatal ward in the maternity areas. This may be as a result of the failure of the professional nurses and midwives to retain the newly gained knowledge. These particular participants were working in a paediatric ward and may not have had the opportunity to reinforce their knowledge through practice.

This view is supported by a study which was conducted in India on retention of knowledge and skills of primary health care workers after training. In this study it was concluded that the health care workers who did not practice in the area to which the training knowledge related showed a lower percentage of knowledge retention that those who applied the knowledge more often in the clinical practice (Venkatachalam 2011). In another study conducted in the United Kingdom, it was concluded that skills that are vital, if not utilised over time may fade due to lack of practice (Academy of Medical Royal College 2012). The decline in knowledge may also be attributed to the fact that although the LMC is known to improve knowledge, it is not without a fault and the presentation of the course may have contributed to this decline.

Post-test findings show all categories of participants achieving a more equal level of knowledge. This suggests that the LMC provides adequate basic breastfeeding knowledge but may not fully extend participants potential for advanced breastfeeding knowledge.

### 5.2.6 Lactation Management Course

The LMC, as part of the MBFI, has proven to be effective in improving outcomes globally. However, the knowledge gained through the course does not appear to result in positive changes in breastfeeding related practices in the institution under study. This may be because the participants were not allowed to change “old practices” because they are not encouraged to do so by older colleagues. This is supported by findings in a study on barriers to implementing mother-baby friendly initiative, where it was concluded that nurses find it difficult to effectively bring new practices when they are not supported by the managers or by senior nurses and midwives (Semenic, 2012). It may also be because the professional nurses and midwives attending the course are not actually responsible for policy change, and have limited influence over general breastfeeding practices in the institution.

The literature shows that professional nurses and midwives who upgrade their skills and knowledge do not always convert the knowledge into changes in practice. They face challenges from older colleagues who are reluctant to change old practices. Furthermore, the literature shows that all health professionals should be trained in breastfeeding (Bodribb, 2008). Medical professionals can also derail the introduction of new practices, even though proven to be effective, in favour of older familiar, albeit outdated, practices. The LMC training is meant to be offered to all staff members, including doctors and non-clinical staff, not nurses only, so that there is uniformity in promotion of practices that support breastfeeding (UNICEF, 2010).

The objective of the 20-Hour LMC training is to improve the nurses’ and midwives’ breastfeeding knowledge and skills, in order for them to assist mothers to initiate and maintain breastfeeding, even after they are discharged from the health facility. The literature shows that women’s confidence about breastfeeding may improve through support from both the health care provider and her family, as well as from possessing knowledge about breastfeeding (Dodgson, 2012). The results from this study showed that LMC is an effective way of improving the breastfeeding knowledge of nurses and midwives, as shown by the increase in the mean scores, from 12 to 16 post-intervention, as illustrated in Figure 4.3 found in Chapter 4.

Assessing the outcomes of the course would assess the skill of the trainer and the transfer of knowledge, therefore, a quality assessment on an ongoing basis would seem to be necessary.

According to a study done in Italy on effects of in-service training, it was concluded that in-service training is one of the effective ways of improving knowledge and improving professional competencies in the work place. The researcher further explains that the improvement comes as a result of positive attitude to learning and self-motivation (Shakoor, 2013). In order for the institution to win the battle against infant mortality, practices that promote, protect and support breastfeeding should be incorporated into the routine clinical practice of all health care practitioners through effective training.

The course was found to be ineffective in impacting on clinical practice. The LMC's cost effectiveness may also be contested as professional nurses and midwives have to leave the clinical area for 20 hours in order to receive the training, and this puts a strain on the human resource as the areas must remain functional.

### 5.2.7 Training and knowledge acquisition

In a study done in the USA on improving students' academic performance, it was concluded that training is an effective way of improving knowledge and that better knowledge acquisition is accomplished through giving feedback to the students on what they are doing well and what they still need to improve on (Orlando 2013). For the LMC to be cost effective, all trained nurses should somehow be monitored for improvement in their breastfeeding practices, to ensure that there is use of the knowledge gained.

In a study conducted in Saudi Arabia on knowledge transfer, the author recommends that health institutions should have measures in place to monitor knowledge acquisition and performance improvement by staff members after training, as proper monitoring guarantees that new knowledge will not be lost over a period of time (Shaftloot, 2012). The author further recommends that advanced training should be provided for staff members who may have vast knowledge on a concept, and have basic training for those who are still starting up (Shaftloot, 2012). The similar concept could be applied for the training of nurses on breastfeeding

matters and such training should be informed by clinical outcomes on MBFI assessments. Evaluating the LMC would assist in modifying the training so that it meets the needs of the individual institution. The LMC has not been evaluated in terms of its relevance to the institution and its particular needs. The emphasis should be shifted towards the importance of the information gathered from the training rather than the number of staff members trained. Once the nurses and midwives understand the importance of breastfeeding and how its practices impact on health outcomes, there will be improvement in breastfeeding rates and health outcomes (Trask, 2015).

### 5.2.8 Accreditation process

The Department of Health sends assessors to maternity facilities throughout Gauteng to facilitate and assess the health facilities' adherence to the ten (10) Steps to Successful Breastfeeding. This is line with their aim to achieve mother baby friendly status at all the facilities. The institution under study has shown a decline in standards rather than an improvement, despite the LMC improving the breastfeeding knowledge of the professional nurses and midwives working there. The MBFI initiative appears not to be working within this context. To date in Gauteng Province, 34 of 43 facilities have been accredited as mother-baby friendly (Gauteng DoH District Office Statistics, 2017). These include two (2) Regional Hospitals; none of the tertiary academic hospitals is accredited as yet. It may be concluded that the challenges experienced by the tertiary institutions needs to be explored.

The system of accreditation is complicated, expensive and adopts a 'one size fits all' approach. Without ongoing quality assurance of the accreditation system, the National DoH may be perpetuating an initiative that is not meeting its goal and is costing the individual institutions time and resources, as well as a high administrative costs to the DoH. Whatever the intentions, it is imperative that the efficacy of the initiative be assessed in a local context. It may be prudent to explore an alternative system or an adaptation of the current system to meet local needs and to improve health outcomes through improved breastfeeding rates. The Western Cape study on MBFI challenges supports this argument; it was discovered that staff members view the process of accreditation in a negative light, as its approach is more fault finding than supportive (Henney, 2013).

The process of accreditation may result in the MBFI being viewed as a project that should be prepared for whenever the assessments are approaching, rather than part of the daily clinical practice. This may result in a degree of “window dressing” for the assessments as opposed to a genuine commitment to improve breast feeding practices. If the institutions were allowed to focus on improving breastfeeding rates through clinical practices that promote, protect and support breastfeeding rather than achieving accreditation there may be a better outcome. This theory is supported by a report from the Institution for Children’s Health Quality, where it was concluded that the involvement of nurses in the process of MBFI related changes will increase buy in, thereby improving the breastfeeding rates of the institution (Trask, 2015). It is vital that the goal of improved breastfeeding outcomes outweighs the goal to gain MBFI accreditation.

## 5.3 Strengths

- The data collection tool was validated and has been proven to be reliable.
- The study sample was representative of the population in the Mother and Child units.
- The use of pre-test and post-test has been proven to be reliable in measuring variables like knowledge.

## 5.4 Limitations

- Due to difficulty in gaining permission to conduct research in other health facilities the study was limited to one facility, thus restricting the researcher from generalising the results to other institutions.
- The sample size was insufficient to allow the use of a control group.

## 5.5 Recommendations

Based on the findings of this study, the following recommendations are made:

### 5.5.1 Clinical practice recommendations

- The MBFI practices should be incorporated into the daily clinical practices of all health care providers practising in the Mother and Child areas; this could be achieved by the introduction of MBFI champions in the units who would be responsible for monitoring of breastfeeding activities.
- The institution needs to develop a way of evaluating both negative and positive behavioural changes post training to ensure that the knowledge gained is not lost but put into practice.
- The cost effectiveness of the course needs to be evaluated.

### 5.5.2 Education and Training

- An approach of “each one teach one”, based in the clinical areas, be utilised for a more cost effective method of teaching the required skills and knowledge.
- Nursing education institutions should include a full module on breastfeeding matters.
- All institutions of learning for health care professionals should introduce MBFI to all the students such that they are conscientised on importance of breastfeeding by the time they reach the clinical areas.

### 5.5.3 Research

- A follow-up study to look at why the acquired knowledge is not translated into practice of the ten (10) steps to successful breastfeeding in the institution.

### 5.5.4 Quality Assurance

- There is a need to have an ongoing assessment of efficacy of the MBFI in its current format to try and establish why knowledge is not translated to practice change in certain institutions.

## 5.6 Conclusion

This study has met the objectives of the research question by using a pre-test/post-test methodology to show that the LMC is effective in increasing the breastfeeding knowledge of professional nurses in the tertiary academic hospital that was studied.

The improved knowledge appears not to be translating into changes in practice.

It should be remembered that different people learn in different ways and other methods of teaching, like ward based training, may prove more effective. The course was designed by the WHO as a blueprint for improving breastfeeding rates, however, it may be valuable to consider rethinking the course delivery for individual contexts. A mentoring type system may be effectively utilised.

On-going quality assurance is also required to assess the cost to efficacy ratio of the LMC.

The criteria for MBFI accreditation may not be fully appropriate for the institution under study and adaptation and reassessment of the system as it stands may be necessary. Without such adaptation and a move away from a single approach fits all, the initiative may fail in its overarching goal of improving breastfeeding outcomes in order to reduce infant mortality and morbidity in South Africa.

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# Annexures

## Annexure 1. Annexure 1: Request To Conduct Research In The Institution

P O Box 932
Mondeor
2110
23 March 2015

XXXXXXXXXXXXXXXXXXXX
XXXXXXXX
XXXX

Dear Sir / Madam

REQUEST TO CONDUCT A RESEARCH IN THE INSTITUTION

I hereby apply to conduct a research study for my Masters in Nursing Education. The proposed study is to assess the effectiveness of the 20-hour Lactation Management Course in improving breastfeeding knowledge of nurses. The study seeks to investigate how the course assists nurses in improving their breastfeeding knowledge, thereby improving mother and the child outcomes. This course is in alignment with the National Department of Health's effort to reduce infant and maternal mortality as per the Millennium Development Goals.

The dignity and anonymity of the participants will be maintained and all data collected will be kept confidential. Informed consent will be obtained from all participants. All study records will not reflect personal details. Permission to conduct the study will be sought from the Post-Graduation Research Department and the Ethics Committee of the university. I have attached the copies of the consent form, information letter, and the proposal. Thanking you in advance for anticipated cooperation and support.

For further information, I may be contacted at 083 725 4391 or Email: 942833@students.wits.ac.za

Yours faithfully

(  )

Nomonde G Makhudu

# Annexure 2. INFORMATION SHEET

**UNIVERSITY OF THE WITWATERSRAND -**

**DEPARTMENT OF NURSING**

**STUDY TITLE:** EFFECTIVENESS OF THE 20 HOUR LACTATION MANAGEMENT COURSE (LMC) IN IMPROVING BREASTFEEDING KNOWLEDGE OF THE PROFESSIONAL NURSES.

Good Day

**Introduction**

I, Nomonde Makhudu, am a student at the University of Witwatersrand. I am studying for my Master's degree in Nursing Education. I would like to invite you to participate in a study on the effectiveness of the 20 Hour Lactation Management Course (LMC) in improving breastfeeding knowledge.

**Purpose**

The study is aimed at evaluating the effectiveness of the 20 hour LMC training in improving breastfeeding knowledge of nurses of all categories.

**Procedure**

You are requested to answer brief questions consisting of a section for demographic information excluding names and multiple choice questions. The answer sheets will be kept anonymous and confidential.

**Right to withdraw**

You have a right to withdraw from the study and your withdrawal from the study at any stage is without any consequences.

**Contact number**

You may contact me at the number below for any questions and clarity. Thank you for your contribution and support.

Nomonde Makhudu
Cellphone: 083 725 4391 Alternative number: 011 488 4112

## Annexure 3. Consent Form


**THE UNIVERSITY OF WITWATERSRAND, FACULTY OF HEALTH SCIENCES**

**NURSING DEPARTMENT**

I …… confirm that I am participating in this study willingly. The purpose, risks, and benefits of the study have been thoroughly explained to me. I am aware that the results of the study which exclude my personal details will be anonymously processed in the research reports. I have been provided with the opportunity to ask questions and have no objection to participation in this study. I have been made to understand that should I at any stage during the study wish to withdraw my withdrawal will have no effect or consequence in any way.

Signature: _____

Date: _____

Witness: _____

## Annexure 4. Data Collection Tool

**PART 1: Demographic information:**

| OFFICIAL USE: | |
|---|---|
| Allocated Code: | Pre-test / Post-test |

Date: _____

Area of work: _____

Category: _____

Years of experience: _____

**PART 2: Multiple choice questions** *[Choose one answer]*

1. The most important criterion for assessing the milk transfer during a feeding at the breast is:
    a. visible areola compression
    b. audible swallow
    c. proper alignment
    d. proper attachment

2. Compared to formula, human milk contains higher levels of:
    a. vitamin D
    b. iron
    c. lipase
    d. vitamin A
    e. none of the above

3. The hormone considered responsible for milk ejection is:
    a. progesterone
    b. prolactin
    c. oestrogen
    d. oxytocin

4. A mother with a three-day-old baby presents with sore nipples. The problem began with the first feeding and has persisted with every feeding. The most likely source of the problem is:
    a. feeding too long
    b. poor attachment
    c. baby's suck is too strong
    d. lack of nipple preparation during pregnancy

5. The hormone considered responsible for milk synthesis is:
    a. progesterone
    b. prolactin
    c. oestrogen
    d. oxytocin

6. Which of the following would you suggest that a woman with inverted nipples do during the third trimester?
    a. Use breast shells with guidance from her health care provider
    b. Cut holes in the bra to allow the nipples to protrude; wear it day and night
    c. Encourage everting the nipples four times a day to permanently evert her nipples
    d. Do nothing because the natural changes in the breast during pregnancy and the infant's suckling postpartum may evert the nipples

7. Which of the following is most likely to have the greatest effect on the volume of milk a woman produces?
    a. maternal weight for height
    b. maternal fluid intake
    c. supplementation of the infant with formula
    d. maternal caloric intake
    e. both a and c

8. Infants exclusively breastfed for about six months will have:
    a. Fewer episodes of lower respiratory infection
    b. fewer episodes of diarrhoea
    c. none of the above
    d. both a and b above

9. The addition of complementary foods to breastfed infants is recommended at about:
    a. 2 months
    b. 4 months
    c. 6 months
    d. 8 months
    e. 10 months

10. Signs of adequate breast milk intake in the early (first 4-6) weeks include all EXCEPT:
    a. baby gains weight
    b. at least 3-4 stools in 24 hours
    c. sounds of swallowing
    d. baby sleeps through the night
    e. at least 6 diapers wet with urine in 24 hours

11. It is especially important that an infant with a strong family history of allergy should be exclusively breastfed for:
    a. 2 months
    b. 4 months
    c. 6 months
    d. 8 months
    e. 10 months

12. Severe engorgement is most often due to:
    a. high oxytocin level
    b. infrequent feedings

c. a high prolactin level
d. postpartum depression

13. The most common cause of poor weight gain among breastfed infants during the first four weeks after birth is:
    a. maternal endocrine problems
    b. maternal nutritional deficiencies
    c. infant metabolic disorders
    d. infrequent or ineffective feedings
    e. low fat content of breast milk

14. A breastfeeding mother with a 3-month old infant has a red tender wedge-shaped area on the outer quadrant of one breast. She has flu-like symptoms and a temperature of 39C. Your management includes all of the following EXCEPT:
    a. extra rest
    b. interrupt breastfeeding for 48 hours
    c. moist heat to the involved region
    d. antibiotics for 10 to 14 days

15. Studies have indicated that the Lactational Amenorrhea Method (LAM) of contraception is less reliable under which of the following circumstances:
    a. feeds 8 or more times in 24 hours
    b. is given no regular supplements
    c. is less than 8 months old
    d. continues with night feedings

16. Which of the following statements is not true of The International Code of Marketing of Breastmilk Substitutes approved as a resolution in the World Health Assembly (WHA) in 1981:
    a. is updated every two years by the WHA
    b. provides guidelines for the ethical marketing of infant formula
    c. is incorporated into the Baby Friendly Hospital assessment

d. was approved by all WHA member countries
e. includes bottles, nipples, and breastmilk substitutes

17. Nipple candidiasis can be associated with all of the following EXCEPT:
    a. oral thrush in the infant
    b. burning pain in the breast
    c. fever and malaise
    d. pink and shiny appearance of the nipples and areola

18. Jaundice in a normal full term breastfeeding infant is improved by:
    a. giving glucose water after breastfeeding
    b. giving water after breastfeeding
    c. breastfeeding frequently (at least 8 or more times in 24 hours)
    d. both a and c

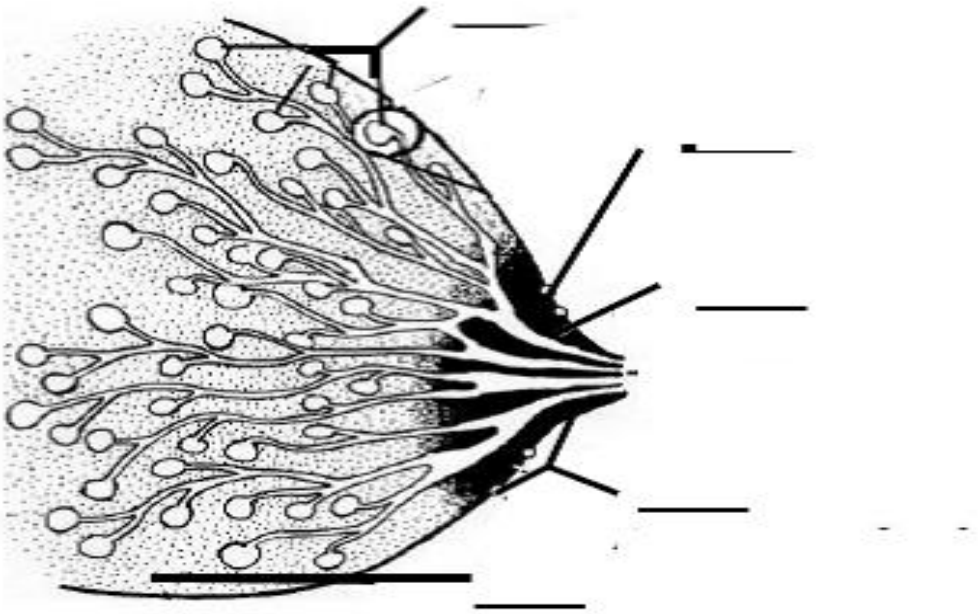
19. Breastfeeding is contraindicated in which of the following conditions:
    a. an infant with galactosemia
    b. mother with mastitis
    c. mother with hepatitis B
    d. mother with inverted nipples
    e. both a and c

20. Reasons for including breastfeeding support for mother-infant in planning for or responding to major emergencies where clean water, sanitation, and power are disrupted do not include:
    a. It is less expensive than providing for infant formula
    b. With support, even mothers who have already weaned can be assisted to re-lactate
    c. Breastmilk provides immunoglobulins that actively prevent infection.
    d. In a stressful emergency situation, breastfeeding provides a secure environment for infants and young children

21. Hospital policies that promote breastfeeding include:
    a. use of a dropper for routine water supplementation
    b. uninterrupted sleep the first night to allow mother's milk supply to build up
    c. unlimited access of mother to baby
    d. use of pacifiers to prevent sore nipples

22. through 26. Label the structures of the breast by inserting next to the appropriate pointer the number of the structure listed below:

22. Montgomery's glands
23. Supporting fat and other tissues
24. Alveoli
25. Areola
26. Duct



## Annexure 5. Pre-Test/Post-Test Answers

1. The most important criterion for assessing the milk transfer during a feeding at the breast is:
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    d. continues with night feedings

16. Which of the following statements is not true of The International Code of Marketing of Breastmilk Substitutes approved as a resolution in the World Health Assembly (WHA) in 1981:
    a. is updated every two years by the WHA
    b. provides guidelines for the ethical marketing of infant formula
    c. is incorporated into the Baby Friendly Hospital assessment
    d. **was approved by all WHA member countries**
    e. includes bottles, nipples, and breastmilk substitutes

17. Nipple candidiasis can be associated with all of the following EXCEPT:
    a. oral thrush in the infant
    b. burning pain in the breast
    c. **fever and malaise**
    d. pink and shiny appearance of the nipples and areola

18. Jaundice in a normal full term breastfeeding infant is improved by:
    a. giving glucose water after breastfeeding

b. giving water after breastfeeding

c. **breastfeeding frequently (at least 8 or more times in 24 hours)**

d. both a and c

19. Breastfeeding is contraindicated in which of the following conditions:

a. **an infant with galactosemia**

b. mother with mastitis

c. mother with hepatitis B

d. mother with inverted nipples

e. both a and c

20. Reasons for including breastfeeding support for mother-infant in planning for or responding to major emergencies where clean water, sanitation, and power are disrupted do not include:

a. **It is less expensive than providing for infant formula**

b. With support, even mothers who have already weaned can be assisted to re-lactate

c. Breastmilk provides immunoglobulins that actively prevent infection.

d. In a stressful emergency situation, breastfeeding provides a secure environment for infants and young children

21. Hospital policies that promote breastfeeding include:

a. use of a dropper for routine water supplementation

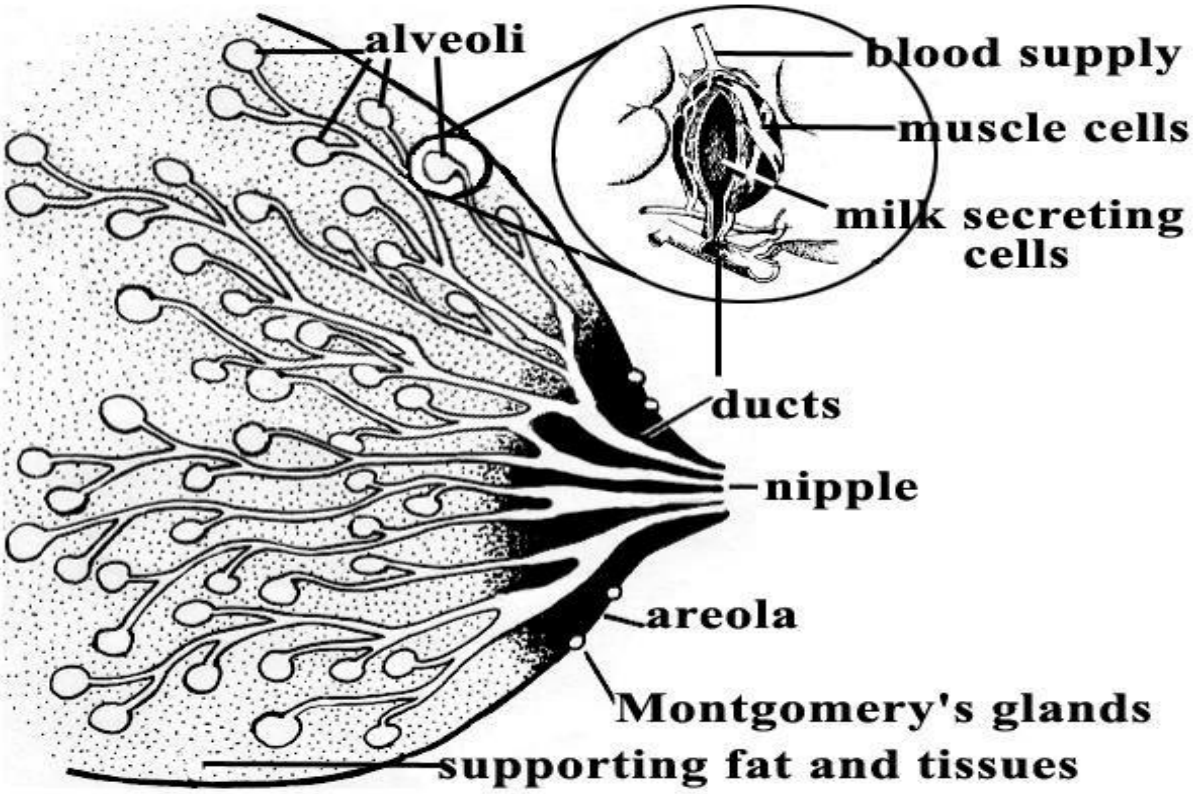
b. uninterrupted sleep the first night to allow mother's milk supply to build up

c. **unlimited access of mother to baby**

d. use of pacifiers to prevent sore nipples

22. through 26. Label the structures of the breast by inserting next to the appropriate pointer the number of the structure listed below:

22. Montgomery's glands
23. Supporting fat and other tissues
24. Alveoli
25. Areola
26. Duct



## Annexure 6. Ethics Committee Clearance Certificate

R14/49 Miss Nomonde Makhudu

**HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)**

**CLEARANCE CERTIFICATE NO. M150520**

| | |
|---|---|
| **NAME: (Principal Investigator)** | Miss Nomonde Makhudu |
| **DEPARTMENT:** | Nursing Department<br>Charlotte Maxeke Johannesburg Academic Hospital |
| **PROJECT TITLE:** | Effectiveness of the 20 hour Lactation Management Course in Improving Breastfeeding Knowledge of the Professional Nurses |
| **DATE CONSIDERED:** | 29 May 2015 |
| **DECISION:** | Approved unconditionally |
| **CONDITIONS:** | |
| **SUPERVISOR:** | Ms Claire Bracher |
| **APPROVED BY:** | Professor A Woodiwiss, Co-Chairperson, HREC (Medical) |
| **DATE OF APPROVAL:** | 12/08/2015 |

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

**DECLARATION OF INVESTIGATORS**

To be completed in duplicate and **ONE COPY** returned to the Secretary in Room 10004, 10th floor, Senate House, University.

I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit the application to the Committee. **I agree to submit a yearly progress report**

Principal Investigator Signature

Date 27/08/2015

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

## Annexure 7. Approval from Faculty of Nursing Science

UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG

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

Reference: Ms Thokozile Nhlapo
E-mail: thokozile.nhlapo@wits.ac.za

20 August 2015
Person No: 942833
PAG

Mrs NG Makhudu
P O Box 932
Mondeor
2110
South Africa

Dear Mrs Makhudu

**Master of Science in Nursing: Approval of Title**

We have pleasure in advising that your proposal entitled *Effectiveness of the 20 hour Lactation Management Course (LMC) in improving breastfeeding knowledge of nurses* has been approved. Please note that any amendments to this title have to be endorsed by the Faculty's higher degrees committee and formally approved.

Yours sincerely

Mrs Sandra Benn
Faculty Registrar
Faculty of Health Sciences

## Annexure 8. Permission from the Institution Under Study

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

**CHARLOTTE MAXEKE JOHANNESBURG ACADEMIC HOSPITAL**

Enquiries:
Ms. G. Ngwenya
Office of the Nursing Director
Tell: (011): 488-4558
Fax: (011): 488-3786
31 August 2015

**Mrs. Nomonde Makhudu**
**Department of Nursing Education**
**Faculty of Health Sciences**
**University of Witwatersrand**

Dear. Mrs. Nomonde Makhudu

**RE: "Effectiveness of the 20 hour Lactation Management Course in Improving Breastfeeding Knowledge of the Professional Nurses"**

Permission is granted for you to conduct the above recruitment activities as described in your request provided:

1. Charlotte Maxeke Johannesburg Academic hospital will not in anyway incur or inherit costs as a result of the said study.
2. Your study shall not disrupt services at the study sites.
3. Strict confidentiality shall be observed at all times.
4. Informed consent shall be solicited from patients participating in your study.
5.

Please liaise with the Head of Department and Unit Manager or Sister in Charge to agree on the dates and time that would suit all parties.

Kindly forward this office with the results of your study on completion of the research.

**Supported / ~~not supported~~**
**Ms. M.M Pule**
**Nursing Director**
**Date:** 01/09/2015

**Approved / not approved**
**Ms. G. Bogoshi**
**Chief Executive Officer**
3/9/2015

## Annexure 9. Permission to Use the Wellstart Questionnaire

Permission to utilise Wellstart Lactation Management Pre / Post-test tool Inbox x

Apr 25 (4 days ago)

**Nomonde Goodness Makhudu** <n.makhudu@gmail.com>

to info from: **Nomonde Goodness Makhudu** <n.makhudu@gmail.com>

to: info@wellstart.org

date: Sat, Apr 25, 2015 at 12:41 AM

subject: Permission to utilise Wellstart Lactation Management Pre / Post-test tool

mailed-by: gmail.com

: Important according to our magic sauce.

**Dear Ms. Naylor & Ms. Wester**

**My name is Nomonde Makhudu, I am a student at the University of Witwatersrand Johannesburg, South Africa) pursuing master's degree in Nursing Education. I am planning to conduct a study as art of my studies on, "Effectiveness of the 20 hour lactation Management Course in improving breastfeeding knowledge of nurses" and would appreciate if you may grant me permission to utilise the self-test questionnaire as a data collection tool for my study. I promise that I will cite the use of the tool correctly. I will not modify the tool in any way except altering spellings of some words (e.g. estrogen to oestrogen) to meet the South African context.**

**Data collection will only be started once the proposal is cleared with the university's Post-Grad Committee and the Ethics committee.**

**Thanking you in anticipation of an affirmative response.**

**Regards**

**Nomonde Makhudu**

**+27 011 488 4110 /083 725 4391**

**Student email: 942833@studets.wits.ac.za**

Reply Forward

**info@wellstart.org via yourhostingaccount.com** 9:20 PM (13 hours ago)

**> Dear Ms. Makhudu:**

**Permission is granted for your study.**