

**DEVELOPMENT OF A TRAINING PROGRAMME TO ENHANCE CERVICAL CANCER  
SCREENING IN LIMPOPO PROVINCE**

by

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*Thesis Submitted in Fulfilment of the Requirements for the Degree:*

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## DECLARATION

I, **Doris Ngambi**, declare that “**Development of a training programme to strengthen cervical cancer screening in Limpopo Province, South Africa,**” hereby submitted for the degree of Doctor of philosophy in Nursing completed in the Department of Advanced Nursing Sciences at the University of Venda has not been submitted previously by me at this or any other university, and that all materials contained herein have been duly acknowledged.

Signature: Doris Ngambi

Date: 26 February 2021

## **DEDICATION**

This thesis is dedicated to God Almighty, who gave me the wisdom and strength to complete this study. My family for the love, encouragement and support they provided me through this journey, I thank you.

## ACKNOWLEDGMENTS

I wish to express my sincere gratitude and appreciation to the following people:

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- All those who assisted, encouraged and supported me during this research, be assured that the Lord will bless you all for the contribution you have made.

## **ACRONYMS/ABBREVIATIONS**

**NHLS** National Health Laboratory Services

**NZQA** New Zealand Qualification Authority

**PHCN** Primary Health Care Nurses

**SA** South Africa

**SSA** Sub Saharan Africa

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## ABSTRACT

High inadequacy rates have significant associated opportunity cost, as women need to be rescreened in the event of inadequate specimen. Therefore, evaluation of specimen adequacy is the most important aspect of the quality assurance component and precise diagnosis. The purpose of this study was to develop a training programme to strengthen cervical cancer screening programme in Limpopo Province. The population of the study were health care professional's age between 35-60 years both gender. A mixed-method sequential design was used in this study. The study was conducted in three phases. Phase one was a situational analysis, followed by the development of a training program in phase two, and the validation of the developed programme in phase three. In phase 1a a qualitative exploratory, descriptive design was used and the quantitative approach followed a descriptive, analytic survey design. After obtaining the permission from the department of health, the researcher phoned the selected clinics securing the appointment with operational managers, senior health care professionals and health care professionals to meet the selected participants. Qualitative data were collected from professional nurses using a semi-structured face-to-face interview using an interview guide. The quantitative data were collected from operational nurse managers and senior nurse managers through a self-administered questionnaire. Qualitative data were analysed using Tesch's open coding method while quantitative data were analysed using Statistical Package for Social Sciences (SPSS) version 26. The findings were merged using a joint display to determine the extent to which the two data confirm, contradict, or expand. The study revealed that structural factors such as lack of space and material resources and human resource factors such as attitudes and lack of competence contributed to inadequacy rate and failure to reach the set targets. A training programme was developed based on the findings, theoretical framework and SAQA guidelines. Validation was done with the aid of the Delphi technique in reaching consensus of the developed training programme by expert panelist of health professionals. The study recommends that health care professionals should maintain good standards of practice, and these can be achieved through competency training.

**Keywords** cervical cancer, cervical cancer screening, competency, pap smear adequacy

## CHAPTER 1

### OVERVIEW OF THE STUDY

#### 1.1 INTRODUCTION

In South Africa, cervical cancer is one the deadly disease among women affecting young and old. Cervical cancer screening has been initiated for decades in South Africa to reduce morbidity and mortality. However, the uptake of screening among black communities is still very low due to poor knowledge and attitudes of health care workers not providing the service to communities. It is in this light that the researcher saw the need to develop a cervical cancer screening programme to enhance the uptake of cervical screening.

Cervical cancer pre- cursors, approximately 90 % of cervical cancer deaths occurred in developing countries. Since the introduction of Papanicolaou (pap) smear in the 1940's it was estimated that there had been a 70% reduction in cervical cancer deaths in developed countries. Conventional pap 'smear is the standard of care for cervical cancer screening in South Africa's public health care system.

The South African National health laboratory services (NHLS) is the country' largest diagnostic pathology services, serving the public health sector and approximately 80 % of the total population. The NHLS has 12 cytology laboratories located around South Africa in all provinces and identified districts that perform below the National standard of achieving a 70 % pap' smear adequacy rates (Makura, Schnil-pel, Michelow, Chibwasha, Coeleman, Jordan and Firnhaber, 2016).

The National guidelines for cervical cancer screening programme in South Africa stipulates that the adequacy rate of a screening facility is to reach at least 70% of cytological laboratories to audit and control the proportion of adequate smears from each screening, facilities consistently achieve below 70% adequacy, the staff needs to be re-trained (National guideline for cervical cancer screening programme, 2018).

#### 1.2 BACKGROUND OF THE STUDY

Cervical cancer is the second most common female cancer globally, with 500,000 new cases yearly (World Health Organization, 20112). It is estimated that 20,000 or 30,000 women, mostly in poor countries are dying yearly due to cervical cancer (WHO, 2012). It comprises approximately 12% of all women cancers; with an estimated incident rate of 30-40 per 100,000 women (Lyimo and Beran, 2012) throughout the world, prevention, control and treatment had been a public health priority (WHO, 2012).

The disease has become the most common cancer and the leading cancer related cause of deaths among women in Sub-Saharan Africa countries. Majority of women who develop the disease in these countries seek treatment at advanced stage, when treatment is no longer effective. It is estimated that at least 3 000 women die of cervical cancer in South Africa annually (Mamahodi, Kuonza and Candy, 2012). Cervical cancer screening programs utilising Papanicolaou (pap) test have been highly effective in reducing cervical cancer mortality. Most failures of cervical cancer screening in organised screening programs were in under or never screened women, however some failures were due to false negative pap test. Various studies have also reported a substantial fraction of false negative pap test that were felt to be unsatisfactory on retrospective review and that the quality of slides preparation correlates with a higher rate of detection of squamous intraepithelial lesion (Owens, Buist, Peterson, Kamineni, Weinmann, Ross, Williams, Stark, Adams, Doubeni and Field, 2015).

Health workers, especially nurses are often looked upon as role models in health-related issues. Nurses play a major role in enlightening the public on availability and the need for cervical cancer screening services. They are informed individuals who are expected to have more information and knowledge about several health-related issues and act as role models in uptake of preventive services but studies had documented otherwise (Arulogun and Maxwell, 2012). Early detection and prompt treatment of cancer and precancerous conditions provides the best possible protection against cancer, well organized screening has been shown to be effective in the reduction of both mortality and morbidity of cancer of the cervix.

Storm, Demure and Saraiya (2014) points out the need to increase knowledge of national guidelines and emphasise evidence based screening practices to make a significant impact in the long term, maximizing the benefit of a comprehensive primary care strategy for cervical cancer prevention and control. Increased official attention to screening and identifying the challenges would help in achieving a successful screening program.

Brazil 's National strategy for cervical cancer screening include using Papanicolaou pap test every 3 years among women aged 25- 64 years. Comprehensive primary health care services were provided although little was known about cervical cancer related knowledge, attitude and practice among health professional and coordinators working in the facilities. Furthermore, the practice of physicians and nurses in Brazil's network of primary health care unit were not consistent with National guidelines for cervical cancer screening initiation (Stormo et al., 2014).

In Nigeria lack of comprehensive policy for cervical cancer prevention and inadequate publicity of available strategies, culminate in low practice of prevention modalities in many developing

countries. Accessible screening facilities and high financial cost had been highlighted as impediments to utilization of such services. The country lacks a well implemented National cervical cancer policy and late presentation of cervical cancer in majority of patients is common (Sowemimo, Ojo and Fasuba, 2017). However, most nurses and physicians in Nigeria stated that National guideline for cervical cancer screening was very influential in their specific health units (Arulogun and Maxwell, 2014).

The South African guidelines for cervical cancer screening indicates the national framework for the establishment of a screening programme. The policy states that every woman 30 years and older with no cervical cancer should have 3 free pap' smears in her lifetime, within a 10-year interval between each cervical smear (National Department of Health and Social Development's Strategic Plans 2011/12-13). The goal is to screen at least 70% of women within the target age group in a period of 10 years (National Department of Health and Social Development's Strategic Plans 2011/12-13).

An indispensable health system component in cytology-based cervical screening is a functioning laboratory service. In South Africa majority of population are serviced through public sector facilities that refer specimen to National health laboratory service for laboratory-based diagnostic services. Majority of cervical screening in South Africa is done by conventional Papanicolaou cytology pap' smear, although newer technologies are available for cytological diagnosis (de Jager, Singh, Kistnasamy and Bertram, 2013).

Specimen adequacy is an important indicator of program performance of screening. Effectiveness and efficiency pap test are classified in the laboratory based on their adequacy for interpretation as satisfactory, and unsatisfactory. The unsatisfactory pap' smear might be influenced by several factors including specimen collection (individual and service dependent) sample preparation and observer variation in the interpretation (Gupta, Bhar, Rajwanshi, Phath and Suri, 2016). Inadequate pap' smears are those that do not provide satisfactory cell sample for evaluation, thus making it more difficult to detect cytological abnormalities and making it necessary to repeat the test. According to current requirement of the National cervical cancer research and control program in Chile, trained professionals (midwives, gynaecologist) were involved in the process. They are guided by the regulation that establish uniform criteria for applying the conventional technique for collecting cervical cytology smear, at the public health levels.

The diagnostic value of cervical smears for detecting cytological precursors of uterine cervical cancer was determined by quality of sampling technique used; several experts even claim that inadequate sampling more so than cytological interpretations errors was responsible for false negative results (de Jager et al., 2013). Inadequate smear was indicated as one of the main

problem of the National cervical cancer screening program in Mexico. The study further concluded that the quality of the cytological investigation was an important factor that can explain the low impact of the health care program on cervical cancer mortality (Thompson, Vilchis, Moran, Copeland, Holte and Duggan). In Brazil Lopez-Alegria, Lorenzi and Plobete (2015) suggested that inadequate cytological specimen might contribute towards increased number of undiagnosed precursor lesion thus affecting the morbidity and mortality of cervical cancer.

According to Stone (2012), a pap' smear reported as "unsatisfactory" is a frustrating outcome for both smear takers and the patient as it leads to increased anxiety, embarrassment and inconvenience as the smear needs to be repeated. The American society for colposcopy and cervical pathology recommended repeat testing within 24 months for women with unsatisfactory pap test (Owens, Buist, Peterson, Kamineni, Mann, Ross, Williams, Stark, Adams, Chyke, Doubeni, Terry and Field, 2015). The current guideline of the Australian National cervical screening program defines an unsatisfactory smear as one with less than 10000 well-preserved well-visualised squamous epithelial cells for conventional pap' smear (or less than 5000 for liquid –based preparation). It is important to note that the specimen is not classified as unsatisfactory based on an absence of endocervical component alone but also based on the Bethesda system.

High inadequacy rates have significant associated opportunity cost, as women need to be rescreened in the event of inadequate specimen. A study conducted in Japan indicated that unsatisfactory specimen might cause screening errors or interpretation errors. Therefore, evaluation of specimen adequacy is the most important aspect of the quality assurance component and precise diagnosis in The Bethesda System. The Bethesda system has been used for cervical cytological diagnosis in Japan since 2008 (Hosono, Terasawa, Katayama, Sasaki, Hoshi and Hamashima, 2018).

Another factor is the request form that contains adequate clinical information, the specimen must of course not have been irreparably broken. Cervical screening always requires an endocervical and exo cervical appropriate sampling device, to increase reasonable chances that the transformation zone is sampled satisfactory (Arbyn and De Cock 2013). Study conducted in Korea indicated that the baseline individual monthly requisition rate of cervical cancer transformation zone component improved after quality management intervention (Min, Lee, Suh, Yoo, Lim, Choi, Ki, Kim et al., 2015).

The study conducted in Limpopo by Mamahlodi, Kuonza and Candy (2012) revealed that several issues had been cited to explain the low coverage rates, including lack of awareness among the target population, inadequate trained personnel to perform the screening test,

reading smears and interpreting the results, poor communication between the screening site and the laboratories and inaccessibility of the facilities to diagnose and treat patients who had been detected through the screening process. The researchers further indicated that evaluation of pap 'smear specimen adequacy was an important quality assurance procedure in the laboratory increasing the possibility of intraepithelial lesion detection and minimizing the risk of false negative reporting. This was especially important in resource limited settings, such as South Africa, where women may undergo screening only once in their life time. Conventionally a cervical smear was satisfactory for evaluation if it had an estimated minimum of 8 000-12 000 clearly displayed squamous epithelial cells (Mamahlodi et al., 2012).

National screening unit in New Zealand, stipulates that to ensure a nationally consistent teaching and assessment standards, providers of training programmes are required to be registered and accredited by NZQA to deliver unit standards 29556. An accredited provider is required to engage in the NZQA moderation system for unit standard 29556. Training programmes provider should have linked with DHB or NCSP regional services (Ministry of Health, 2017). Furthermore, the entry to cervical screening training is restricted to individuals who met the following criteria: the applicant should be a registered health practitioner, have a scope of practice, belong to a professional group that include cervical screening such as medical practitioner, nurse practitioner, registered nurse, enrolled nurse or midwife and must have a current New Zealand practicing certificate (be supported by clinical supervisor training) to complete the clinical component of the course; possess professional/ personal indemnity insurance; had access to an appropriate client base who require cervical screening to ensure they could maintain their competency (Ministry of Health, 2017). The applicant must complete a minimum of 20 hours of theory in cervical screening training programme and a supervised practical component of cervical cancer screening which covers the competencies outlined in this document (Ministry of Health, 2017).

Most pap 'smears in South Africa are performed at primary care level/ clinics and community health centres. It is important to strengthen screening services at primary level facilities to provide adequate pap 'smears and improve the training of health care providers, there is no standardized training programme such as competency skill based programme in Limpopo Province. In South Africa, there is no national training program specifically for cervical cancer however the regulation (R425), four-year course requires students during midwifery training to perform 10 pap smears. Provinces design their own programmes such as the one in Western Cape.

### 1.3 PROBLEM OF THE STUDY

The researcher had been working in Vhembe District more than six years from 2011 to date moving around all clinics in Vhembe district and receiving statistics for adequacy rate for cytology test results of all the clinics in all 5 Districts in Limpopo Province quarterly from National health laboratory services for review. The observation was that most of the cytology test results showed that there was highest number of cytology test results with no endocervical component or unsatisfactory for evaluation.

In Limpopo Province, the districts are unable to reach the adequacy rate of 70% as indicated by the National health laboratory services during quarterly reviews meetings, where performance of all facilities under Vhembe and Mopani Districts are reviewed and discussed. Most of the pap 'smear collected are of poor quality with no endocervical component or are unsatisfactory for evaluation as confirmed by pap smear results from most facilities within the two districts. High inadequacy has a significant association with cost as women need to be re-screened in the event of an inadequate specimen and many women may have been issued with false negative results thus reducing the benefits of screening for cervical cancer. Adequacy rate could be increased at the health facility level through additional staff training on accurate collection of cervical cells (Makura et al.,2016). The researcher intends to develop a training programme to improve the adequacy rate of pap' smears to strengthen the cervical cancer screening programme. The goal of a training programme is to ensure that there are sufficient competent, skilled professionals to attract women to the service, screen eligible women with an appropriate test (WHO, 2017).

The figure below indicates the percentage of adequacy rate according to districts performance

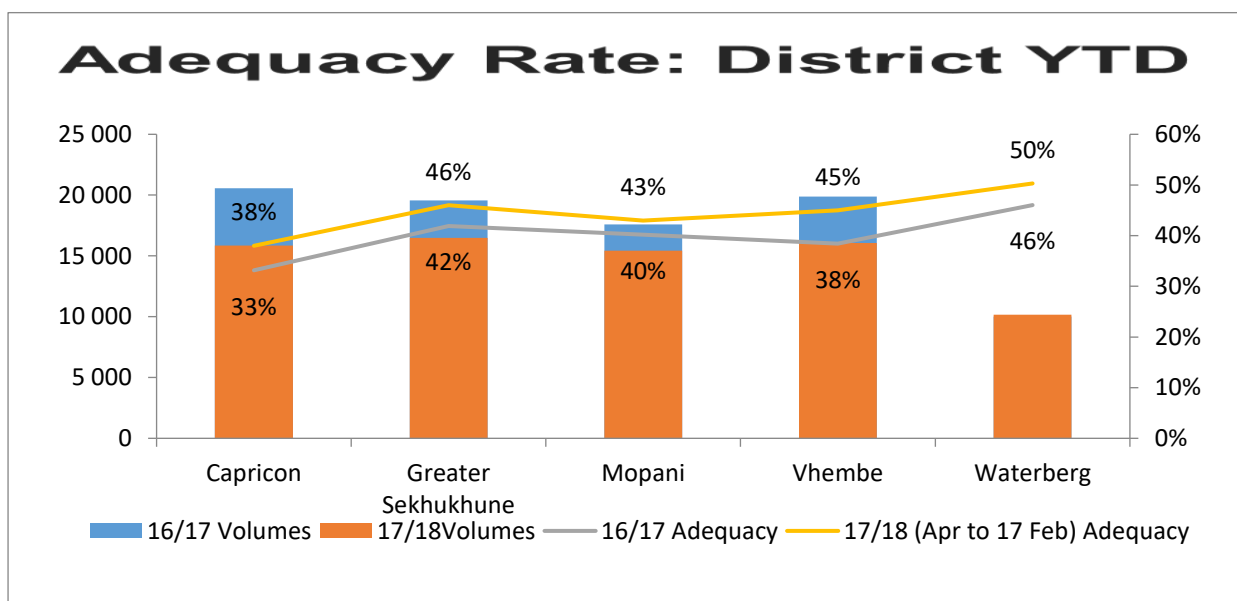


Figure 1: Cervical cancer screening adequacy rate (National health laboratory services April 2017- Feb 2018.)

Highest number of inadequacy/unsatisfactory smears impacts negatively on the quality of life for women as it delays early detection for cervical cancer and treatment. Inadequacy of transformation zone component and unsatisfactory smears have a higher risk of a progression to cervical cancer or pre-cancer lesion to cervical cancer than adequacy of transformation zone. This prompted the researcher to design/ develop a training programme to improve adequacy rate.

#### **1.4. RATIONALE OF THE STUDY**

Studies has been done on knowledge, attitudes and practices (KAP) of women towards cervical cancer screening as well as health workers KAP towards cervical cancer programme, however limited or studies have been done on enhancing or strengthening cervical cancer programme through collection of adequate smears by competent health professionals.

#### **1.5. SIGNIFICANCE OF THE STUDY**

The training programme developed at the end of this study might help women to have early diagnosis for cervical cancer. The findings of this study might help to address other contributory factors contributing to inadequacy smears. The findings might also benefit the health care professionals with knowledge and skills to do pap 'smear. The findings might also benefit other researchers who were interested in researching the same topic in future to add to the body of knowledge. Policy makers might benefit from informed data which may guide them when developing policies.

#### **1.6. RESEARCH AIM**

The overall aim was to develop a training programme to strengthen cervical cancer screening in Limpopo Province.

#### **1.7. OBJECTIVES**

##### **Phase 1(a) Qualitative approach**

- To explore perceptions of health care professionals about cervical cancer screening programme in Limpopo Province.

- To describe challenges of health care professionals about cervical cancer screening programme in Limpopo Province.

### **Phase 1 (b) Quantitative approach**

To assess the knowledge, skill and practices of health care professionals regarding cervical cancer screening in Limpopo Province.

#### **Phase 2**

- Develop training programme to strengthen cervical cancer screening services in Limpopo Province.

#### **Phase 3**

- Validate the training programme.

### **1.1.8. DEFINITION OF KEY CONCEPTS**

#### **Cervical cancer**

A neoplasm of the uterine cervix, which can be detected in the early, curable stage by the Papanicolaou test (Wood, Vogel, Ng, Fox hall, Goodwin and Travis, 2012). In this study a neoplasm means altered cells in the cervix.

#### **Screening**

The carrying out of test on large number of people to identify those that have a disease for which treatment may be available (Andersen, De Rubeis, Berman, Gruman, Champion, Massie, Holland, Partridge, Bak, Somerfield, and Rowland 2014). A preliminary procedure such as a test or examination to detect the most characteristic sign or signs of cancer of the cervix (Wood et al., 2012). In this study screening is a surgical clean procedure to collect the endo-cervical component using a spatula.

#### **Pap smear**

A sample smear method of examining stained foliated cells used to detect cancer of the cervix and obtained during routine pelvic examination annually from 18 years of age (Wood et al., 2012). In this study pap smear is scraping of the cells from cervix and applied on a slide for laboratory examination.

## **Cervical cancer training**

Training is the process of learning skill that you need for a particular job or activity (Goldstein and Ford, 2002). In this study training, will be teaching or developing in professional nurses' skill or knowledge that relate to collection of cervical smears.

## **Programme**

A plan of action aimed at accomplishing a clear the objective of the business of the institution (Makunyane, 2017). In this study a programme shall entail a structured procedure manual on cervical cancer skills technique.

## **Strengthen**

To make something stronger, more effective or to become stronger or more (WHO, 2004). In this study to strengthen means to empower, inspire and capacitate skill development

## **Inadequate smear**

The state or quality of being inadequate/ lack of the quantity or quality required (Gupta et al.,(2016). In this study, inadequate smear shall mean collection of smears with no cells identified under microscope.

## **Adequate smear**

The state of quality and quantity of endo-cervical cells required for evaluation (Gupta et al., (2016). In this study, it shall mean enough cells to be identified under microscopic examination.

## **1.9. THEORETICAL FRAMEWORK**

This study was guided by precede- proceed as a model of frame work. This conceptual model minimizes the risk of subjectivity by synthesizing disparate sources of data to ensure that initiatives with the greatest potential of achieving the best health outcomes was implemented. The Model was based on the premise that the determinants of health and health risks are multi-factorial and that multifaceted and multi sectorial efforts were required to effect behavioural, environmental, and social change.

A major strength of this Model was its capacity to facilitate identification of the desired outcomes at the outset of the planning process, which determines the evaluation metrics. This Model also aids systematic classification of factors by their relative importance and capacity for modification using a ranking system. A ranking system facilitates consideration of the

determinants for change at individual, provider, and system levels and allowed for the identification, development, and implementation of interventions with the greatest potential of achieving a positive impact.

The framework of precede-proceed model was useful for grouping together factors that were likely to be used to bring about the desired program outcomes. The three broad groupings were predisposing factor, enabling factors, and reinforcing factors. Predisposing factor were those that include personal attributes such as person's knowledge, attitudes, beliefs, values and perceptions that can promote or hinder motivation for change. Enabling factors were those skills, resources and barriers were those that encourage or hinder the desired change. Enabling factors were mainly societal forces or systems, oftentimes enabling factors were availability of personal and community resources, accessibility, referrals, laws, status, personal skills, services and facilities. Reinforcing factors were the behaviours and attitudes or those around the person such as the rewards and incentives received or the feedback that was received from peers, managers and social group for adopting the desired outcome. The precede component of the model was the diagnostic phase that was useful for identifying the predisposing, enabling, reinforcing constructs associated with the phenomenon and, the proceed component was the development phase outlining the policy regulatory and organizational constructs. The model asserts that predisposing, reinforcing, and enabling factors influence that behavioural and environmental change would occur. The precede structure directs attention to what must be pressed as the desired outcome, in this case a woman getting screening. To determine what causes the desired outcome must be diagnosed before intervention strategies can be designed. Without an adequate diagnosis of the important factors, the investigator runs the risk of designing ineffective intervention strategies. Phase five involved establishing which health promotion, health education and policy related intervention was best be opted to encourage the desired changes in the behaviours or environment's and in the factors that support those behaviours and environments was the most prominent tool for designing and administering an experiment in intervention to change high risk behaviours designed by Green and Keuter. The precede-proceed model had been adopted within long term, experimental health promotion programs. It provided a framework that help health makers effectively design health programs based on the assessment and analysis of the situations, the most basic assumptions in this model was the active participation of the audience. Applying precede model showed training programs based on precede model might be effective on decreasing the high number of pap 'smear results with inadequacy smears.

The reinforces in this study were self-encouragement and encouragement by others and individual positive feelings. Health professional after the training they might encourage

themselves and being encouraged by others to make sure that they had collected quality of smears based on the knowledge and skill that they would have acquired with positive feeling. The enablers were notification of weekly educational messages about materials discussed in workshops, distribution of CDS and posting materials on the educational board. The reinforcers might be trainers' internal incentives and encouragement of both groups to adopt. Process evaluation and review of progress towards pre-set goals would be carried out during the implementation of the training course. The effectiveness would be evaluated based on the completion of the prece-de-proceed questionnaire and the check list once a month after the training. Training sessions were arranged in groups of 20 members in separate days (Didehvar, Zareban, Jalili, Bakhshani, Shahrakipoor and Balouchi, 2016).

The prece-de-proceed model of which health professionals' behaviour was assessed in three areas, the predisposing factor, such as knowledge, attitudes, beliefs and values. Proceed behaviour change and generate motivation for behaviour, enabling factor such as availability of resources and accessibility of resources or services and regulation was an introduction to behaviour or environmental change that facilitate achievement of motivation for realization of an environmental policy by the health professional. Reinforcing factors were factors that help keep track of behaviour and provide reward for behaviour. Proceed model based on education was effective in changing the predisposing factors. Prece-de spell out policy, regulatory and organizational construct in educational and environmental development and true to its name as well as describe how to proceed with the intervention itself. In this study the health professionals were reminded about the pap smear policy which dictate that 70% of adequacy rate for cytology results should be reached. The model was developed in 8 stages and could inform any health program (Green and Kreuter, 1999).

Prece-de has four phases:

*Phase 1: Identifying the ultimate desired results and social assessment*

The prece-de portion of the model begins with the diagnostic activities that identified desirable outcome or goals of the intervention or ask what could be achieved. The activities determine the primary or the distal outcomes for a training program.

*Phase 2: Epidemiological, Behavioural, and Environmental assessment*

Identifying and setting priorities among health or community issues and that behavioural and environmental determinants that stand on the way of achieving the results and environmental determinants or conditions that had to be attained to achieve the results and identified the behaviour, life styles and or environmental factors that affect those issues or conditions.

Health care professionals will be asked about what problems or issues affect the adequacy rate for cytology results. What needs to change achieve the optimal adequacy rate for pap' smear. These phases determine epidemiological, behavioural, and environmental factors that may well have an impact of women receiving pap' smear in early detection for cervical cancer. This phase contributed to the identification of the factors that a training program needs to impact on health professionals.

*Phase 3: Educational and Ecological assessment*

This phase determines factors that if modified, would be most likely to result in behaviour change and sustain this process. This process is generally classified as the predisposing, enabling, and re enforcing factors that can affect the behaviours, attitude and environmental factors given priority in phase 2. The model may assist in determining predisposing knowledge, attitudes, beliefs, enabling skills, resources access policy and reinforcing social influence, incentives, positive experiences factors necessary to initiate and maintain change for health care professionals in increasing the adequacy rate for pap smear.

*Phase 4: Intervention alignment and administrative and policy assessment*

4a- This phase matches appropriate the intervention with the projected changes and outcome identified in phase 1-3 using assessment results from phase 1-3.

4b Administrative and policy assessment

In this phase resources, organizational barriers and facilitators and policies that were needed for the intervention implementation and sustainability will be identified. The organizational and environmental system that could affect the desired outcome will be considered (enabling factor). The administrative diagnosis assesses resources, policies, budgetary needs, and organizational situations that could hinder or facilitate the development and implementation of a training program to strengthen cervical cancer screening.

Identifying the administrative and policy factors that influence what can be implemented. Change process should focus initially on the outcome not on the activity. Administration and policy diagnosis establish availability of necessary resources and organizational policies and regulations that could affect program implementation.

Proceed has three phases:

*Phase 5: Pre-test study*

The results and lessons learned in the pre-test are important revising both the training program developed and its evaluation and for efficacy study

### *Phase 6: Implementation*

This phase presents a description of the implementation of the training program. Key roles in the implementation phase are highlighted. Implementation of the design and conducting the intervention. The training program will be implemented; Health professionals will be trained on how to collect quality smears (Binkley and Johnson, 2013).

### *Phase 7-8: Evaluation*

The implementation process assessment should address the amount of intervention exposure, development of a training program, extent to which to which an intervention is implemented as designed and participants' appraisal of intervention quality or usefulness. The outcome evaluation should comprise of an assessment of a training program, direct effect on outcome, mediation of outcome designated as mechanism of change and moderation of contextual factors.

Assess extent to which intervention is carried out as planned. The researcher will evaluate the training if there is any improvement on quality smear collection (Binkley and Johnson, 2013).

### *Impact evaluation*

Is the intervention having the desired impact on the target population of health professional and operational managers, chief professional nurses. Assess changes in predisposing enabling and reinforcing factors that predict likelihood of desired behaviour and environmental changes. Health professional will be able to collect quality smears with endo cervical component this will assist in early detection of cervical cancer thus reducing morbidity and mortality caused by cervical cancer

### *Outcome evaluation*

Assess desired changes to health and quality of life indicators, where increased number of quality smears collected by the health professionals and 70% of adequacy rate will be reached.

Is the intervention leading to the outcome desired results that was envisioned in phase 1 (Green and Kreuter, 2005; Didehvar, Zareban, Jalili, Bakhshani, Shahrakipoor and Balouchi, 2016). In this study, health professional primary health care services will be interviewed to determine the predisposing and modifiable factors that motivate health professionals to engage in cancer screening, knowledge, attitude and beliefs regarding cervical cancer screening and whether they possess the knowledge and skill on correct technique for

collection of pap' smear. Enabling factors include modifiable factors that will make it possible for health professionals to engage in cancer screening such as skill of pap'smear collection, having resources for screening and adhering to cancer screening policies. Reinforcing factors includes modifiable factors such as social influences, incentives, positive experiences that will assist the health professionals to strengthen cervical cancer screening. (Green and Kreuter, 2005; Didehvar et al., 2016).

## 1.10 RESEARCH DESIGN AND METHODOLOGY

This study was divided into three phases with the first phase as data collection and analysis while the second phase was the development of a training programme to strengthen cervical cancer screening and phase three to validate the training programme.

Table 1. Provides a summary of the research design and methods employed in the study. The detailed research design and methods will be discussed in Chapter 3.

Table 1: Research methods and design

<b>PHASE 1: EXPLORATORY DESCRIPTIVE SURVEY</b>					
<b>Objective</b>	<b>Design/ method</b>	<b>Population</b>	<b>Samplin g</b>	<b>Data collection</b>	<b>Data analysis</b>
Explore perception of healthcare professionals about cervical cancer screening program	Qualitative	Health care professionals	Purposive sampling	Semi-structured interview	Thematic content analysis
Describe the challenges of health care professional about cervical cancer screening	Qualitative	Health professionals	Purposive Sampling	Semi-structured interview	Thematic content analysis
To assess the knowledge, skill and practices of health care					

professionals (operational managers and senior health care professionals) regarding cervical cancer screening in Limpopo Province.	Quantitative	Health care professionals (operational managers and senior health care professionals)	Total population sample	Structured questionnaire	SPSS
<b>PHASE 2: DEVELOPMENT OF A TRAINING PROGRAMME TO STRENGTHEN CERVICAL CANCER PROGRAM</b>					
Theoretical framework, South African Qualification Authority framework,					
<b>PHASE 3: VALIDATION OF A TRAINING PROGRAMME TO STRENGTHEN CERVICAL CANCER PROGRAM</b>					
		Experts: oncology nurses, doctors, nurse educators  Laboratory technicians	Purposive sampling		Content analysis and descriptive analysis

## PHASE 1: EXPLORATIVE AND DESCRIPTIVE SURVEY

Phase 1 of the study was a mixed method, a blend of all aspect of both qualitative and quantitative approaches into one study (de Vos et al., 2011). Mixed method was selected as it included integration of quantitative and qualitative approaches to develop knowledge. The exploratory sequence approach involves generating information gathered using the quantitative instrument from the findings of the qualitative study. The qualitative data obtained are analysed first, then results inform the design of the questionnaire for the quantitative study. Quantitative data then be collected analysed and conclusion drawn consolidated and interpreted (Creswell, 2014).

## PHASE 2: DEVELOPMENT OF A TRAINING PROGRAMME TO STRENGTHEN CERVICAL CANCER SCREENING

The one-day workshop was held with stakeholders who are managing primary health care facilities in health districts of Limpopo Province, with the purpose of presenting and discussing the results of phase. Inputs to develop the programme in terms of knowledge content, competencies required, standardisation of pap' smear procedure, evaluating performance and sustaining capacity development. Thereafter the development of a training programme was initiated based on the empirical data collected in phase 1, supported by the literature review and the outcomes of the workshop.

## PHASE 3: VALIDATION OF CERVICAL CANCER SCREENING TRAINING PROGRAMME

Validation is described as the scientific process where collected and analysed data are checked for their accuracy (Chinn and Kramer, 2011). The main purpose of validating results is to provide evidence of the effectiveness of the programme which will be developed. The programme was validated for validity, reliability, clarity, relevance, acceptability, flexibility and comprehensiveness according to Chinn and Kramer (2011). The Delphi technique was used to validate the training programme.

### **1.11 MEASURES TO ENSURE TRUSTWORTHINESS/ VALIDITY AND RELIABILITY**

Rigor was ensured in this study using Guba's model in (Krefting 1991) to assess trustworthiness of the qualitative data in phase 1a. The concepts truth value, applicability, consistency and neutrality were used as criteria to assess the value of the findings. Validity and reliability was ensured by utilizing similar research instrument for all participants, and pretesting of the instrument was done and interview guide was standard for all interviews in all phases of the study.

## **1.12 ETHICAL CONSIDERATIONS**

Ethical research specific to this study were considered. These entailed ensuring anonymity and confidentiality of participants, obtaining informed consent from participants and emphasising voluntary participation and the right to withdraw from the study without being victimized.

## **1.13. ORGANISATION OF THE THESIS**

Chapter 1 Orientation of the study

Chapter 2 Literature review

Chapter 3 Research methodology

Chapter 4 Presentation and discussion of qualitative findings

Chapter 5 Presentation and discussion of quantitative findings

Chapter 6 Contextualisation of a theoretical framework

Chapter 7 Development of a training programme

Chapter 8 Validation of a training programme

Chapter 9 Limitations, recommendations, and conclusions of the study.

## **1.14 CONCLUSION**

Cervical cancer is a global problem and cervical screening services are not well structured. Health care professionals are required to provide cervical cancer screening to women to reduce the burden of the disease to the already strained health care services due to cost related to treatment of cancer. Therefore, the training program could assist in prevention and early diagnosis.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 INTRODUCTION

Literature review refers to the process of analysing and synthesizing sources to come up with a picture of what is known and not known about the situation (Grove, Gray and Burns, 2014). The literature review puts the study into context, show the path of prior research and links the current project to the former, assist the researcher after data collection to differentiate between findings and existing knowledge and how the findings could advance the existing knowledge (de Vos et al., 2011).

Literature review identifies, evaluates the relevant literature direct within a field of research. It illuminates how knowledge has evolved within the field highlighting what has already been done, what is generally accepted, what is emerging and what is the current state of thinking on the topic (Grove et al., 2014). It also identifies a research gap and articulates how a research project addresses this gaps or collection of published information materials on an area of research or topics such as books and journals articles of academic value.

The purpose of literature review is to review current literature related to development of a training programme to strengthen cervical cancer screening. In which the researcher will gather qualitative and quantitative data on perception and practices of health care providers on cervical cancer screening programme and other factors influencing cervical cancer screening inadequacy rate and how can competency be improved for cervical cancer screening.

##### 2.1.1. The search strategy

The aim of the review was to conduct a comprehensive search of the available literature, no limits, such as date or research method were applied to the initial search. A comprehensive search of database was conducted from 2009 to 2018, key concepts and search terms were developed to capture literature related to strengthening cervical cancer screening programme. To achieve this the researcher searched a variety of research databases on experimental and grey research literature.

The samples of relevant studies were identified by searching databases including Google scholar, Medline, EBSCOHOST, Science direct, published articles from peer reviewed journals, full text, books, abstracts, policies and guidelines and frame work.

The search strategy was used in collaboration with School of Health Sciences librarian in addition, search terms included inadequacy rate or unsatisfactory results for pap smear, adequacy rate, development of a training program, cervical cancer screening.

### **2.1.2. Inclusion criteria**

All full articles written only in English, dates from the year 2019-2018; discussing cervical cancer screening, pap smear/cytology, unsatisfactory/ or no endocervical cells, adequacy rate, Quality smears cervical cancer guidelines and training programmes and competencies of health workers.

### **2.1.3. Scope of the literature**

The literature review will cover relevant information regarding the development of a training programme to strengthen cervical cancer screening in Limpopo Province.

## **2.2. DISCUSSION OF FINDINGS FROM LITERATURE REVIEW**

Literature will cover issues relating to cervical cancer policies and guidelines, knowledge, attitudes, practices, factors affecting inadequacy, skills, competency and training programme for cervical cancer.

### **2.2.1. Policy guidelines on cervical cancer screening programme**

The World Health Organization (WHO) recommended a 5-year screening interval for women over 50 years and a 3-year interval for those within the age group of 25–49 years if the resources are available (WHO, 2013). However, the guideline does not stipulate the frequency for screening for women below 25 years, the guideline is silent on the matter. And for women above 65 years if their previous results were negative it also does not indicate whether they can have an annual check or should be excluded. Dim (2012) indicates that the American College of Obstetricians and Gynaecologists (ACOG) protocol indicates that cervical cytology should begin for every woman by age 21 years, irrespective of HPV years. From the age of 30 years, screening interval could be increased to 3 years for women who had three consecutive negative cervical cytology tests. The author further contends that cervical cancer screening should stop at age 65 or 70 years among women who have three or more negative cytology results in a row and for HIV-positive women twice yearly Pap smear is recommended in the first year after diagnosis, and if the results are normal, screening should continue annually afterwards (Dim,2012).

The international guidelines vary, recently guidelines from the United Kingdom recommend testing every three years for a women age 25-49 years but make no mention of what to do should results not include endocervical cells. Australian guideline which recommends

screening every two years cite retrospectively studies and not that the quality of smears is not determined by the presence or absence of endocervical cells. The American cancer society recommend annual repeat screening for women whose pap smear show no endocervical cells or earlier repeating test for certain women. The guideline does not clarify which women qualify for early repeat testing this ambiguity may cause confusion for physicians about who and when to retest. Cervix (American Cancer Society, 2011).

National health policy in Tanzania however does not have a screening policy for cervical cancer a priority is given to infectious diseases such as malaria, tuberculosis, diarrheal diseases, acute respiratory infections, sexual transmitted infections all of which have individual control programme (Urasa and Darj, 2011). In Rwanda, before the HPV vaccine was introduced in 2011, there was no cervical cancer screening available in public health facilities, a few private clinics and NGOs offered it sporadically. However, in 2013 Rwanda launched a national strategic prevention, control and management of cancer and became the first nation in Africa to offer a comprehensive prevention program that incorporates both HPV vaccination with GARDASIL [Human Papillomavirus Quadrivalent (Types 6, 11, 16 and 18) Vaccine, Recombinant] and HPV testing.

Cervical cancer screening was introduced in 2000 in South Africa. It was projected at 70% coverage target by 2010, to date 13.6% coverage has been achieved and the mortality is still high. More recent data suggest that screening has had a minor impact, if any, amongst populations with limited access to cervical screening services (National Department of Health's Strategic Plans 2011-2012). The reality is that for the vast majority of women in SA, screening services are either not available, or either do not function effectively, or are not accessed by those who need, so that affect the utilization of cervical cancer services negatively (National Department of Health's Strategic Plans 2011-2012). The American Society for Colposcopy and cervical pathology recommends repeat testing within 2-4 months for women with an unsatisfactory pap test (Owens et al., 2015). According to the SA national policy guideline on cervical cancer screening indicate that women with inadequate smear should be re-screened, if the second smear is also inadequate client to be referred to known competent screening services to screen women again for better results (Makunyane, 2017).

### **2.2.2. Guidelines for cytology laboratories**

Professional and technical guidelines must be followed to ensure the collection and preparation of adequate cervical cells samples. The quality of cervical cytology laboratory depend on the adequate handling and staining of the sample screening and interpretation of the slides and reporting of the results an appropriate balance must be achieved between the best patient are possible laboratory quality assurance and cost effectiveness. Uniform grading

of cellular abnormalities is an essential condition for registration and comparison over time and between different settings laboratories should apply only a National agreed technology for cytology that is translatable into the Bethesda reporting system (Herbert, Bergeron, Wiener, Schenck, Klinkhamer, Bulten and Arbyn, 2007).

### **2.2.3. Guidelines to cervical screening adequacy of pap smears**

The current guidelines of the Australian National cancer screening program define an unsatisfactory smear as one with less than 10000 with well preserved, well visualized squamous epithelial cells for conventional pap smear less than 5000 for (liquid bases preparation). It is important to note that specimens are not classified as unsatisfactory based on an absence of endocervical components alone (Australian Department of Health, 2018).

The laboratories assess the adequacy by comparing the cellularity to reference images. The presence of endocervical cells (metaplastic cells) indicate sampling of the transformation zone which is the region at most risk for neoplastic.

Historically the absent of endocervical cells was thought to indicate an inadequate smear, however the evidence for this assumption is lacking although some studies showed that samples lacking endocervical cells have a lower detection rate of abnormal cells, follow-up for this cases showed that there was no increase in missed significant disease CIN or higher (Stones,2012).

Reporting the presence of endocervical cells provides a useful surrogate marker for smear taker to gauge their technique. The monthly pap smear audit, allow smear takers to monitor their endocervical pick up rates every month. Variation in results from month to month are to be expected and should be alarm (Stones, 2012). When we take, a pap smear we aim to sample the squamous columnar junction as it is here that squamous cells of cancer of the cervix arises.

The pathologist or cytotechnologist must provide information about the adequacy and the quality of the specimen done with her or his interpretation. Therefore, in addition to defining the diagnostic categories, the Bethesda system also develops criteria for determining the adequacy and quality of smears.

According to Bethesda system, these criteria includes estimations of the number of squamous and endocervical cells present, specimen preservation and fixation and the absence of obscuring elements such as excessive blood, inflammation bases on these criteria. The pap smear traditionally has been placed in to 3 categories: satisfactory, unsatisfactory, satisfactory

but limited, although patients with unsatisfactory generally undergo repeated evaluation within few months of unsatisfactory smears. The purpose of designating smears as unsatisfactory is to alert clinicians that the smear might not be reliable for detecting pre-neoplastic or neoplastic condition (Adam, McIntyre and de Bruyn, 2012).

An unsatisfactory pap smear with insufficient squamous cells is defined as one which contain fewer than 10,000 cells visualized squamous epithelial cell (Adam et al., 2012).

Sometimes the report will indicate that the sample was unsatisfactory. This may happen because

- The cells may be obscured by blood or inflammation
- The test may not have been properly prepared
- There may not be enough cells on the sample to give an accurate assessment
- The slide may have been broken

Not all those factors are under the control of the doctor or nurse collecting the sample, so even very experienced health care professionals can take samples that the laboratory reports as unsatisfactory. If any of these problems occur, the women will be asked to be repeated in six to 12 weeks allowing time for the cells of the cervix to renew (Adam et. al, 2012).

Endocervical cells come from the area where the squamous cells meet the glandular cells. This is called the transformation zone. This is the area where the changes that precede cancer are most likely to develop. It is sometimes difficult to get a sample of the cells from this area, particularly when a woman is past menopause. This is because the transformation zone turns to move up into the cervical canal (Adam et. al, 2012).

### **2.3. Screening methods for cervical cancer screening**

#### **✿ HPV test**

HPV is a type of sexually transmitted infection. Certain types of HPV can cause cervical cancer and other less common types of genital cancers. HPVs are found in over 85%–90% of all precancerous and invasive cervical lesions, and HPV 16 and 18 are responsible for 70% of cervical cancers, with trivial differences among countries, and for over 60% of cervical intraepithelial neoplasia (CIN) 2/3 lesions worldwide (Dim, 2012).

This may explain why the HPV vaccines in current use contain antigens for both HPV 16 and 18.

### ☼ Pap test

The Pap test is a complex system of laboratory and clinical procedures, which has been widely used globally in the diagnosis of pre-malignant lesions and cancer of the cervix. It is a secondary prevention method, aimed at identifying the precancerous lesions that need follow-up and/or treatment (Dim, 2012). Generally, all women with ASC or LGSIL should have a repeat screening after 6 months and should be referred for colposcopy if the lesion is progressive.

The pap smear is considered as the gold standards in cervical cancer screening and lesions identified are easy to treat, however relatively low, qualified manpower and laboratory resource exist in more countries.(Ibrahim,2013).The only limitation of the conventional pap smear is the potential for sampling and preparation errors, which can occur when the cell on the slides are not representative of the condition of the cervix, only a fraction of epithelial cells collected on the sampling device are deposited on the slide (Ranjana and Sadhna,2016). Limitation require trained persons, if the smear was found to be inadequate it requires health care professionals to recall a woman for further test. Use of both an endocervical brush and spatula has shown to collect better samples of cells than the spatula alone (Ranjana and Sadhna, 2016).

### ☼ Colposcopy

A cervical biopsy may be done when abnormalities are found during a pelvic exam. It may also be done if abnormal cells are found during a Pap test. A positive test for human papillomavirus (HPV) may also call for cervical biopsy. A cervical biopsy is often done as part of a colposcopy. The major advantage of cytology screening are the considerable experience accrued world- wide in use and that it is so far the only established screening test for cervical cancer pre-cancerous that have been shown to reduce the incidence and mortality of the disease (Petry, Wörmann and Schneider, 2014).

### ☼ Visual inspection with acetic acid (VIA)

VIA is a visual examination of the uterine cervix after application of 3-5% acetic acid. If the cervical epithelium contains an abnormal load of cellular proteins, the acetic acid coagulates the proteins conferring an opaque and white aspect of the concerned area. In developing countries because of lack of necessary infrastructure and quality control, absence of high-quality cytology screening may not be feasible for wide-scale implementation. Hence, cervical cancer screening program based on visual screening test such as VIA/VILI has been used in resource-poor countries like India (Bobdey, Sathwara, Jain and Balasubramaniam, 2016). Studies in India suggest that VIA and VILI have comparable sensitivity and specificity to

cytology and HPV DNA test-based screening (Bhatla, Puri, Joseph, Kriplani and Iyer, 2012; Deodhar, Sankaranarayanan et al. 2012; Ghosh and Gandhi et al. 2012). An advantage of VI-based approaches is the immediate availability of screening test results, which provides an opportunity to conduct a biopsy or offer treatment during the same visit (the “screen and treat” approach) and reduces the likelihood of failure to follow up (Deodhar, Sankaranarayanan et al., 2012). The few studies that have engaged in longer-term follow-up of participants to estimate the impact of different cervical cancer screening approaches on morbidity and mortality in India have found that VIA-based screening leads to significant declines in cervical cancer mortality within a decade of the start of intervention. In summary, evidence suggests that VI-based screening (Krishnan, Madsen, Porterfield and Varghesed, 2013).

#### **2.4. Measures to improve quality of cytologic screening**

The essential elements for successful cytology screening including includes

- Training of the relevant health care professionals including smear takers, smear readers (cytotechnologist) cytopathologist, colposcopists and programme managers.
- An agreed decision on the priority age group to be screened initial 38-64
- Adequately taken and fixed smears
- Efficient and high quality laboratory services that should be preferable be centralized.
- Quality control of cytology reading
- A means to rapidly transport smears to the laboratory
- A mechanism to inform the women screened of results of the test in an understandable form
- A mechanism to ensure that women with an abnormal result attend for management and treatment
- An accepted definition of an abnormality to be treated
- A mechanism to follow up treated women
- A mechanism to invite. Women with negative smears for subsequent smears
- A decision on the frequency of the subsequent screens (Branca and Longatto-Filho, 2015).

#### **2.5. Perception of health care providers towards cervical cancer screening programme**

Study conducted in Libya suggested that health care providers can influence women’s screening behaviour and lack of recommendation for screening can be one of the barriers that affect women’s participation in screening programmes (Hwesa et al., 2016). Findings suggested that health care providers do not provide sufficient information regarding cervical cancer screening programme for women who attended health facilities. The results highlight

the role played by health professionals in motivating women to attend cervical cancer screening programme and the need for health education of health care providers to offer precious advice regarding screening on the other hand health care professionals highlighted that the implementation of reminding system of cervical cancer screening will support them to improve screening attendance, in addition health care provider stressed the necessity for education and awareness screening programme among women (Hweissa et al., 2016).

Study conducted in India revealed that most nurses thought a specimen examination and pap smear were procedures to be performed by doctors only, 24% never screened themselves they thought that they had no symptoms, 1% thought that if a woman is a virgin the pap test will take away a virginity (Singh, Seth, Rani and Srivastava, 2012). Study conducted in Lagos showed that nurses had good knowledge of cervical cancer but have limited understanding of the types of cervical cancer screening techniques and poor disposition towards undergoing cervical cancer screening. It may thus be recommended that institutions should have periodically seminars and training of health personnel especially nurses which forms a group of professionals that can give health education to women about cervical cancer. These trainings may be done as part of orientation programme to newly employed staff more over hospitals based pro screening campaigns is highly advocated to enhance prevention of cervical cancer (Awodele, Adeyomoye, Awodele, Kwashi, Awodele and Dolapo, 2011).

Study conducted in Malawi showed that women's utilization of pap smear services might be influenced by shortage of trained providers, absent of motivation talks, in adequate material and structural resources. Unfavourable schedules for screening, not all facilities in Malawi have trained providers even if the nurse is a trained provider she might be unable to do cervical cancer screening services due to shortage of staff members, implying that opportunities might be missed due to shortage of staff (Hami, Ehlers and Van der Walt, 2015).

Study conducted in Tanzania suggested that more education regarding cervical cancer at the work place and more emphasis should be put on the topic in nursing schools and as well as education at the place of work and suggested the use of media in addition to more education at the place of work (Urasa and Darj, 2011).

Nurses can provide health promotion and disease prevention and they are in an ideal position to provide health education to young girls and women, it is necessary to make the nursing staff have knowledge about cervical cancer and its prevention to the public.

Study conducted in Nigeria suggested that the most female nurses are among health workers who provide health education for secondary school students and women in rural communities, awareness on perception of cervical cancer being high in female nurses of significance importance (Biobaku, Adesekan, Fatusi and Afolabi, 2014).

Study conducted in Kwa-Zulu Natal indicated that nurses disagree with the starting age of 30 and 10 years' interval for pap smears believing that younger women are at risk due to HIV and AIDS and sexually transmitted infections, further education of registered nurses should ensure that they understand the natural causes of the disease and rationale for the guideline policy (Sibiya and Granger, 2010),

According to the study conducted in Kwa -Zulu Natal suggested that registered nurses perceived the following challenges as affecting the cervical cancer screening other professional nurses not conducting pap smear as not trained and lack of resources and a conclusion was made by professional nurses that pap' smears might not meet the objective or reduce the cancer of the cervix and suggested that further education for registered nurses is necessary to ensure the understanding of the outcome course disease and the rationale for the use of national cervical cancer screening guideline facility (Makunyane, 2017).

The study further confirmed that the registered nurses perceived challenges as playing a bigger role to implementation of the screening programme. Registered nurses perceived the following challenges as affecting the cervical cancer screening: long period elapsed between the time of taking the pap smear and receiving the results, inadequate follow up system at the clinic which created problems with tracking clients with abnormal smears difficulties when locating clients due to incorrect clients details, lack of proper address, incorrect or out dated address details, lack of communication system, lack of feedback from the referral hospitals, others not conducting pap smears as never trained and lack of resources, it was also stated that further education for registered nurses is necessary to ensure the understanding of natural course of disease and the rationale for the use of the National cervical cancer screening guideline (Makunyane, 2017).

## **2.6. Cervical cancer practices and standardized performance**

Obtaining an optimal cervical cytology samples

The sensitivity of the screening programme is improved by sample takers taking high quality sample and carefully following the instructions from the manufacturer and laboratory for transferring cells into LBC medium. Inadequate sampling may be responsible for a significant proportion of false-negative results and failure to detect abnormalities. The cytology specimen should be repeated in three months if it is unsatisfactory.

### **2.6.1. How to obtain an optimal cervical cytology sample**

Adequate sampling: including endocervical components. Many cervical lesions occur in the cervical transformation zone, and an optimal cervical screening sample contains sufficient endocervical or metaplastic squamous cells to indicate that the transformation zone has been

sampled. A satisfactory cervical screening sample is determined as containing sufficient well preserved and well visualized squamous cells. Although presence of endocervical/transformation zone component is optimal and indicate that the transformation zone has been sampled, an absence of these cells will be commented on in the cytology report but will not make the sample unsatisfactory. If a cytology test is reported as satisfactory (even if no endocervical/transformation component is present). It does not need to be repeated. The smear taker should follow the recommended recall provided in the laboratory report

Despite knowledge of the gravity of cervical cancer and prevention, attitude and perception towards screening were negative (Awodele et al., 2011).

## **2.7. Factors that can make it difficult for a sample taker to obtain endocervical cells includes**

- Pregnant or post-menopausal women (when the endocervical cells are located high in the endocervical canal so the sampling device cannot sample the area)
- Poor visualization of the cervix and inability to locate the cervical os
- Very heavy mucus or inflammation obscuring the transformation zone
- Cervical stenosis
- Sample takers can help ensure endocervical components are sampled by
- Under taking four to five full rotation with the broom as per the manufacturer's recommendation (National screening unit, 2017).

Sexual transmitted disease was associated with transformation inadequacy collection; this may be due to too much abnormal vaginal discharge with obscured transformation zone. Collection of cervical specimen should be carefully performed by experienced practitioner (Anantaworapot, Manusook, Tanprasertkul, Lertvutivivat, Senanont, Pravatana and Suwannarurk, 2016).

Major causes of false negative results are insufficient collection of smears material for the transformation zone and inadequate preparation fixation and processing of the smear, use of spatula, combination of the spatula and endocervical brush allow adequate collection of target zone preparation of conventional smear. The laboratory should provide a mechanism to monitor the proportion of inadequate smears submitted by the individual smear takers and those with low adequacy rare should undergo re-training in smear taking. (Anantaworapo et al., 2016).

## **2.8. Technique of smear preparation using Ayres spatula**

### **Sampling technique**

Rotate 360 on the cervix pointed end in the cervical os.

### **Smear preparation**

Spread the material from both sides of spatula on 2 slides A&B fixed by 95% alcohol (Ranjana and Sadhna, 2016).

## **2.9. Cervical cancer screening training practices**

Study conducted in Australia indicated that the practice nurse must be appropriately qualified and trained to take cervical smears and other preventive checks. The practice nurse should be credentialed as qualified and trained to take pap smears. All practice nurse taking pap smear and other preventive checks should have undertaken a credited training course. Continuing professional development is compulsory part of the credentialing arrangement and is recommended for all nurses (Mills, Salaun, Christie, Gorman and Harvey, 2012).

Study conducted in Australia indicated that nurses undertook activities in women's health which may have included undertaking cervical screening yet they also indicated that they have received limited education in cervical screening with some learning through informal on the job opportunities. Only the occasional general practice nurse appeared to have an accredited qualification in cervical screening (Holmes, Mills and Salaun, 2014).

In the United Kingdom, accredited training in cervical screening is provided through Marie curie cancer care family planning courses and through post graduate study. According to the National Health Service cervical screening programme every primary care trust has a nominated person responsible for its screening programme and for implementing the National guideline, women are advised that they can ask to have the smears taken by a female doctor or nurse if they prefer. Study further indicated that almost 90% of professional nurses have received specialized training in cervical cancer cytology and that they perform roughly three quarter of cervical test in general practice setting (Holmes et al., 2014). Increasing medical providers' knowledge and skills is important for early detection and prevention of cervical cancer and cancer in medically underserved areas of the United State and globally (Parra, Oden, Schmeler and Richards-Kortum, 2019).

Study conducted in Nigeria revealed that awareness and knowledge of cervical cancer screening was high but they exhibited indifference and negative attitude and low personal

screening practices several reasons were put forward for this level of practice. Nurses being agents of such health education calls for concern, study revealed that there is low willingness among nurses to health educate other women on cervical cancer screening and inform the facilities of adequacy rate should a facility consistently achieve below 70% adequacy. The staff is to be trained (Anyebe, Opaluwa, Muktar and Phillip, 2014). The study further suggested that health care professionals need to intensify effort to increase awareness about cervical screening and encourage women through the different clinics to use these services the benefit of screening and early diagnosis of cervical cancer should be emphasized to enhance utilization of cervical cancer screening services (Anyebe et al., 2014).

Although the primary health care package does not include cervical cancer as a condition which needs universal attention like other chronic conditions, the national policy guideline on cervical cancer screening indicate that the adequacy rate of a screening facility to reach at least 70% cytological laboratories are expected to audit and control the proportion of adequate smear from each screening facility (Makunyane, 2017). Study conducted in Victoria indicated that nurses collects smears that are of the same quality as nurse practitioners and physicians. Cells in a cervical cytology sample indicates that the transformation zone where most cervical cancer develop is likely to have sampled (Rennie, Boxsell and Pedrett, 2012).

In 2010 the ministry of health and social services developed guidelines for pap smear and in collaboration with cancer association of Namibia conducted a national wide training of registered nurses to conduct pap smear.

## **2.10. Other factors affecting adequacy rate for pap smear**

Laboratory professionals figure prominently among neglected cadres in health system across Sub-Saharan Africa. There is often insufficient number a skewed distribution low level of qualification and limited career opportunities. Laboratory professionals often work in facilities which are poorly equipped and do not systematically respect safety and infection control standards. These factors adversely affect the performance of laboratory professionals who are the back bone of quality diagnostics. Competency in laboratory services and often resorts to presumptive diagnosis rather than laboratory confirmation (Schnei, Diman, Dacombe and Carter, 2014).

Study conducted in Ethiopia revealed that major factors affecting the laboratory services were staff shortage, poor communication system, inadequate equipment's, low motivation, lack of training, lack of internal quality care, power supply interruption, equipment failure and poor infrastructure (Mesfin, Taye, Belay, Ashenafi and Girma, 2017). Disinfectant cream or fluid, lubricating jelly, vaginal medication less than 48 hours before for going for colposcopy with acetic acid less than 24 hours. Previous smear less than 3 month before cervical surgery less

than 3 month before radiotherapy, physicians who take smears should take account of these as far as possible.

High inadequacy rate has significantly associated with opportunity cost of women and to be screened in the event of an inadequate specimen (de Jager et al., 2013).

### **Pap 'smear quality**

Early six district performed at or above the National adequacy standards: thus there is a need for further evaluation and intervention to improve adequacy rates with low adequacy rates a large number of pap smear may have to be repeated or large number of women may have been issuer with false negative results thus reducing the benefits of screening for cervical cancer adequacy rate could be increased in the health facility level through staff training on accurate collection of cervical cells or specificity of collection device used in the public sector should be examined as they could result in adequate sampling or inefficient recording of endocervical cells under the microscope it has been previously demonstrated that by using a plastic cervix brush (broom) not only results increased adequate rate but it is also cost saving when cooperated to the wooden spatula (Makura et al., 2016).

### **Specimen quality**

Specimen collection cervical sample collection for cytology involves the clinician visualizing of the cervix and identifying the squamous columnar junction which as described earlier it is the junction where there is smooth squamous surface (Makura et al., 2016).

### **Factors that adversely affect smear quality**

Menstruation, blood loss or break through bleeding, vaginal inflammation, infection, severe genital atrophy, menopause, pregnancy and lactation (de Jager et al., 2013).

### **Efficiency and quality of laboratory services**

High quality laboratory services are essential to effective cytology screening if it is possible to solve transport problems, the greater the centralization of such services the more efficient the laboratory will be. Quality control programme must be introduced in all cytology laboratories. A 1% fill re- screening of negative smears is ineffective and is not recommended. Careful evaluation of detection rate by the smear reader and special evaluation of those with rates out of the expectations may help to identify poor performance (Ibrahim, 2011).

### **Essential elements for successful cytology screening includes**

- Training of the relevant health care

- Adequately taken and fixed high quality laboratory services that should preferably centralized
- Quality control of cytology reading a smear rapidly transport smear to the laboratory (Ibrahim, 2011).

### **Quality assurance**

Quality assurance is a process of establishing desirable standards of nursing care, planning and providing the type of care that will meet most standards. It is highlighted that the performance of calculated for effectiveness against pre- established standards to provide a basis for assessing the potential risk aimed at assessing and improving the quality of nursing care provided to clients in the nursing unit. In this study quality assurance is evaluated through the collection of quality cervical smears accounting for adequate rate which depend on the the national cervical cancer screening policy guideline (Makunyane, 2017). Adequate smears should contain both ecto and endocervical cells, cervical mucus and minimal amounts of blood, pus and debris. The Aylesbury spatula is the recommended screening device (Makunyane, 2017).

### **Evaluating the quality of a smear**

The Bethesda system for reporting smears provides three categories for evaluating the quality of the smears: “satisfactory for evaluation”, “satisfactory for evaluation but limited by...” and “unsatisfactory for evaluation.”

- The assessment is based on the following criteria:
- Presence of sufficient number of cells
- Presence of metaplastic and/ or columnar cells as well as squamous cells,
- Fixation of the cell material:
- absence of excessive numbers of erythrocytes or inflammatory cells
- absence of extensive cytolysis of the squamous cells
- even thin spread of the cellular materials, absence of aggregations of cells,
- A suitable for cytological evaluation should also be labelled with identifying details.
- These refers to request form that contains adequate clinical information.
- The specimen must, must of course, not have been irreparably broken
- Factors that adversely affect smear quality
- Menstruation, blood loss or breakthrough bleeding
- Vaginal inflammation, infection
- Severe genital atrophy(menopause)
- Pregnancy (and lactation)

- Forging digital examination
- Disinfectant cream or fluid, lubricating jelly
- Vaginal medication (less than 48 hours before)
- Vaginal douche (less than 24 hours before)
- Forging colposcopy with acetic acid (less than 24 hours before)
- Previous smears (less than 3 month before)
- Cervical surgery (less than 3moth before)
- Radiotherapy

### **Sampling devices**

Cervical screening always requires endocervical and exocervical specimen taken with the appropriate sampling device, only in that way is there a reasonable chance that the transformation zone is sampled satisfactory.

### **Sampling technique**

Endocervical cells and exocervical cells are sampled simultaneously. The long bristles are applied to the endocervix to pick endo cervical cells while the short bristles are put into contact with the exocervical region. The handle of brush is rotated between thumbs and finger a few times (ideally 5) in a clockwise direction under gentle pressure. The sample is spread onto the slide with a painting action using both sides of the brush.

### **2.11. Knowledge of cervical cancer**

Foulu and Shaimagon (2015) reported that the low level of knowledge about cervical cancer and the different educational stages of nurses were not reflected in a weighty variance in the level of knowledge, and there was an urgent need for modification of nursing curricula and that the gynaecology materials include the cervical cancer prevention programs, to increase the knowledge of nursing students and to improve female awareness in the community as a care provider. The study further recommended the need for educational materials on program regarding cervical cancer to improve nurses' knowledge as they are acts as a source of information in the community increasing female awareness about cervical cancer through media channels (TV, radio and press) competing interest (Foulu and Shaimagon, 2015).

The study in Nigeria indicated that cervical cancer is the second common cancer among women with early detection and prompt treatment as best management options female nurses have crucial roles to play in promoting the utilization of cervical cancer screening services yet little information exists regarding their perception and utilization of these services, yet little information exists regarding the perception and utilization of these services. The cervical

cancer screening services related knowledge, perception and utilization among female nurses at the university college hospital Ibadan Nigeria were therefore determined. Study further revealed that knowledge and utilization of cervical cancer screening services among female nurses at the university college hospital Ibadan is low regarding knowledge based on nurses therefore becomes imperative as they play important role in the prevention of cervical cancer, in the community. The older nurses should be used to encourage and serve as cervical cancer screening motivators for their junior colleagues, this would ultimately be done at all to the country at large (Arulogun and Maxwell, 2012).

Study in Nigeria revealed that that knowledge about cancer of the cervix and its screening is important in screening uptake. Previous studies done among female health worker have shown good knowledge of cervical cancer, however, cervical cancer screening attendants rate are still far from satisfactory in most countries. Nurses play a major role in promoting health care services and in enlightening the public on many health-related issues and their knowledge and attitude on health-related issues are crucial in gaining and promoting patients' uptake of care (Ifeme, Vumma, Anikwe, Okorochukwi, Onu, Obuna, Ejikeme and Ezeonu, 2019).

## **2.12. Training**

It is the consensus of the stake holders that when conducting training in multiple sites or through national programmes, the use of standardized curriculum reducing training variations and complying with high clinical standards improve patient outcome. This is particularly true in countries where diverse population have various needs and where institutions have different levels of resource. One approach to making highly reliable is to use an innovative blended learning program (Strategic partnership, 2019).

### **Training of Physicians**

The experience and dedication of the person taking the smear also plays a crucial role in achieving a good smear. The collector effect is even more important than the choice of equipment. Theoretical and practical training in taking pap smear need to be permanent features of training programmes in the medical faculties and in post graduate course

Cervical cancer screening education programmes need to be carried out among health care professionals at all levels, especially among nurses. The continuing education based programme provide an opportunity for doing this, especially as nurses constitute one of the most authoritative sources of information on health matters for the general populace, especially for women as they become informed, they should be motivated to practice what

they teach and lead by example. The adoption of cervical cancer screening as a pre-employment test may also be considered

To increase uptake of cervical screening doctors and nurses who undertake training have increased rate of transformation zone sampling post training. As a results of cervical cancer screening training women are better prepared for the consequences of results and better prepared follow up (cervical screening training prospectus 2017-2018). This present study will also attempt to develop a training program to strengthen cervical screening.

### **2.13. The cervical cancer prevention and control programme**

Consists of three service delivery components that must be linked together. These components are:

- ✿ Community information and education;
- ✿ Screening services;
- ✿ The diagnostic or treating services planning and managing programme

About 2 tests in every 100 are inadequate and need to be repeated. Inadequate sample means no results can be given as not enough cervical cells were present for examination under the microscope in the unusual event that women has three inadequate in a row, should be referred on for colposcopy (Marharding, 2018).

A pap smear reported as unsatisfactory is a frustrating outcome for both the smear taker and the patient. It can lead to increased anxiety, embarrassment and inconvenience as the smear need to be repeated (Stone, 2012).

### **2.14. Development of the training programme**

The training programme was developed based on the guidelines of programme development by the South African qualification Authority (SAQA) and the adult learning theory, furthermore the program development process by Wheeler curriculum steps, validation through the Delphi technique and or evaluation of the program

## **3. THE THEORETICAL FRAMEWORK**

This study is guided by the precede proceed model framework. This conceptual model minimizes the risk of subjectivity by synthesizing disparate sources of data to ensure that initiatives with the greatest potential of achieving the best health outcomes are implemented

The Model is based on the premise that the determinants of health and health risks are multi-factorial and that multifaceted and multi-sectoral efforts are required to effect behavioural, environmental, and social change.

The Model has evolved from a diagnostic tool developed in the 1980s, into a nine-phase model that integrates environmental health factors and evaluation into the process. PRECEDE is an acronym that stands for predisposing, reinforcing, and enabling constructs in education, diagnosis, and evaluation, while PROCEED is the second part of the conceptual model and involves four phases that are focused on implementation and evaluation. These processes work in unison with the PRECEDE phases facilitating the identification of priorities and the setting of objectives, while the PROCEED phases assist in identifying the criteria for policy implementation and subsequent evaluation.

A major strength of this Model is its capacity to facilitate identification of the desired outcomes at the outset of the planning process, which determines the evaluation metrics. This Model also aids systematic classification of factors by their relative importance and capacity for modification using a ranking system. A ranking system facilitates consideration of the determinants for change at individual, provider, and system levels and allows for the identification, development, and implementation of interventions with the greatest potential of achieving a positive impact. Over the past two decades, the Model has been used internationally by health care planners and researchers to design interventions that acknowledge a wide range of individual and environmental determinants of health.

The framework of the precede-proceed model is usefully for grouping together factors that are likely to be used to bring about the desired program outcomes. The three broad groupings are predisposing factor, enabling factors, and reinforcing factors. Predisposing factor are those that include personal attributes such as persons' knowledge, attitudes, beliefs, values and perceptions that can promote or hinder motivation for change. Enabling factors are those skills, resources and barriers that encourage or hinder the desired change. Enabling factors are mainly societal forces or systems, oftentimes enabling factors are availability of personal and community resources, accessibility, referrals, laws, status, personal skills, services and facilities. Reinforcing factors are the behaviours and attitudes or those around the person such as the rewards and incentives received or the feedback that is received from peers, parents, family, employers and social group for adopting the desired outcome. The precede component of the model is the diagnostic phase that is useful for identifying the predisposing, enabling, reinforcing constructs associated with the phenomenon and the proceed component is the development phase outlining the policy regulatory and organizational constructs. The model asserts that predisposing, reinforcing, and enabling factors influence that behavioral and

environmental change will occur. The precede structure directs attention to what must precede the desired outcome in this case a woman getting screening. To determine what causes the desired outcome must be diagnosed before intervention strategies can be designed. Without an adequate diagnosis of the important factors, the investigator runs the risk of designing ineffective intervention strategies. Phase five involves establishing which health promotion, health education and policy related intervention is best being apt to encourage the desired changes in the behaviours or environment's and in the factors, that support those behaviours and environments is the most prominent tool for designing and administering an experiment in intervention to change high risk behaviours designed by Green and Keuter (2005). The precede-proceed model has been adopted within long term, experimental health promotion programs. It provides a framework that help health makers effectively design health programs based on the assessment and analysis of the situations, the most basic assumptions in this model is the active participation of the audience. Applying precede model show training programs based on precede model might be effective on decreasing the high number of pap smear results with inadequacy smears

The reinforces in this study will be self-encouragement and encouragement by others and individual positive feeling. Health professional after the training they will encourage themselves and being encouraged by others to make sure that they collect quality of smears based on the knowledge and skill that they would have acquired with positive feeling. The enablers will be notification of weekly educational messages about materials discussed in workshops, distribution of CDS and posting materials on the educational board. The reinforces will be trainers' internal incentives and encouragement of both groups to adopt. Process evaluation and review of progress towards pre-set goals will be carried out during the implementation of the training course. The effectiveness will be evaluated based on the completing the precede-proceed questionnaire and the check list one month after the training. Training sessions will be arranged in group's 20 members in separate days (Didehvar, Zareban, Jalili, Bakhshani, Shahrakipoor and Balouchi, 2016).

The precede-proceed model of which health professionals 's behaviour is assessed in three areas, the predisposing factor, such as knowledge, attitudes, beliefs and values. Proceed behaviour change and generate motivation for behaviour, enabling factor such as availability of resources and accessibility of resources or services and regulation are an introduction to behaviour or environmental change that facilitate achievement of motivation for realization of an environmental policy.by the health professional. Re enforcing factor are factors that help keep track of behaviour and provide reward for behaviour. Proceed model based on education is effective in changing the predisposing factors. Precede spell out policy, regulatory and organizational construct in educational and environmental development and true to its name

as well as describe how to proceed with the intervention itself. In this study the health professionals will be reminded about the pap smear policy which dictate that 70% of adequacy rate for cytology results should be reached. The model was developed by Green and kreuter (2005) in 8 stages and can inform any health program.

Precede has four phases

#### Phase 1

Identifying the ultimate desired results and social assessment

The precede portion of the model begins with the diagnostic activities that identify desirable outcome or goals of the intervention or ask what can be achieved. The activities will determine the primary or the distal outcomes for a training program

#### Phase 2

Epidemiological, Behavioral, and Environmental assessment

Identifying and setting priorities among health or community issues and that behavioural and environmental determinants that stand on the way of achieving the results and environmental determinants or conditions that should be attained to achieve the results and identify the behaviour, life styles and or environmental factors that affect those issues or conditions.

Health care professionals will be asked about what problems or issues affect the adequacy rate for cytology results. What needs to change achieve the optimal adequacy rate for pap smear. These phases determine epidemiological, behavioural, and environmental factors that may well have an impact of women receiving pap smear in early detection for cervical cancer. This phase contributed to the identification of the factors that a training program needs to impact on health professionals

#### Phase 3

Educational and Ecological assessment

This phase determined factors that if modified, would be most likely to result in behaviour change and sustain this process. This process is generally classified as the predisposing, enabling, and re enforcing factors that can affect the behaviours, attitude and environmental factors given priority in phase 2. The model will assist in determine predisposing knowledge, attitudes, beliefs, enabling skills, resources access policy and reinforcing social influence, incentives, positive experiences factors necessary to initiate and maintain change for health care professionals in increasing the adequacy rate for pap smear.

## Phase 4

Intervention alignment and administrative and policy assessment

4a This phase matched appropriate the intervention with the projected changes and outcome identified in phase 1-3 using assessment results from phase 1-3

4b Administrative and policy assessment

In this phase resources, organizational barriers and facilitators and policies that were needed for the intervention implementation and sustainability will be identified. The organizational and environmental system that could affect the desired outcome will be considered (enabling factor). The administrative diagnosis assessed, resources, policies, budgetary needs, and organizational situations that could hinder or facilitate the development and implementation of a training program to strengthen cervical cancer screening

Identifying the administrative and policy factors that influence what can be implemented. Change process should focus initially on the outcome not on the activity. Administration and policy diagnosis establish availability of necessary resources and organizational policies and regulations that could affect program implementation.

Proceed has four phases

Implement and evaluate

## Phase 5

Pre-test study

The results and lessons learned in the pre-test are important revising both the training pro-am developed and its evaluation and for efficacy study

## Phase 6

Implementation

This phase presents a description of the implementation of the training program. Key roles in the implementation phase are highlighted. Implementation of the design and conducting the intervention. The training program will be implemented; Heath professionals will be trained on how to collect quality smears (Binkley and Johnson, 2013).

## Phase 7-8

The study of both the implementation process and outcome achievements is important. The implementation process assessment should address the amount of intervention exposure

development of a training program, extent to which to which an intervention is implemented as designed and participants' appraisal of intervention quality or usefulness. The outcome evaluation should be composed of an assessment of a training program direct effect on outcome, mediation of outcome designated as mechanism of change and moderation of contextual factors

Are you doing the things you planned to do. Assess extent to which intervention is carried out as planned. The researcher will evaluate the training if there is any improvement on quality smear collection (Binkley and Johnson, 2013).

#### Impact evaluation

Is the intervention having the desired impact on the target population of health care professional, operational managers and senior health care professionals. Assess changes in predisposing enabling and reinforcing factors that predict likelihood of desired behaviour and environmental changes, Health professional will be able to collect quality smears with endo cervical component this will assist in early detection of cervical cancer thus reducing morbidity and mortality caused by cervical cancer.

#### Outcome evaluation

Assess desired changes to health and quality of life indicators, where increased number of quality smears collected by the health professionals and 70% of adequacy rate will be reached.

Is the intervention leading to the outcome desired results that was envisioned in phase 1 (Green and Kreuter, 2005; Didehvar, Zareban, Jalili, Bakhshani, Shahrakipoor and Balouchi, 2016). In this study health professional from health promotion and cancer control program department will be interviewed viewed in their role as the key administrative and policy information, predisposing factor include modifiable factors that motivate health professionals to engage in cancer screening, practices such as cancer screening knowledge attitude and beliefs where they will have knowledge on correct technique for collection of pap smear. Enabling factors include modifiable factors that will make it possible for health professionals to engage in cancer screening such as skill of pap smear collection, having resources for screening and adhering to careening policies. Reinforcing factors includes modifiable factors such as social. Influences, incentives, positive experiences that will assist the health professionals to strengthen cervical cancer screening (Green and Kreuter, 2005; Didehvar et al., 2016).

#### **4. CONCLUSION**

Literature has included the policies related to cervical cancer screening. The perception of health care professional, practices of health professional, other factors contributing to inadequacy rate by laboratory technicians, knowledge and skills of health professionals related to cervical cancer screening programme and development of a training programme to strengthen cervical cancer screening.

## CHAPTER 3

### RESEARCH DESIGN AND METHODS

#### 3.1. INTRODUCTION

In this chapter, the methods used to conduct this study are described. Details are provided on the study setting, designs and sampling strategies employed, data collection and data analysis procedures are specified. Ethical consideration are also described.

Methodology is a systematic way to solve a problem. It is a science of studying how research is to be carried out. Essentially, the procedures by which researchers go about their work of describing, explaining and predicting phenomena are called research methodology. It is also defined as the study of methods by which knowledge is gained. Its aim is to give the work plan for research (Rajasekar et al., 2013).

#### 3.2. RESEARCH AIMS AND OBJECTIVES

The overall aim was to develop a training programme to strengthen cervical cancer screening in Limpopo Province.

##### **Phase 1(a): Qualitative**

- To explore the perception of health care professionals about cervical cancer screening programme and describe the challenges of health professional regarding cervical cancer screening in Limpopo Province.

##### **1(b): Quantitative**

- To assess the knowledge, skill and practices of health care professionals (Operational managers and senior health care professionals) on cervical cancer screening.

##### **Phase 2:**

- Development of a training programme to strengthen cervical cancer screening programme in Limpopo province.

##### **Phase 3:**

- Validation of a training programme in Limpopo province.

#### 3.3. RESEARCH METHODS AND DESIGN

Creswell (2016) indicates that mixed method involves both collecting and analysing quantitative and qualitative data, meaning a researcher collects both numeric and text information. A mixed method is a research approach that was used for the study. An exploratory sequential mixed method was used which is the reverse sequence from the explanatory sequential design. The exploratory sequence approach involves generating information gathered using the quantitative instrument from the findings of the qualitative study. The qualitative data was obtained and analysed first, the results informed the design of the questionnaire for the quantitative study. Quantitative data was collected, analysed and conclusions drawn consolidated and interpreted (Creswell, 2014). This then informed the development of a training programme to strengthen cervical cancer screening programme in phase 2 and phase 3 is the validation of the training programme.

### **3.3.1 Phase 1a: Qualitative research**

Phase 1a of this study was approached qualitatively. The decision was based on the objectives of the study that focused on the complex problems of inadequacy of pap' smears. The researcher assumed that the phenomena would be better explored using a qualitative approach which may be able to dig deeper and answer the questions why and how (Babbie, 2007). Creswell and Plano Clark (2011) indicates that in a mixed method research, qualitative interviews are often beneficial in the initial stages of the study to identify and develop questions intended for the vocabulary of participants. The authors further highlight that even when survey instrument is adapted for new population, it still needs a qualitative interview to improve the validity and the reliability of the instrument.

- Explorative design

An explorative design is aimed at exploring the dimensions of the phenomenon, the manner in which it will show and the other factors that are related (Polit and Beck, 2012). The explorative study assisted in exposing relatively unknown research section to gain insight on how to strengthen cervical cancer screening. According to de Vos et al., (2011), the explorative design enable the researcher to collect in-depth information from the health care professionals, who were narrating their perception regarding cervical cancer screening programme. The researcher explored the depth, breadth, richness and complexity inherent in the phenomenon of interest which was to explore and describe their perception and challenges regarding cervical cancer screening program in Limpopo Province. Narrative synthesis is the only study design that can be used in qualitative research (Polit and Beck, 2012).

With the explorative design the researcher gained insight to generate new ideas, concepts and theories regarding problems under examination within the context of this research, being to strengthening of cervical cancer screening program.

- Descriptive Design

Descriptive research aims at exploring and describing a phenomenon in the real environment discovering a new sense and defining frequencies with which events occur (Brink et al., 2012; Burns and Grove , 2013). A descriptive design refers to the overall strategy that integrates the different components of the study in a coherent and logical way, ensuring that the research problem will be addressed in full (de Vos et al., 2011). Concepts related to cervical cancer programme were described and discussed through a descriptive design and their relationship were noted. A descriptive design assisted in explaining perceptions that health professionals had about cervical cancer screening programme (Polit and Beck, 2012; Burns and Grove, 2013). In this study the researcher observed and listened to participants detailing their clear, accurate and precise descriptions of perception and challenges of cervical cancer screening programme in Limpopo Province. Description involved the collection of qualitative data through semi-structured individual interviews with health professionals understanding views and perception regarding cervical cancer screening program.

### **3.3.2 Phase 1b: Quantitative research**

Quantitative research is an inquiry into a problem based on testing a theory composed of variables, findings are measured in numbers and analysed using statistic (de Vos, 2011). It is a systematic collection of numerical information where statistical procedures are being used (Burns and Grove 2013). A cross sectional design study was conducted to assess the knowledge, skill and practices of health professionals on cervical cancer screening in Limpopo province. The quantitative study used, yielded more information about knowledge, skills and challenges by means of direct questioning of sample of health care professionals.

- Descriptive design

Descriptive research aims at exploring, describing phenomenon in real situations, discovering new meaning and determining the frequency with which something occurs (Burns and Grove, 2013). Through descriptive research concepts were described and relationships were identified relating to knowledge, skills and challenges related to cervical cancer program which gave the researcher a picture of what was occurring in the situation and this assisted in the development of a cervical cancer programme in Limpopo province. The design provided the researcher with new insight and highlighted important facts to be included in the developed programme.

### 3.4. RESEARCH SETTING

The study was conducted in Limpopo Province which is one of the nine provinces in South Africa. Limpopo Province is divided into five districts, Capricorn, Waterberg, Mopani, Sekhukhune and Vhembe. The reason for selecting Vhembe and Mopani districts was that they have low adequacy rate regarding cervical cancer cytology results and are in the rural areas of the Province. Limpopo Province has high population density, high level of poverty, unemployment and poor or limited infrastructure for women with cervical cancer. Vhembe district is in the Northern part of the province and shares its borders with Zimbabwe. It covers a geographical area which is predominately rural.



**FIGURE: 2 MAP OF LIMPOPO PROVINCE DISTRICTS**

(Department of Health 2009-2011) Limpopo Vhembe district profile 2011-2012).

Vhembe district is divided into 4 municipalities, that is Thulamela, Makhado, Collins Chavane and Musina, and were selected purposively based on low adequacy rate for cervical cancer cytology results (Local government in South Africa 2009-2011). Mopani

district is in the North-eastern part of Limpopo Province. It is bordered in the east by Mozambique in the North, in the South by Mpumalanga Province. Mopani district is divided into 5 municipalities, that is Ba-Phalaborwa, Greater Tzaneen, Greater Letaba, Greater Giyani and Maruleng were also selected based on low adequacy rate for cervical cancer cytology results (Local government in South Africa 2009-2011).

### **3.5. POPULATION AND SAMPLING**

Target population is the specific pool of cases that the researcher wants to study. Accessible population refers to those cases that conform to the eligibility criteria and are accessible to the researcher (de Vos et al., 2011). In phase 1(a) qualitative research, the population were primary health care personnel rendering health care services (PHCs) in Vhembe district clinics and Mopani district clinics of Limpopo Province. In phase 1(b) the target population were primary health care personnel, operational managers, senior health care at primary health care services of Mopani and Vhembe districts.

#### **3.5.1. Sampling of districts**

Limpopo Province is divided into five districts, Capricorn, Waterberg, Mopani, Sekhukhune and Vhembe. Vhembe and Mopani districts were selected purposively based on low adequacy rate for cervical cancer cytology results.

#### **3.5.2. Sampling of municipalities**

Mopani district is divided into five municipalities which are Ba-Phalaborwa, Greater Giyani, Greater Letaba, Greater Tzaneen and Maruleng. Greater Giyani and Greater Letaba were selected purposely based on the low adequate rate for cervical cancer screening. Vhembe has four municipalities being, Thulamela, Collins Chavane, Makhado and Musina. Collins Chavane and Makhado sub-districts were also selected purposively based on low adequacy rate for cervical screening.

#### **3.5.3. Sampling of clinics**

A non- probability purposive sampling method was used in phase 1(a). This sampling method was chosen because it enabled the researcher to actively select the most productive sample to answer the research questions. Only clinics identified as those with the highest number of inadequacy rate smears for cervical cancer in the selected municipalities. (Brink, Van der Walt and Van Rensburg, 2012).

In phase 1(b) the sampled municipalities comprised of seventy- three (73) clinics. Makhado had 17 clinics, Collins Chavane 28 clinics, Chavane, Greater Letaba 12 clinics and Greater

Giyani 16 clinics. A probability systematic sample was used to achieve the desired sample of clinics. Names of the clinics were listed in the sample frame and every third clinic represented within each municipality, and a total of twenty-two clinics were sampled.

**Table 2: Sampling of clinics**

Names of municipalities	Number of clinics	Clinics sampled
<b>Vhembe</b>		
Makhado	17	5
Collins Chavane	28	8
<b>Mopani</b>		
Greater Giyani	16	5
Greater Letaba	12	4
Total	73	22

**Source: Authors own work**

#### 3.5.4. Sampling of participants

Study employed non-probability convenience sampling in phase 1(a). The participants who volunteered willingly and having worked at the clinic for more than a year participated in the study.

**Table 3: Sampling of participants**

Municipality	Participants sampled	Total Participants
Makhado	Clinic A= 4 Clinic B= 5 Clinic C= 8 Clinic D= 6 Clinic E= 5	28
Collins Chavane	Clinic F= 7 Clinic G= 8 Clinic H= 7 Clinic I= 6 Clinic J= 7 Clinic K=7	57

	Clinic L=7 Clinic M=8	
Greater Giyani	Clinic N= 7 Clinic O= 7 Clinic P= 7 Clinic Q= 7 Clinic R= 7	35
Greater Letaba	Clinic N= 5 Clinic O= 5 Clinic P= 5 Clinic Q= 5 Clinic R= 5	25
<b>TOTAL</b>		145

**Table 4: The sample frame**

<b>Districts</b>	<b>Municipalities</b>	<b>Total no of PHCN's</b>
Vhembe	Makhado	25
	Collins Chavane	57
Mopani	Greater Giyani	35
	Greater Letaba	25
Total		142

#### 3.5.4.1. Sample size

The sample size in qualitative research was determined by the scope of the study, saturation of information and quality of data collected (Burns and Grove, 2013). Data was collected until data saturation occurs (Brink et al., 2014). The number was determined by data saturation. The key issue was to generate enough in-depth data that illuminated the patterns, categories and dimension of the phenomenon under study (de Vos et al., 2011).

#### 3.5.4.2. Inclusion criteria

The criteria for inclusion was:

- Registered professional nurse
- rendering cervical cancer screening services at selected Vhembe district and Mopani health clinics for at least more than 1 year
- Consent to participate in the research (Polit and Beck 2008).

### 3.6. DATA COLLECTION METHOD

According to de Vos et al., (2011) data collection is a procedure is used by researchers when collecting information from the participants with the aim of providing a contextual experience, revealing an experience as a process. Techniques useful in obtaining information related to tasks, values, preferences, attitudes, believes, and experiences are different. In qualitative research the process of data is complex, data is collected simultaneously with data analysis (Burns and Grove, 2013). In phase 1(a), a one to one interview method was used to obtain more information from participants. In-depth unstructured interview is conducted with the interviewer using prepared overall questions called an interview guide was used (de Vos et al., 2011). The interview guide comprised of open ended questions. The interview guide composed of two sections. Section A required participants' demographic information (age, gender, educational status, years of experience). Section B explored the perceptions, challenges and practices of health professionals regarding cervical cancer screening program.

A questionnaire is a data collection instrument composed of specific questions for obtaining facts and opinions about a phenomenon from people informed on the issue applied in different ways (de Vos et al., 2011). In phase 1(b) a questionnaire was used for data collection. A self-administered questionnaire used contained both structured and semi- structured questions. The questionnaire covered the demographic variables, issues related to availability of resources for pap' smear collection, environment, privacy, technique of collection, readiness of health professional and the practices about pap smear screening.

#### 3.6.1. Pre-test

A pre-test was conducted before the main study to assess if the researcher's skill of inquiry and questions are correctly framed are understandable. In phase 1(a) five health care professionals from selected clinics were individually interviewed allowing the procedure for the actual study. The five nurses who participated in the pre-test study were included in the main

study. The results of the pre-test assisted the researcher improve the phrasing and structuring of questions to make it more understandable and improve on the subsequent interviews.

In phase 1 (b) the instrument was pre-tested among health care professionals who were not part of the main study. Ten percent of the study were used for this exercise and this assisted correct the instrument before it is finally used.

### 3.6.2. Validity and reliability

- **Validity**

To ensure validity of the instrument, the researcher ensured that the questionnaire is constructed in simple English language to avoid ambiguity. The researcher also ensured that the questions posed to participants addressed the issue that needed to be covered in this study, this was ensured by extensive literature search. The questions were presented to experts in the Department of Nursing for scrutiny.

- **Reliability of instrument**

Reliability refers to the dependable, consistent, stable, and trustworthiness of the data collecting instrument wherein the instrument would measure the same thing more than once and still yields the same results (Polit and Beck, 2008). The researcher conducted a pilot study to evaluate the clarity of the instructions given to respondents to complete the questionnaires and in the final study all participants responded to similar questions.

## 3.7. DATA COLLECTION PROCESS

After receiving permission from the provincial department of health and Vhembe and Mopani primary health services, the researcher visited the researcher sites and explained to the operational managers and professional nurses more about the study purpose and requested consent from participants. Health care professionals who consented to participate in the study were given consent forms and information leaflets to sign. The researcher made follow-up appointments with participants and respondents and visited the respective primary health care services. Data was conveniently collected from participants in phase 1(a) and questionnaires for phase 1(b) were distributed to respondents and collected at a later stage. Data was collected until data saturation was reached. The interviews were conducted in English or the language the participant felt free to express

themselves to assure comfort during interview. The questionnaire was developed in English and was guided by the themes and sub-themes that emanated from phase 1(a).

### **3.8. DATA ANALYSIS**

#### 3.8.1. Qualitative analysis

Since the study followed a mixed method in qualitative data analysis, data was analysed using thematic content analysis in phase 1(a). This method is widely popular among qualitative researchers because it aims to present the key elements of participants' account (Braun and Clarke; 2006; Green and Thorogood, 2009). The steps involved in this method of analysis included:

- Becoming familiar with the data

The researcher engaged the data by reading through thoroughly to capture the essence or message behind the field notes and listening to the recordings over and over again to ensure that nothing is left out.

- Generating initial codes

Interesting features in the data was coded in systematic fashion across the entire data set and data were collated and organized according to codes generated.

- Generating themes

The codes identified were grouped and from these groups the researcher identified themes and attempt to find relationship between themes and between different levels of themes.

- Defining and naming the themes

At this point the researcher reviewed the themes to see if they all supported by adequate data to stand on their own, those that did not have enough data were merged with or excluded from analysis. Themes were described in a way to capture its true essence.

- **Producing the report**

The researcher organized the themes to present a narrative that is concise and coherent and gives an account that represent the data across themes.

### 3.8.2. Quantitative Analysis

In this study, collected data was analysed using statically package for social science (SPSS) version 24.0. Descriptive statistics was used to analyse the data. Data was presented in the form of bar charts and frequency tables. Inferential statistics were used to draw inferences about compared groups and quantifying relationship between variables in the study.

### 3.9. MEASURES OF TRUSTWORTHINESS

Research findings must be evaluated in relation to the procedure used to generate the findings to ensure trustworthiness or soundness. Lincoln and Guba (2007) proposed the concept of credibility, dependability, transferability, and conformability as appropriate constructs in validating qualitative research. These constructs were applied to this study to ensure trustworthiness.

- **Credibility**

This constructs is the alternative to internal validity. The goal here is to ensure that the participants were accurately identified and described. To ensure credibility the researcher identified participants who met the eligibility requirement and who are willing to participate and provided a comfortable atmosphere to ensure that the participants were comfortable to speak out. The researcher ensured that the best method of data collection is used. The researcher maintained prolonged engagement and persistent observation in the field, triangulation of different methods, peer debriefing, member checks

- **Transferability**

This is the alternative to external validity or generalizability. Although is difficult to make a general statement within the context of a qualitative research. The researcher ensured proper description of the context within which the research was approached and used of triangulation of method to ensure that the findings is generally applicable and acceptable.

#### **Dependability**

This is an alternative to reliability. This is not easily achievable in qualitative research due to the changing social context within which this type of research is conducted (Lincoln and Guba, 2007). The researcher ensured dependability by allowing cross-checking of codes by an independent coder and considered the presumed changes that occurred during the study and the impact it might have on the outcome of the study. The researcher asked whether the research process is logical, well documented and audited from independent coder.

- **Conformability**

This captures the concept of objectivity. Conformability in this study was ensured by proper documentation of the procedures for checking and re-checking of data and explaining and justifying data with literature support.

### **3.10. PHASE 2: DEVELOPMENT OF A TRAINING PROGRAM TO STRENGTHEN CERVICAL CANCER SCREENING**

The development of a training program was guided by theoretical frameworks as well as the results found on the perceptions, challenges and practices of health care professionals regarding cervical cancer screening. The researcher identified the predisposing, enabling, barriers and reinforcing factors that emanated from analysed data to build and to re-enforce the good practices done during the provision of cancer screening services by professional nurses. Barriers in a form of gaps identified from study will be addressed by workshops, seminars and in-service trainings. Enabling factors identified will be strengthened through continuous support, monitoring and participative management. Predisposing factors identified will be counteracted through the provision of support by maternal health managers and operational managers, oncology nurses onsite to improve knowledge and skills of health care professional and displaying positive attitude towards the implementation of effective and efficient cervical cancer screening services. SAQA guidelines and adult learning theory were integrated in the development of the programme.

### **3.11. VALIDATION OF THE PROGRAMME**

The purpose of validation is to determine whether decisions made about learning, objectives, methods, strategies and implementation are correct at each mapping step through programme monitoring and evaluation (Barthomew et al., 2006). Validation is described as the scientific process where collected and analysed data are checked for their accuracy (Chinn and Kramer, 2009). The main purpose of validating results is to provide evidence of the effectiveness of the programme which will be developed. The programme was validated for validity, reliability, clarity, relevance, acceptability, flexibility and comprehensiveness by means of the Delphi technique.

#### **3.11.1. Population**

The experts in nursing education, curriculum developers and oncology health professionals will evaluate the programme for its feasibility and applicability.

### **3.11.2. Sampling**

A non-probability purposive sampling method was used in this study. This method is suitable for this study because all the participants have the expected area of speciality required to inform the training programme.

### **3.11.3. Data collection**

Data collection method was a self-administered structured closed ended questions and open ended questions (de Vos et al., 2014). The instrument used in assessing the programme was able to address the phenomena under study and validate the data obtained from the results.

### **3.11.4. Data Analysis**

Descriptive statistics was used to describe and summarize data collected in this study. Data was analysed using the Statistical Package for Social Sciences (SPSS) version 24 and content analysis will be used to analyse open ended questions.

## **3.12. ETHICAL CONSIDERATION**

It is important for the researcher to consider ethical issues before conducting research. Ethical requirement aims to minimize the possibility of exploitation by ensuring that the research subjects are not merely used, but treated with respect while they contribute to social good (Emmanuelle et al., 2000) The following ethical issues were considered in this research

- Ethical clearance

The research proposal was presented to the school higher degree committee and if successful, it will be sent to the University Higher Degree Committee for quality assurance. The University of Venda ethics committee recommended and approved the study. After the approval of the proposal the researcher requested permission from Provincial Department of health and Vhembe District Department of Health, furthermore permission was obtained from the hospital managers/CEO of all the selected hospitals in Vhembe, Mopani Districts where the study was conducted.

- Informed consent

The participants were acquainted with the purpose for which this study is being conducted and the procedure for data collection will be explained to them. They were informed of their right to withdraw from the study if they are not satisfied with the proceedings. Only participants who gave their written consent were included in the study

- Confidentiality and Anonymity

The participants were assured that the information provided by them and all forms of documentation received from them will be secured from the public domain. The document will be kept by the researcher for a period of 4 years after the end of the study. Furthermore, they were not asked to provide any form of identification, by way of their names and address. Finally, they were assured that the results of the study will not be traceable to them.

### **3.13. CONCLUSION**

The chapter described the research methodology of the study. Mixed methods research combines elements of qualitative and quantitative research approaches, the mixing of methods, methodologies answers the research questions and make a basic study design fuller and richer.

## CHAPTER 4

### PRESENTATION AND DISCUSSION OF QUALITATIVE FINDINGS

#### 4.1. INTRODUCTION

The previous chapter presented the research design and methods used in this study. This chapter covers presentation and interpretation of themes which emerged during qualitative data analysis. The results were presented in a narrative format with participants' quotations. The purpose of this chapter is to present and interpret the qualitative findings from the individual in-depth interviews conducted with the health care professionals.

#### Objectives of qualitative phase

- To explore the perception of health care professionals about cervical cancer screening programme in Limpopo Province
- To describe challenges of health care professionals about cervical cancer screening in Limpopo province.

#### 4.2. PRESENTATION AND DISCUSSION OF THEMATIC FINDINGS

Data was analysed using Tesch method of data analysis and the following themes and sub-themes emerged. The researcher, supervisor and independent coder reached consensus of the themes and sub-themes presented below.

##### 4.2.1. Demographic information

The demographic information of participants consisted of age, gender and years of service or experience. Eighteen health care professional participated and sixteen were females and only two were males. This is a result of gender inequity as nursing profession has been stereotyped to be a female profession. Their ages were between 35- 60yrs which indicate their state of maturity in the profession. Ten professional nurses were having a degree in nursing and only eight had diploma in nursing and their years of experienced differed with eight nurses having more than 15yrs, three between 10-15yrs and two between 5-10yrs and five between 1-5 years. The years of experience can be a determining factor in the practice and implementation of the cervical cancer screening programme.

### 4.3. DISCUSSION OF RESEARCH RESULTS

Five themes emerged from the data collected during semi- structured individual interviews. It included field notes about perception of health care professionals about cervical cancer screening programme and challenges experienced by health care professionals about cervical cancer screening. An over view of themes and sub-themes were presented in Table 4.1

Table 4.1. An overview of main themes and sub-themes reflecting the perception of health care professionals and challenges experienced by health care professional about cervical cancer screening programme in Limpopo Province.

Table 4.1 Overview of themes and sub-themes

MAJOR THEME	THEME	SUB-THEME
Perceptions of health care professional on cervical cancer screening programme.	1.Perceived benefits of cervical cancer programme	1.1. Early diagnosis and early treatment
		1.2. Prevention of cancer progression
		1.3. Reduction in mortality due to cervical cancer
		1.4. Diagnosis and prevention of STI
Challenges of health care professional on cervical cancer screening programme	2. Poor uptake of cervical programme	2.1. Lack of interest/attitudes of health professionals
		2.2. Insufficient training for cervical cancer screening by district
		2.3. Lack/Shortage of resources to implement
		2.4. Structural barriers (infrastructure)
Policy implementation and revision	3. Concerns regarding the Implementation of National	3.1. Revision of the current policy

	cervical cancer screening policy	3.2. Follow up system
Practice competence regarding cervical cancer screening programme	4. Incompetency in cervical cancer practice and performance of pap smear	4.1. Results of inadequate cervical component
		4.2. Poor filling/ completion of cytology form
		4.3. Lack of skill in identifying the transformation zone
		4.4. Failure to meet set target for National 70% adequacy rate
		4.5. Improper technique of drying the slide
Suggested measures to development of a training program for health professionals	5. Educational support to strengthen cervical cancer programme	5.1. Nature of the training programme
		5.2. Contextualization of the training programme
		5.3. Need for competency based training programme
		5.4. Programme content/ topics
		5.5. Workshop/in-service should be hands on for guided process
		5.6. Intensify training programme for diagnosis purpose

		5.7. Peer training required to increase competency of staff members
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## PERCEPTIONS OF HEALTH CARE PROFESSIONAL ON CERVICAL CANCER SCREENING PROGRAMME

### 4.3.1. THEME1: PERCEIVED BENEFITS OF CERVICAL CANCER PROGRAMME

Participants of the study reported the benefits of cervical cancer screening programme. They reported that it reduces morbidity and mortalities in women and that if detected early it can be controlled and treated effectively.

#### Sub-theme 1.1. Early diagnosis and treatment

Early diagnosis is important and as part of primary prevention health promotion and education is vital for women to seek screening early and be treated. Cervical cancer screening is regarded as a secondary prevention for cervical cancer in women only if women are encouraged to present themselves at the clinics for pap' smear at an early stage.

Participants from this study alluded that cervical cancer screening was important because it detect cancer early. This is how they perceived the benefits of the programme:

Participant 6, Female, 36yrs said: *"Ok I perceive cervical cancer screening program as a way of ruling out the cervical cancer of women who are at child bearing age and those ones who are not at child bearing age that's how I perceive it, that the programme is good because it helps in detecting cancer early if found so that it can be able to help women to find this cancer at an early stage. So, that they can be able to get treatment early"*.

Participant 6, Female, 32 years further added *:is very important to all women because when we get to be screened we are able to know our status when it comes to cervical cancer if I get screened today and I find that I am cervical cancer negative it means that I can be able to tell others so that they can be able to get screened for cervical cancer if you go and be screened for cervical cancer and find that you have cancer , the doctor can diagnose it early so that they can send you to the specialist who will be able to assist you with the treatment the chemotherapy"*

Participant 9, Female, 36 years supported that: *"Mm.. I take it as a positive program, it help us to detect cancer early"* further added *..... " you see with cervical cancer it is not easy*

*to diagnose because it does not have signs and symptoms is only if we test them earlier before we cannot say there this and that as a sign and symptoms if we test them we can detect if this women is having cancer and then we can send the person to be treated"*

Participant 8, Female, 40 years *it is helpful because it assists in early detection and the women will be treated early for cancer of the cervix"*

Participant 7 Female 28 years said: *"Mm cervical cancer screening program I think is good enough and effective cause we enhance our health care facility and we have early detection of cervical cancer"*

### **Sub-theme 1.2 Prevention of cancer progression**

The issue of early diagnosis minimizing the spread of cancer was highlighted by other participants

Participant 9, Female, 36 years said: *"To save these women, Jaa.....! before is too late because if you test them you find that some are already having cervical cancer which spread and we can't treat it"*

Participant 6, Female, 32 years further added that: *" the impact is that if you don't get diagnose early it means that the cancer if you happen to have cancer, the cancer cells will spread and then you will not get cured you will have to wait for terminal stage and you die no one will be able to help you."*

Participant 7, Female, 28 years: further added: *"Because the cancer would have spread throughout the body, sometimes ya dzhena hothe ya tshimbila (Literally meaning metastasis).*

Participant 10, Female, 55 years further added: *" by doing early detection if we are like doing the smear and it comes saying the women should repeat the smear within one year instead of telling the women to wait for that one year we will tell the women to come back within six month not a year because for those who are on ARVS who are positive is fast to multiply, is in those who are healthy but we do not have to divide them to say these are healthy because if she is not tested by then she will be tested after three month and she will wait to be tested after six month we do not have to is rather give that women 6 month not to wait one year"*

### **Sub-theme 1.3 Reduction of mortality due to cervical cancer**

Cancer in general is regarded as a death threat, however if we change the perceptions of women, more lives can be saved and women live healthy reproductive lives.

One participant 10, female 55 years said: *“The reason behind is because if we do early we are minimizing the spread of cancer and inside the women and we are minimizing maternal mortality if we do not do early detection a women can come at the fourth stage of cancer where they won’t be any help for that lady and also we are trying to minimize the up and down of transferring the patient to higher level tertiary level where as if you did the early detection the women there won’t be the que go to the higher level or tertiary level we are cutting the load, yes”*.

Participant 2, Female, 29 years: indicated that: *“Cervical cancer screening” I think is important cause we screen all our women we check them early so that if there is a problem we referee them at an early stage so that on the other side it prevents death”*. Participant 9, Female, 36 years added: *“ It is very important for early detection of cancer because we will prevent the death of women and removal of womb ”*

#### **Sub-theme 1.4 Diagnosis and prevention and of STI**

Some participant stated that some women do not report STIS therefore cervical cancer screening will diagnose unreported cases of STIS as indicated in the responses

Participant 10, Female, 55 years said: *“The other thing is that it can diagnose sexual transmitted disease that are not reported.”* Further added: *“To me I think It is important because women really are dying mostly because of..... I think HIV, they come at a later stage I think it is important and the government should say let’s go to those younger ones, less than 30 years and above this they small they have got polyps, STI which they do not know they will end up having infertility and those women who are sexual active those who are twenty to thirty they need to be taken pap smear and be put on the statistic, because people that we are leaving behind they are those who are in the late twenties they are the ones who are sick”*

Participant 6, Female, 32 years: added: *Ok to those who are younger than 30 years we do it to diagnose sexual transmitted infections such as gonorrhoea, trichomonas vaginitis.* Cervical cancer screening is important in early diagnosis, treatment and reducing mortality rates, this is confirmed by the study conducted by Makunyane (2017) on the implementation of cervical cancer screening policy which indicates that cervical cancer screening prevent morbidity and mortality. Cervical cancer screening is regarded as important to all women, the National organized cervical cancer prevention programme is important to decrease the incidences and mortality related to cervical cancer (Makunyane, 2017). All participants in various interviews indicated that they consider cervical cancer screening as important for various reasons for the

benefit of clients for example cancer screening, cancer early detection, cancer diagnosis, STI's, diagnosis as Cancer is dangerous to women (Makunyane, 2017).

## CHALLENGES OF HEALTH CARE PROFESSIONAL ON CERVICAL CANCER SCREENING PROGRAMME

### 4.3.2. THEME 2: POOR UPTAKE OF CERVICAL CANCER SCREENING

Cervical cancer screening is not implemented effectively because health care professionals are not selling the product well to women in the communities they serve, resulting in poor uptake of the programme. This can be done through introducing more educational programs and encouraging them to participate in screening campaigns.

SUB-THEME 2		
Challenges of health care professional on cervical cancer screening programme	2. Poor uptake of cervical programme	2.1. Lack of interest/attitudes of health professionals
		2.2. Role of gender as a barrier to screening
		2.3. Insufficient training for cervical cancer screening by district
		2.4. Lack/Shortage of resources to implement
		2.5. Structural barriers (infrastructure)

Participants in the study acknowledged that they were not doing their part effectively in implementing cervical screening. These are their narratives:

#### Subtheme 2.1 Lack of interest/ attitude of health care professionals

Not many health care professionals are interested in management of cervical preventive measures. Lack of interest by health care professional is regarded as a challenge in terms of

cervical cancer screening in most facilities women are sometimes frustrated due to health care professional who are not interested in cervical cancer screening women are taken from pillar to post by health care who are not interested they are always turned back by health care professionals who are not interested.

The following were the responses from the participants

Participant 6, female, 32 years indicated that: *"I think it goes back to what I have said to say some nurses are not interested. Some clients themselves they refuse to be screened by younger nurses. They prefer the older nurses and the older nurses are not interested, but otherwise we don't have "*

Participant 9, female, 36 years said: *"Other nurses are not interested clients are turned back because you may find that in the whole of this clinic only two or three people, others they say they do not have time."* Further added: *"Sometimes you find that you have lot of patients and you find that few are for pap' smear, and the way you have to go and perform pap smear is in that side maternity I have to leave the consulting room and go to maternity ward so it takes time so I prefer to do the patients and say pap' smear I will see later "*

Participant 5, female, 35 years said: *" There are those who are not interested at all, yes who will move the client to patient from point A to B to say please come tomorrow, today I do not have time I am all alone please come tomorrow I do not have time, maybe it is because of shortage of staff I do not know but to me it is not time consuming".*

Participant 8, female, 40 years said: *"I think it goes back to what I have said to say some nurses are not interested. Some clients themselves they refuse to be screened by younger nurses. They prefer the older nurses and the older nurses are not interested, but otherwise we don't have that is the reason we cannot reach 70%mmm.... "*

Participant 13, Female, 52 years: *"The clients do not have any challenge ee sometimes the women might come from home say kuri I want to be done this , nurses will say come tomorrow there is no what, there is no equipments mean while they are there, they turn the client back ee or else they say come next week you find kuri she know that she won't be in she will be on leave that's what is happening"*

Participant 5, female, 35 years indicated a positive reason why she was interested in pap' smear collection is that:

*"I was not formally trained; I just saw a professional nurse doing the screening in the facility and I was interested. The reason why I got interested in cervical screening is that my mother*

*was or a candidate for cancer, and because it was detected or identified by a certain professional nurse who got interested in screening or who saw the importance of screening. So what about me not doing the same thing to these people jaa... that's how I got interested in this Jaa.*

Participant 14 Female 48 years further added: *"In this clinic I can say is motivation, we are not motivated enough motivation it's when we think we are pushed because we are pushed, people we just do it because we are told to do it. So, motivation means sitting back in a friendly manner talking with staff saying guys lets us do it and even as a manager can motivate the staff by saying that I am doing it."*

Nurses play a major role in enlightening the public on the availability and need for cervical cancer screening services. Their attitude is often crucial in gaining women's confidence as they are the person who conduct the test. They should themselves view the programme positively and beneficial to themselves also. They should be role models and champions of the cervical cancer screening programme

## **2.2. Role of gender as a barrier to screening**

Sexual and reproductive health (SRH) initiatives have focused almost exclusively on women, often offering services in places where only women frequent. Male involvement may also have negative impacts, such as stigmatization, isolation, or outright prohibition of access to care (Adewumi, Oketch, Choi and Huchko, 2019).

Health services should come up with strategies that incorporate gender issues and involve male partners in Sexual Reproductive Health (SRH) conversations that affect their partners and themselves to increase their response to acceptance of SRH and uptake of the various reproductive health screening such as cervical cancer screening because it can also be transmitted sexually.

Participants has this to say:

Participant 9, Female, 36 years said: *Every morning we give health education why you need to do pap' smear, then some of them will be interested some will ask you questions saying that it is painful, some will say no not today, I will come back no to be seen my vagina by men no ways no, sometimes in our group we only have to males no women".*

Participant 9, Female, 36 years said: *" like males they will say a woman I want to open the vagina, it's silly so if is an older person will say no because this woman is older than me how can I check in the vagina so is somehow."*

Participant 13 female 52 years said : “ *As I have indicate above when I start I have indicated something like that kuri sometimes it can be the male nurses who can fear to touch the female clients that is one of the barriers, the male nurses they do not have interest like the females with the male nurses is worse sometimes you find kuri we got the report of clients are abusing those male nurses are masturbating them while they are busy doing the procedure that is why the male nurses does not have interest when doing pap’ smear and even the clinic manager when your colleague has had such a challenge we sometimes feel the pity for him we will say they must not do this mara according to the guideline he had to do it those are some of those barriers, as I have said the age of the women of that patient sometimes the older women vhona they will say ooh I can’t want to be seen by the younger daughter eeh like that.*”

Evidence for the effectiveness of male involvement in cervical cancer screening in east Africa comes from a Ugandan study where male partners were shown a letter after their partners screened for HPV. Results showed that when male partners received the letter, women’s likelihood of returning for treatment after a colposcopy increased (Ademuwi et al., 2019). Limited knowledge among male partners about cervical cancer may serve as a barrier to women accessing treatment, however when male health care practitioners are involved in SRH and educate all male concerning issues of SRH, women will access these services.

### **Sub-theme 2.3. Insufficient training for cervical cancer screening by health care professionals by districts**

Lack of standardised training and provision of on-site support is a challenge resulting in the low number of health care professionals providing cervical cancer screening services. The impact of shortage of skills then results in high number of adequacy rate for pap ‘smear results provided by the health care professionals. Participants reported their inadequacy as follows:

Participant 9 female 36 years said: “ *Yes if you look at me I was like I never attended anything or how to collect a smear just graduated from school and come to work at the clinic, and I know that we need to do the pap ‘smears and I ask my colleague how do we do it and they show me and they never told me exactly why are we collecting and from where, how.*” *Even at the in-service training I was doing it at the hospital, where you do not get the chance to do the pap smear, so I learned skill here at the clinic after the in-service.*” Participant 9 Female 36 years further added:

*“Because some of us nurses we do not know where we find cervix we only know to open the cervix and take something there and we said we have done it, we do not have knowledge” added “ It means the endocervical component was not taken inside on the wall of the cervix on the mouth of the cervix that’s when it will be saying absent it is not done correctly”* “Lack of

*training we don't even have Mentors or who will come and tell us that this is right or wrong, lack of training is also a challenge."*

Participant 7, Female, 28 years said: *"I think we have high number of inadequacy rate because we did not receive formal training mm I just came here to the clinic and we have just taught one another how to do it and on top of that there was no any formal thing that we consider on top of that when we show one another this is how we do it remember we have got lot of clients we have to hurry."* The same participant further added: *"No, I was not trained but my colleague showed me on how to collect pap 'smear but that was 3 years back since then no in-service training.....I suggest that every professional nurse be trained before starting to collect pap' smear."*

Participant 10 Female 55 years said: *"I was working in male medical then in the hospital nobody is going to train you on how to collect it but only the doctors they showed us how to do it but also they were doing it antilock wise of the smear of which it is not allowed but the rest I have learned in the reproductive side yes"*

Participant 10, Female, 55 years further indicated that: *" It was all of us, there was people from the laboratory who came and show us what they are expecting."*

Participant 6 Female 32 years said: *" Yes the specimen was not collected from the endo-cervix when we use the spatula or the brush to collect the specimen, it means that we did not do it correct.....mmm....h! is that we need training most of us we need to be trained on how to collect the specimen inside the cervix at the correct area and the correct specimen because the high rate means that people are not able to carry out the skill."*

Participant 5, Female ,35 years said: *"It goes back to training this thing was not part of training during our training we were shown by our colleagues on how to do the skill."*

WHO (2015) indicates that to promote up-to-date health care professionals' competencies, health services managers play a critical role in ensuring that competency consolidation occurs in their services and is aligned with the principles of lifelong learning and health care professionals should engage in the continuous process of reflection on whether their practice has been successful through assessments and feedback mechanisms.

#### **Sub-theme 2.4. Lack / shortage of resources to implement cervical cancer screening**

The lack of resources poses a serious challenge to health care professionals to render the cervical cancer screening services and sometimes find themselves in dilemma when providing cervical cancer screening services. The lack of equipment's for conducting cervical cancer

screening were also a concern and raised as a reason for the lack of commitment for cervical cancer screening. Participant had this to say:

Participant 6 Female 32 years said: *“Eeh.... not long ago our machine was not working now its fixed I think we can be able to carry the pap smear because if the machine is not working we have to wait for the disposable Cusco to be delivered but if the Cusco are not delivered we cannot carry out how will we do without cuscus.”* Participant 6 further added: *“The procedure itself it does not give us a problem, but we only have a challenge when it comes to resources that we have to use when conducting the procedure..... because at sometimes we find that we have less resources, such as the covers the one that we put specimen on top of it, sometimes we find that we lack them at the facility and we have to wait for the depot to provide us “*

Participant 10, Female, 55 years indicated that *” Because the consumables is scarce to get it, you can get it maybe after three month, the only thing is to take your car you go clinic by clinic saying can you borrow me five because you see that the month is ending you need to do the statistic”* she added: *“The pharmacists are trying their level best the thing is there up at the depot because you can’t get all maybe you can order hundred and you find maybe you find that you have been given fifty and the pharmacy will come and say borrow us two the other clinic does not have and then you can’t say no.”* further added: *“shortage of resources and equipment’s for example we don’t have a sterilizer as we have to travel 20 km for use to sterilize our equipments.”*

Participant 9, Female, 36 years said: *“Lack of resources affect the implementation of cervical cancer because of the resources when the slides come back you will find that we do not have the covers comes back you find that the slide are not there,”*

Participant 13 Female 52 years said: *“Sometimes we find kuri we order material and shortage of equipment’s it can lead to ,we order and you find kuri it does not come back, we do not have autoclaving machine we have to rely on other facilities for example in our area we go to Giyani health centre and you find that they do not have that distilled water we use for that machine we rely on rain water sometimes when is rain the clinic has to accumulate water and must go with the water there is then that you can be assisted”*

Participant 14 Female 48 years said: *“That is the main challenge we do not have it at all, we were using the autoclaving an old one is in it our gate way I do not know if it is under the hospital if we want something they do give things that they were using so is not working what I have identified about that autoclave whenever they plug it it does not absorb the moisture and then I discovered that the vaginal speculums the still ones they rusted because of moisture*

*at least we are having the disposable ones so the disposable ones it is but they are assisting buy those who need is not easy but if we take to the hospital is not easy even for them or us to do the autoclaving is a main challenge”*

The study conducted in Cape Town revealed that South Africa faces many challenges in the implementation of an effective cytology based screening programme some of the challenges include human resource shortage resource constraints, poor functioning health system, competing health priorities, lack of access to health services particularly women with low socio economic status living in rural or urban areas (Dawood, 2014).

### **Sub-theme 2.5 Structural barriers (infrastructure)**

The health care professionals reported lack of proper facilities in the clinics as a serious challenge that leads to poor quality care that increases maternal mortality in the health care facilities of Limpopo Province. Unwillingness to Provide cervical cancer screening this was aggravated by poor infrastructure and lack of privacy.

The following responses were reflected by participants:

Participant 4 Female 30 years: *“The infrastructure for example in the chronic where I am working is where we are seeing our HIV clients and find that I must do Pap smears and there is a coach but there is no curtain for privacy, no, there is no screen so privacy there is compromised and exposing the woman there you find that someone is knocking and without saying come in the person already came in”*

Participant 7 Female 26 years indicated that: *“Though we have the issue of privacy because we do not have partition in labour ward,” and high quality services for women in need to the full extent of the law, this should be achieved if managers include health system cost for infrastructure, supplies, equipments and capital cost”*

Participant 5 Female 35 years said: *“Yes there is lack of confidentiality and privacy”*

Participant 9 Female 36 years said: *“Sometimes you find that you have lot of patients and you find that few are for pap’ smear, and the way you have to go and perform pap ’smear is in that side maternity I have, leave the consulting room and go to maternity ward so It take time so I prefer to do the patients and say pap ’smear I will see it later”*

It has been noted that a concomitant lack of infrastructure, physical space and trained personnel to respond to these demands sometimes results in fragmented barriers to quality cervical cancer screening services. Improving access to cervical cancer prevention services is also crucial among this underserved population such as rural Limpopo where women are

also poor and cannot access health care, so the primary health care services should be their gateway to better health. Improving the education of health care professionals may change their attitudes and be proactive towards the program and should capitalise on its gender role in strengthening the services.

## POLICY IMPLEMENTATION AND REVISION

### 4.3.3. THEME 3: CONCERNS REGARDING THE IMPLEMENTATION OF THE NATIONAL CERVICAL CANCER SCREENING POLICY

SUB-THEME 3		
Policy implementation and revision	3. Concerns regarding the Implementation of National cervical cancer screening policy	3.1. Revision of the current policy
		3.2. Follow up system

#### Sub-theme 3.1. Revision of the current policy

Health care professionals are expected to adhere to guidelines to provide quality cervical cancer screening services. Implementation of cervical cancer screening guidelines is an aid to proper management of women seeking cervical cancer screening care at different levels of care. To effect positive changes, it is important to motivate health care professional to use this guideline.

Participants were asked to share their views about the implementation of National cervical cancer screening policy guideline and responded as follows:

Participant 5 Female 35 years said " *No because we had a challenge with screening of a pregnant women, For example while we were busy talking about this maternal program that I attended we raised this issue to say I once had a challenge I did pap smear to a pregnant women and that pregnant women lost a child it was said that because I did pap 'smear, the cervical screening guideline is not clear when to do it is only the maternal guideline that say you must do but the National cervical screening guideline does not include the pregnant women. So, we end up not knowing whether we should do or not do these pregnant women. The National cervical screening guideline does not stipulate it does not. Maternity guideline it is referred to the cervical what the policy does not indicate it is quiet, its silent yes"*

*Participant 14 Female 48 years added: "We did treat them after treatment they will come and report saying I am not better we treat them again sometimes we refer to the hospital but they will end up coming back I am not better so you know you have to follow a guideline and here is a young woman who need it and you can see that she need that pap smear but it is not easy because she is not covered by the guideline"*

*Participant 13, Female, 52 years said: "I don't think it is easy to conduct more especially nowadays reason is we are the newly the young stars by now you find kuri the pap smear according to the guideline when the person for normal cervical cancer screening the routine one it need the women who is 30 years and above except the diagnostic one if that lady is ill is then that we can do for her even if she is below 30 years."*

*Participant 8, Female, 40 years said: "I recommend that the screening policy should also cover teenagers because they are sexual active and it must not start from the age of 30years and above at least 20 years and above"*

*Participant 6, female, 32 years said: "Women who are below 30yrs they also have to be screened because you also have to rule cancer to them"*

*Participant 7 Female 28 years said : "It should indicate that we should screen every women 30years and above , if there is no problem we should be repeated the pap smear after 10 years and we should screen those with chronic condition, HIV and AIDS so if we screen the patient like now, we should repeat the pap smear after 3 years and if there is a problem we should repeated the pap smear every year and the women should be screened three times for the whole life" participant Female further added "No we have just browse it when doing in-service training".*

*Participant 10, Female, 55 years said: "Yes we implement them and we also give some of the clients we are who are educated they ask to read sometimes I photocopy those pages I think it is important then I give them, yes."*

The findings generally indicated that understanding the policy was not a problem to health care professionals but difficult to practice/implement due to the contents of the policy that is questionable on some aspects, such as age restrictions and gestation which requires some revision. Study that was conducted in Kwa-Zulu Natal province revealed that all the high grade squamous intra epithelial lesion occurred in women younger than 30 years which is much lower than the usual age distribution for high grade lesion around 35-40 years (Sibiya and Grainger, 2010).

### Sub-theme 3.2. Follow up system

The potential reduction in morbidity and mortality through cancer screening cannot be realized without receipt of appropriate follow-up care for abnormalities identified via screening.

All participants indicated that encouragement of women for follow up of cervical cancer screening is important and responded as follows:

Participant 10 Female 55 years said: *“It talks about early detection and signs and symptoms and the important what age should a women do pap smear it is important that a women should do at least is it five years or ten years she has to do three smears done to her life ....those who are HIV positive they have to do if we find that they are saying we have to repeat them after one year we do not wait we transfer them to hospital those who have typical squamous we do not have to keep them in the clinic have to transfer them to hospital immediately”* Further added: *“On that one we will say (laugh) included or excluded but that patient has to be repeated in one year or six month some doctor that I was working with two years back and the reproductive consultant told us that those clients with HIV we are no longer going to wait for one year or six month because it can say a squamous when the cancer is already in situ”*.

The objective of the National cervical cancer screening policy to decrease number of new cases of cervical cancer by identifying and treating early stages of the disease if well implemented the policy has the potential to reduce cervical cancer incidence cases by 70% over a ten-year period if a high coverage is attained (Dawood, 2014).

Policy guideline provides recommendations for screen-and-treat strategies to prevent cervical cancer. In addition to the recommendations, this document proposes a decision-making flowchart for choosing the best screen-and-treat strategy for a setting at a programme level (WHO, 2013).

## PRACTICE COMPETENCE REGARDING CERVICAL CANCER SCREENING PROGRAMME

### 4.3.4. THEME 4. INCOMPETENCY IN CERVICAL CANCER PRACTICE AND PERFORMANCE OF PAP SMEAR

SUB-THEME 4		
		4.1. Results of inadequate cervical component

Practice competence regarding cervical cancer screening programme	4. Incompetency in cervical cancer practice and performance of pap smear	4.2. Poor filling/ completion of cytology form
		4.3. Lack of skill in identifying the transformation zone
		4.4. Failure to meet set target for National 70% adequacy rate
		4.5. Improper technique of drying the slide

#### **Sub-theme 4.1. Results of inadequate component**

Lack of practice and professional incompetence, as characterized by inadequate knowledge and skill in providing good and quality cervical cancer screening services, was identified as a diverse challenge. Health care professionals also claimed to be insufficiently trained to collect adequate quality smears for pap 'smear. Respondents express the need to have adequate knowledge about the provision of cervical cancer screening services

Health care professionals also claim to be insufficiently trained to collect adequate quality smears for pap 'smear. Participants express the need to have adequate knowledge about the provision of cervical cancer screening services.

The following are quotations from the health care professionals in the interviews.

Participant 10 Female 55 years *"I think is bad since we are not going to identify the problems to the patient earlier. Remember the inadequacy means ee.. the pap smear or cervical screening was not done correctly."*

Participant 10 Female 55 years further indicated that: *" the cervical cancer screening results comes back being inadequate proves the incompetency of health care professional in performing cervical cancer screening"* further added *"they are still using their own method, they are still using the KY jelly which is not allowed , ee.....h! you can't use the lubricant when you are collecting the endocervical component because is like also the jelly there when it goes to lab they will see the jelly they won't see the component then meaning that that specimen has to come back then what we do we try to those consulting rooms they have to*

*call me or whoever if they can't see the endo- cervical component they rather use water than using the lubricant"*

Participant 10 Female 55 years further added " *I have discovered there are other people who are still using the rubbing method... the circling method which was cancelled long time ago that is why we will be having that inadequacy and the other thing, this thing of putting the slide under the sun I do not go for that because it is going to stay there for three to four days what do you expect it is going to come back being inadequate because the sun is too much to this slide than to put it on the cooler a place where it is going to be dry not being interfered"*

Participant 10 Female 55 years further indicated that: *"The adequacy rate we can improve by starting using those disposal ee vaginal speculum and also stress the thing of stopping the use of lubricant because the lubricant is the one I am suspecting that it is the one that is causing the inadequacy of the endocervical component because you can't mix the endocervical component with the lubricant rather use water is the best because it is not going to disturb anything there even on the microscope they won't see that you have put water on the vaginal speculum yes, the skill is easy but results are inadequate"*.

Participants verbalized that there is a need for the management to identify the competency and the skills as well as the willingness of the health care professionals and send them for training, and not wait in line or queue, or for seniority. This will then yield positive results for the health institutions and benefit the patients.

#### **Sub-theme 4.2. Poor filling of forms on specimen collection site**

Poor filling of the cytology forms for clients is regarded as a contributory factor to inadequacy rate for pap 'smear results which delays early diagnosis as failure to locate area impacts on screening. The findings of this study were confirmed by participant as indicated by the following responses

Participant 15 Female 39 years said: " *under filling in of the form we have the cytology form which is the N2 form and on the cytology form there is an area which a clinician should complete indicate the site of the collection so that area direct the laboratory technicians to know where the specimen was collected for example if the specimen was collected from the cervix endo cervix expect to see endocervical cells, so when we screen and look under the microscope when we see those cells we will say the specimen is adequate and representative of the site that the clinician says they have collected from.* " Participant Female 39 years

further added:

*“if the clinician uses the incorrect forms which does not indicate the site of origin we normally have smear challenges and assume that it is a cervical smear even if the clinician would have not seen the cervix so if you use the incorrect form it can contribute to inadequacy rate that we report on so if the form is filled incompletely or there is no enough information ee for example say the clinician does no tick the origin of the specimen the laboratory will assume that it is a cervical smear because ee 90% of the specimen that we receive for pap’ smears are cervical smears so they will make a comment to say the specimen was satisfactory for evaluation with no endocervical component on the results based on the origin of the specimen so if nothing is ticked so those specimen they fall under cervical smears and if they were not endocervical smears and they were vaginal smears it means they will false contribute to inadequacy smear we will declare them as inadequate smears only to find that they were not actually collected from the cervical area”.*

*Participant 15 Female 39 years said” Another issue on the form if the incorrect form is used other lab forms do not have that area which indicate the origin of the specimen so normally the clinician will just say is a cervical smear, the use of incorrect form as well can contribute to inadequacy because we will assume that all this is pap’ smears were collected from the cervix.”*

#### **Sub-theme 4.3. Lack of skill in identifying the transformation zone**

Failure to identify the transformation zone during pap ‘smear collection will result in smears that does not have endocervical component leading to false negative results, delaying early detection. It is important for health care professional to make sure that during cervical cancer screening you sample the transformation zone to obtain quality smears

Participant 15 Female 39 years indicated that: *“sixth issue on inadequacy is the issue of not sampling the transformation zone area and this is a very critical issue because 90% of the cancer that arise they arise from the transformation zone so if a clinician when they collect on the cervix they do not sample the transformation zone it will be an inadequate smear if they are doing a smear a cervical smear “*

Participant 8 Female, 42yrs said: *“I think it is due to nurses they do not locate the cervix or see the cervix they collect the smear anywhere where there is no endocervical component.”*

Participant 15 Female 39 years: *“I think I have covered most of the things the only thing on the technique because we have already highlighted that the correct collection device again when collecting from the cervix to keep contact at all times when collecting throughout the cervix at 360 degrees so when one collects from the cervix they must bear in mind that the*

*cervix is round so it's like a clock so they need to keep a firm collection throughout when collecting and they must do it once and do 360 degrees because a lesion can be anywhere from the cervix."*

Participant 5 Female 35 years added: *"Yes I think it will help me to do the correct thing like I said before I had the challenge of not seeing the cervix, the cervix that is below there. I assume that there are so many things we need to know about collection of pap smear, yes or doing cervical screening like for example when do we do after menstrual period what to consider before. I think there are those things we don't know. The only thing that I know is to insert the speculum and do pap 'smear, when and how and what to consider I don't know, I think it will be useful, we need to be trained, mm."*

Participant 5 Female 35 years further indicated that: *"It is very easy, ee though sometimes it is difficult with the setting , or the what do we call you find that the cervix is under, not visible enough and sometimes you find that the patient has done total hysterectomy and she is not aware, or they have forgotten and I don't know what happened they don't tell you in time , you search for the cervix, you don't find it but otherwise either than those challenges mm ! it is very easy. mmm...."*

*Participant: 6 Female 32 years further added" Yes we did not get inside the cervix"*

Participant 7 Female 28 years added: *"I think it is due to nurses they do not locate the cervix or see the cervix they collect the smear anywhere where there is no endocervical component"*

The results revealed that most health care professionals were not competent in performing cervical cancer screening, incorporation of cervical cancer screening training in the basic training of health care professionals could therefore improve the skill of cervical cancer screening.

According to the study conducted in Malawi indicated that these services should be provided by skilled and competent health workers who are knowledgeable and skilled (Maseko, Chirwa and Muula, 2015). According to the study that was conducted in Sudan revealed that major causes of false negative results are insufficient collection of smears material from the transformation zone (Ibrahim,2011).

#### **Sub- theme 4.4. Failure to meet set target for national 70% adequacy rate**

Proper identification of transformation zone is crucial for health care professional to assist in the diagnosis of cervical cancer the following are the responses from the participants

Participant 15 Female 39 years said: *"National priority programmes is a form of monitoring the system to monitor if indeed the target that we have set for our facilities to screen is 70% of the population, we are also monitoring to say all that 70% that we are supposed to screen are quality smears or are we just screening in terms of numbers reaching the 70% target of inadequate smears or is part of it an indicator actually for the clinicians to monitor if their screening programme is efficient for population and meeting the target that had been set for them to screen 70% of the population in 10 years."*

Participant 15 Female 39 years said: *"I think that is why the laboratory service employed cytology coordinators to work in relationship with the Department of health in order to improve the adequacy rate in our society and in our facilities as well, so in their working relationship expectation is to go and capacitate our clinicians for those who are doing collection and also empower them to understand that is not for collecting data... screening is not about data is about quality for patient, to say let's screen our women properly so the expectation is for the NHLS together with the Department of health to work together and improve and go back to those facilities that are not doing well and empower them and improve and empower them and I am also happy that you are doing this study so that this empowerment capacitation can start when nurses or clinicians are at the training level so that this can be emphasised."*

Participant 14 Female 48 years said: *"Ee I can say inadequacy means that we are delaying to detect the abnormalities from our clients so delaying detecting it means we are delaying the diagnosis even delaying the treatment so it means it will take long for them to get the treatment"*

This was supported by participant 5 female 35 years

*"Maybe is because we are not trained, that is the reason why we cannot reach adequacy rate of 70% mm... "*

Participant 9 Female 36 years indicated that: *"I won't be able to carry out or reach the 70% adequacy rate you are talking about because I was not taught formally"* Participant 9 Female 36 years added *"Yes how are we going to reach 70%, adequacy rate were as we were not trained now to collect the endocervical component"*

According to the study that was conducted in Taiwan showed that specimen quality influences smear interpretation and consequently the accuracy of diagnosis. It is utmost important to improve specimen quality. There is a need to target especially remote health care worker who are responsible for collecting smears to improve coverage in remote regions. The importance

of correct technique cannot be over stated because the efficacy of the programme could be eroded and compromised by the suboptimal quality smears (Cheng and Hsu, 2014).

#### **Sub-theme 4.5. Improper technique of drying the slides**

Improper technique of drying the slides affect the quality of smears needed according to National cervical cancer screening guideline policy. Participants indicated the following:

Participant 15 Female 39 years said: *“So if the clinician does not fix that cells properly for example the clinician collect the pap smear and then they do not have their consumable next to them, they run to consulting room no 5 to get a fixative. The cells will dry and become degenerative and the other reason is if the cell are not fixed properly sometimes a person can fix but the technique is incorrect or either they are too close or too far so the preservative is not preserving the cells is just filing the room and those cells will degenerate, and then when you have fixed your cells the storage for those slides to dry if you put them on the window seal to direct sunlight the cells will become degenerate so just have to put them at room temperature. So degenerate cells can also contribute to an inadequate rate because so you collected your adequate smear and now you did not fix them properly they either dry or die or brake under the microscope we won't be able to identify as endocervical cells and will contribute to inadequate smear due to improper fixation.”*

Participants 15 Female 39 years further added:

*“Ok I think in terms of centimetres I am not really sure but literature says an elbow length so I am not sure how many centimetres it's an elbow length but if you spray too close normally the fixative becomes watery and then it washes the slide off so it should not be done like that at least the clinician should depend on the width when you spray the mist come so that mist is the one that should fall on to the cells to preserve them not the water part when the spray is near the object are too close becomes watery it should not be watery it should be sufficient”*

The study conducted in Sudan revealed that inadequate preparation fixation and processing of the smears use of spatula combination of spatula and endocervical brush allow adequate collection of the target zone for preparation of conventional smear. The speed of fixation should be minimised for few seconds, fixation with alcohol has been shown in field circumstances to be adequate (Ibram, 2011). According to the study conducted by (Jamshidi, Molazem, Sharif, Torabizadeh and Kalyani (2016) indicated that nurses' competency is based on the knowledge and skill taught to them, nursing training should be a combination of theoretical and practical learning experiences that enable nursing students to acquire the knowledge and skill and attitude for providing nursing care.

#### 4.3.5. SUGGESTED MEASURES TO DEVELOPMENT OF A TRAINING PROGRAMME FOR HEALTH CARE PROFESSIONAL

Suggested measures to development of a training program for health professionals	5. Educational support to strengthen cervical cancer programme	5.1. Nature of the training programme
		5.2. Contextualization of the training programme
		5.3. Need for competency based training programme
		5.4. Programme content/ topics
		5.5. Programme participants
		5.6. Programme duration
		5.7. Intensify training programme for diagnosis purpose
		5.8. Workshop/in-service should be hands on for guided process
		5.9. Peer training required to increase competency of staff members
		5.10. Evaluation of the programme

The participants of the study formulated suggestions in terms of what should be included in the training programme for health care professionals in Limpopo Province. It was suggested that the training programme should focus on cervical cancer screening programme. The aspects to be included is that it should address the problems in their settings, it should be

competency based and the content should include things like anatomy of cervix, the filling and interpretation of results as examples. Seven sub-themes emerged during data analysis.

### **Sub-theme 5.1. Nature of the programme**

Participants indicated that the programme need to be structured in a way that it covers all aspects that are related to work- based learning, the educational intervention should have a formalised structure. These is what participant had to say:

Participant 10 Female 55 years Indicated that *"Yes because sometimes you feel that some of the things you forgot, new information you will get it there when there is training you get new information, and even the guideline if it changes so you have this and these guideline"*

Participant 13 Female 52 years said: *"Maybe a week aneri we will start learning of a theory part of it and then we go to the nearest facility and we practice ee like that even that you come and you do the test to see whether we have done well in the practice we do practical of it just a week or three to two days is the best"*

Participant 5 Female 35 year said : *"I want this training to be frequent or continuous because you will find that more nurses are coming to the facility, others are going from staff nurse to professional nurse if it is done once off it means that those people won't come back and train me it means I will only receive in-service training which is not formal you understand and sometimes I won't be able to carry out or reach the 70% adequacy rate you are talking about because I was not taught formally."*

### **Sub theme 5.2. Contextualization of the training programme**

The training programme should be contextualized in Limpopo Province to improve the high number of inadequacy rate for cervical cancer screening results. In Limpopo province, the adequacy rate for pap smear results is very low. Among this Province there are five districts of which Vhembe and Mopani has got the lowest coverage in terms of adequacy rate for cervical cancer screening that can be improved by the development of a training programme.

Participant 10 Female 55 years suggested that: *"the development of a training programme should focus on the aspect that would assist the health care professionals in Vhembe and Mopani district in Limpopo Province mm..."*.

### **Sub-theme 5.3. Training programme should be competency based**

Competency refers to the effective application of knowledge, skills and judgement demonstrated by someone in daily practice or job performance (WHO, 2015). Learning the

skill aims at producing competent and effective health care professional who can take adequate smears.

The following are the participants quotes.

Participant 10, Female 55 years said: *“Yes continuous assessment is required and we need to practice the skill in front of our teachers to become competent.”*

Participant 5 Female 35 years said: *“I want us to be trained and after training we receive certificate that we have been trained regarding the cervical cancer. I think there must be a person they will train us nurses and after training if they should know which clinic they have trained after training they will come and see if the adequacy rate have improved or not. “Some of them I think they are trained when it comes to pap’ smear they can also organise a person who is trained regarding the skill and they will show us how to do it”*

Participant 14 Female 48 years added:

*“Jaa even at the clinic level the must be an operational manager monitor how many was done and how was done is very much important, myself I want certification because it encourage us even if you feel like doing the right thing ee when you look at your certificate you paid yourself to say I can do this thing jaa I have been trained so you make sure.”*

*Participant 7 Female 28 years further added: “I think mmm....” “ We need training and updates so that we can learn the correct technique for pap’ smear collection, I suggest that every professional nurse be trained before starting to collect pap ‘smears, Yes, it should be assessed for competency so that it will encourage us to practice the skill because if you do not practice how are you going to do it ”*

#### **Sub- theme 5.4. Programme themes/ topic**

Some participants were specific about what should be included in the training programme.

One participant 10 Female 55 years said:

*“To cover the adequacy what is expected when they say the endocervical component is present because they do not know what is present what is absent, the person will say a mara the slide was full of what it was a discharge that patient will be seeing trichomonas’s instead of giving us the endocervical component.”*

Participant 9 Female 36 years said: *“some of us nurses we do not know where we find it we only know to open the cervix and take something there and we said we have done it, we do not have knowledge..... Jaa..... I think we need workshops.”*

Participant 6 Female 32 years said: *"I perceive it as that we need training most of us we need to be trained on how to collect the specimen inside the cervix at the correct area and the correct specimen because the high rate means that people are not able to carry out the skill"*

Participant 7 Female 28 years said: *"It should cover the technique, skill for doing pap 'smear so that we can improve the adequacy rate for pap smear."*

Participant 9 Female 36 years said: *"can we prevent it, is it treated, mm signs and symptoms mm and management"* and how do we do the skill and even the skill to approach this women and interpretation of results and even if you can give us an idea how to convince our patient to get tested ee is very difficult to do that" participant 9 Female 36 years said further added *"If you can include the skills, the theory of signs and symptoms, causes even the guideline, interpretation of results, I think it will be sorted If you can include the skills, the theory of signs and symptoms, causes even the guideline, interpretation of results, I think it will be sorted"*

A particular aspect was suggested inclusion in the training programme by participant 5 female 35 years saying: *"The legal aspect is pointed out as important because they prescribe the process involved during the pap' smear collection in National cervical cancer screening policy."*

The capacity development should have a large range of themes or topics to obtain an accurate picture of the capacity required for the programme (Goldstone, Ntuli and Pillay, 2010). Other themes were identified for inclusion in the training programme due to suggestions during data collection as indicated by participants.

### **Sub-theme 5.5. Intensify training programme for diagnosis purpose**

Training programme should be intensified to equip health care professionals with the knowledge and practice for cervical cancer screening.

Participant 10 Female 55 years said:

*" Ok there are those who do not know what is CIN1 and CIN2 CIN3 and what is biopsy and those thing they have to be elaborated and taught so that when the results came the endocervical component is there is a high grade squamous cell is in it you understand exclude C1, C2,C3. They need to know what do they mean about that include C2,C3 they really have to know that it is in situ or stage three, the other thing the signs and symptoms of the cervical cancer because others patient will represent in difficult in breathing and swollen legs and not urinating and most of the time we do not do the PV because we will be seeing the swollen legs patient being pale, the stomach is being distended you are not going to think about the CA you will think maybe about the liver failure were as it say it's CA stage 4 or stage 3, and I think*

*it is important to us to examine when she comes to collect the treatment let do the pap smear if she is complaining of cough let's do the pap smear because also cough is a sign that something detection how do we collect adequate smears, how do we interpret the results how do we communicate at tertiary level follow up of the patient until the final diagnoses”*

Participant 14 Female 48 years indicated that: *“The interpretation of results we have we have to know if ever they say cervical component is present or absent what does it mean , when they say is insufficient and different results like I said the vho ascuss , low-gradesil, high-gradesil what does it mean not for the sake of referring why do you refer so you have to know them all , we have to know kuri if we delay the identifying and treating the cervical cancer it means we are going to have lot of women dying of cancer”*

Participant 6 Female 32 years indicated that: *“The challenges comes from collecting the specimen itself ee when it comes from taking the component from the cervix it is very difficult and also the interpretation of the results after we have collected the specimen like when the patient come back for results sometimes this results saying is high squamous, low grade ,high grade squamous epithelial cells so we have to explain to the patient uri what doe low squamous mean to them to use the language which they understand which is not easy at all”*

Participant 5 Female 35 years *“I want to learn more about maybe how should we do cervical cancer screening, who are most vulnerable I do not know if it is the correct word and who are at risk, when should we do pap' smear and when do we not to. Who are the most risk patient or clients to consider more than the other. And also the interpretation of results we must know so that we can proper manages the clients ja, yes I mentioned the thing how should we do and when inclusive with the skill, the technique, how do we interpret eeh... the condition of the cervix, to say it is red, it have discharge, include all those things mm and " I want to learn more about maybe how should we do cervical cancer screening, who are most vulnerable I do not know if it is the correct word and who are at risk, when should we do pap 'smear and when do we not to . Who are the most risk patient or clients to consider more than the other.*

Participant 6 Female 32 years added: *“I will love it to cover the portion of inadequacy and the insufficiency, the present and the interpretations of results, the lower grade, the higher grade, yes the negative part I want it to be included when the patient come back I know what to tell the patient and get updated on the guideline the signs and symptoms and everything concerning cervical cancer and you find that they have forgotten those.”*

Participant 9 Female 36 years said *“Mm the facilitators of this training will be the ones provide this service quarterly, and facilitator must make follow up. They need to come here to the clinic*

*to check what we have learned will improve the adequacy rate” Participant 9 Female 36 years further added: “Mm I think training will be the best” and I think there should be workshops where we workshop the nurses”*

Participant 13 Female 52 years said: *” The technique itself we conduct it well but aniri we are not sure kuri we are doing correctly as I have said I never had a training or in-service training ee we do as we see ee not knowing kuri is it correct but the procedure itself is not that difficult to perform.”* Participant 13 Female 52 years further added:

*“I think the nurses can be revised so that they can see the importance of National producing guideline and therefore after the guideline it means those ones that are on training that time should do the practical part of it ani so that they can know, after that those trainers I think it should be best for them to come and do follow up to come and see if it is done uri is implemented or not ane they will have a attendance register and go to those facilities they train and see if that one is training others and implementing in that facility I think it will assist”*

*Participant 6 Female 32 years said:” Let say the patient is coming and we ask for permission to do the cervical screening then the nurse who have been tested competency the nurse will carry out the procedure explaining everything and then and again wait for the results to see if the nurse did well”*

Study conducted in India revealed that negative attitude towards and inaccurate knowledge of cervical cancer and screening methods among health care providers especially among nurses can pose substantial barrier to cervical control programme in India and other developing countries more over if nurses themselves undergo screening test regularly they can be role models for other females I carrying out cervical cancer screening test (Singh, Seth, Rani and Srivastava, 2012).

#### **Sub-theme 5.6. Programme participants**

Empowerment of all health care professionals providing cervical cancer screening to increase efficiency is key for improving the adequacy rate for cervical cancer screening.

Participant no 4 Female 30 years said: *”The training programme should involve every health professional in the clinics the need for in-service training for all health care professional and should be included in the curricula of nursing students.”*

Participant 14 Female 48 years said: *“I belief that training of all the nurses is very much important all of us, we have to be trained it has to be it..... should not be one men’s*

*programme, this one is supposed to be all of us is our duty to know how is done through training. “*

Participant 7 Female 28 years said: “I think mmm...”. “ *We need training and updates so that we can learn the correct technique for pap ‘smear collection” I suggest that every professional nurse be trained before starting to collect pap ‘smears*

Participant 9 Female 36 years: “*will recommend all nurses to be trained in the clinic providing this training quarterly”*

This was confirmed by (Musa, Achenbach, Odwyer, Evansm McHugh and Hou, 2019) confirmed that continuing education ensures maintenance of up to date knowledge, skill and experience with system approach to promote quality care and accountability. Providing training to health care professional to provide cancer prevention and early detection services will be an investment to communities in Limpopo province.

#### **Sub-theme 5.7. Duration of the training programme**

The duration of a training should allow a learner to be guided through a process of learning to achieve expected skills and learn the content and be assessed by the facilitator if competent or not.

Participant 17, male, 40yrs said: “*the training should be based on gaps identified on our performance indicators that we have on the operational level; this will make all the health care professionals to have in-depth knowledge of the subject and the duration of training also should allow for this”.*

Participant 7 Female 28 years added: “*What can I say, I believe if we can have positive attitude because really nurses do not want to do pap ‘smears, may be training and practical’s is required to make us competent, the training programme should be offered for a period of 4 days.”*

Participant 10 Female 55 years: said “*Training programme will be offered for a period of 4 days, I think per quarter it should be twice per quarter not once per year because once per year..... there are those newly qualified they do not know anything and if you say go and do pap smear sister Ndou is going on pension not late, soon meaning that the whole sister for pap’smer (laugh) this is high time” they should have the training at least twice per quarter”*

Participant 14 Female 48 years said: *“Mm I think three days to four days might be enough minimum of three day because there is a lot there are practical’s we just do the theory then the practical’s”*

Participant 13 Female 52 years said: *” Maybe a week aneri we will start learning of a theory part of it and then we go to the nearest facility and we practice ee like that even that you come and you do the test to see whether we have done well in the practice we do practical of it just a week or three to two days is the best”*

### **Subtheme 5.8. Workshops/in-service should be hands on for guided process**

The issue of in-service training was highlighted by the participants who indicated that the in-service training will make health care professional to capacitate each other and improve the knowledge of health care professionals.

Participant 6 Female 32 years said *“I think we can also do in-service training as nurses again reminding each other ,those who are competent than others remind others when you are taking the pap smear they can do the procedure while we observe, then the next patient come the person who was observing they can be able to carry out the specimen and do the procedure then when the results come we will be able to see were the problem was if the problem if the results comes to be good it shows that the endocervical component was there it means that we have learned again it means that we can do the process I suggest that”*

Participant: 5 Female 35 years indicated that: *” Depend on whether there is new information coming out or maybe to say what can I say, yes , they can do updates if there are new I think if we can have that one service we will be ok update it will do unless if there are new information that the need to update it can do”*

Participant 7 Female 28 years said: *“I think we have high number of inadequacy rate because we did not receive formal training mm I just came here to the clinic and we have just taught one on other how to do it and on top of that there was no any formal thing that we consider on top of that when we show one another this is how we do it remember we have got lot of clients we have to hurry “*

Participant 5 Female 35 years : *“Yes I think it will help me to do the correct thing like I said before I had the challenge of not seeing the cervix, the cervix that is below there. I assume that there are so many things we need to know about collection of pap smear, yes or doing cervical screening like for example when do we do after menstrual period what to consider before I think there are those things we don’t know. The only thing that I know is to insert the*

*speculum and do pap smear, when and how and what to consider I don't know, I think it will be useful, that is why you are saying it need to be comprehensive, we need to be trained, mm."*

*Participant 14 Female 48 years said: "Ee what can reduce as I have said in-service training and emphasizing the important of early detection and treatment to colleague that if they know why they are doing it means they have to develop passion for assisting or helping women to avoid ee complications so I believe if they are trained and they know exactly why they are doing it they will do it whole heartedly. Ee as for me at least I had an in-service training so I make sure during in-service training I show them how quality smears are collected although I can say is not enough we need training that would enable all of us to be on the same level of knowledge on how to collect. "What we can do is what I have talked about the training, the in-service ee even supervision.*

*Participant 13 Female 52 years:" I do not remember about the training except while I was still a student ani it falls under our programme a four year student , I was a four year student by then so I just know the theory part of it then when I approach the clinic when I was employed you find kuri other sisters whom we found there they are the one who in-service us when they do we try and do we see that I see myself as competent by know I am not sure because I did not receive a thorough training"*

The study conducted by (Ibrahim, 2011) revealed that smears takers should meet sufficient competency training. The laboratory should introduce a mechanism to monitor the proportion of inadequate smears submitted, the individual smear takers those with less > 10% in adequate smear should undergo training hands on training in smear taking.

### **Sub-theme 5.9. Peer training required to increase competency of staff members**

Education alone is not sufficient to change the behaviours of providers, it is important to make sure that continuing education is done to health care professionals the following were the participants responses.

*Participant 7 Female 28 years said "Ok Is one of our senior nurses who is very competent when it comes to cervical screening she is the one who teach us how to do the screening and how to carry it out"*

*Participant 6 Female 32 years said "I think we can also do in-service training as nurses again reminding each other, those who are competent than others remind others when you are taking the pap 'smear they can do the procedure while we observe, then the next patient come*

*the person who was observing they can be able to carry out the specimen and do the procedure then when the results come we will be able to see were the problem was if the problem if the results comes to be good it shows that the endocervical component was there it means that we have learned again it means that we can do the process I suggest that"*

Participant 6 Female 36 years added: *"I wish it to be carried just like they do other workshop they call nurses from different facilities, they go and train them and then after training they come and share skill and then they go just like that"*

Participant 9 Female 36 years: *"Because every year you find that the clinic have a new nurse from school graduate school they can equip the person"*.

The study conducted in India revealed that there is an urgent need for reorientation course for working nurses and integration of cervical cancer prevention in the nursing nurses existing curriculum in India and other developing countries (Rahman and Kar, 2015). Training and in-service training is an investment in the health fraternity (Bluestone et al., 2013).

#### **Sub-theme 5.10. Evaluation of the programme**

Participants indicated that there should be an outcome in the training programme that is reflected by the adequacy rate of the specimens. If training is successful it should be assessed for its fruitfulness.

Participant 5 Female 35 years further added: *"to see if ee..h the training is effective I think we should have we need to for it to be assessed, isn't the aim is to check the adequacy rate. The most important thing is to check the adequacy rate so If you trained and you do not come back to check if the training was useful, if you do not come back what is the use, so you have to come back and assess if ever the training was fruitful or not"*

The participant indicated that the training programme should address the basic principle practical for application of basic principle and how to operationalize this principle ad process on the practical level

Study conducted by Musa et.al., (2019) revealed that health care providers who completed their training 10 or more years ago are likely to have been adequately trained in cancer prevention and early detection in early 1990s therefore, reaching providers after they have completed their training with continuing medical education programme is vital to improving the practice of cancer prevention and early detection.

## 5. DEVELOPMENT OF A QUESTIONNAIRE

An exploratory sequential mixed method is a design in which the researcher first begins by exploring with qualitative data and analysis and then uses the findings in a second quantitative phase. The intent of the strategy is to develop better measurements with specific samples of populations and to see if data from a few individuals (in qualitative phase) can be generalized to a large sample of a population (in quantitative phase) (Creswell, 2016). The first collected face-to-face data, analysed the results, developed an instrument based on the results, and then administered it to a sample of population of operational managers. The table 4.2 below indicates the process.

STATEMENTS TO GUIDE QUESTIONNAIRE	THEMES	SUB-THEMES
1. What are the benefits of cervical cancer screening?	1. Perceived benefits of cervical cancer programme	1.1. Early diagnosis and early treatment
		1.2. Prevention of cancer progression
		1.3. Reduction in mortality due to cervical cancer
		1.4. Diagnosis and prevention of STI
What are the causes of poor cervical cancer screening?  Do you have knowledge regarding cervical cancer screening?  Have you screened women for cervical cancer at your clinic?  How often? - regularly, sometimes always	2. Poor uptake of cervical programme	2.1. Lack of interest/attitudes of health professionals
		2.2. Insufficient training for cervical cancer screening by district
		2.3. Lack/Shortage of resources to implement
		2.4. Structural barriers (infrastructure)

<p>Do you understand the content of the national cancer screening guideline?</p> <p>Do you think it is still relevant to your practice currently?</p> <p>If “no/yes” what should be improved?...</p>	<p>3. Concerns regarding the Implementation of National cervical cancer screening policy</p>	<p>3.1. Revision of the current policy</p> <p>3.2. Follow up system</p>
<p>Do you think competency should be measured?</p> <p>What were the best aspect for improving the competency of staff?</p> <p>What are the contributing factors for inadequate results with no endocervical component in your clinic?</p> <p>What are the challenges for not achieving 70% adequacy rate?</p> <p>What are the important points to note in cervical cancer screening?</p>	<p>4. Incompetency in cervical cancer practice and performance of pap smear</p>	<p>4.1. Results of inadequate cervical component</p> <p>4.2. Poor filling/ completion of cytology form</p> <p>4.3. Lack of skill in identifying the transformation zone</p> <p>4.4. Failure to meet set target for National 70% adequacy rate</p> <p>4.5. Improper technique of drying the slide</p>
		<p>5.1. Nature of the training programme</p>

<p>Have you ever attended cervical cancer training programme?</p> <p>Who should be trained?</p> <p>Who should be participate in the programme?</p> <p>What do you suggest regarding the training programme?</p> <p>What do you suggest regarding topics to be covered in training programme?</p>	<p>5. Educational support to strengthen cervical cancer programme</p>	5.2. Contextualization of the training programme
		5.3. Need for competency based training programme
		5.4. Programme content/ topics
		5.5. Workshop/in-service should be hands on for guided process
		5.6. Intensify training programme for diagnosis purpose
		5.7. Peer training required to increase competency of staff members

## 6. CONCLUSION

The findings of the study highlighted the plight of health care workers regarding cervical cancer screening programme, they indicated the benefits of the screening programme and the challenges they experienced in their facilities while implementing the national screening guideline and their lack of competency in getting an adequate smear and locating the transformation zone. Participants further welcomed intervention strategies to empower them to implement the programme effectively. Primary health workers are the main drivers of population oriented health education programmes such as cervical cancer screening programmes to prevent development or progression of invasive cancer.

The PHC workers provide care closest to community members; they mobilise and empower communities for health actions, thus promoting equity and ensuring accessible health care. Therefore, for PHC workers to be effective in providing preventive care for cervical cancer, they require capacity enhancement to assure quality service delivery and better outcomes. The next chapter will focus on the quantitative strand.

## CHAPTER 5

### PRESENTATION AND INTERPRETATION OF QUANTITATIVE DATA

#### 5.1 INTRODUCTION

The main aim of the present study is to develop the training programme that will strengthen cervical cancer screening in Vhembe and Mopani districts Limpopo Province. However, this section of the study introduces the quantitative study findings and interpretation pertaining to the knowledge of health care professionals on cervical cancer screening programme. A questionnaire was used to collect data from the senior health care professionals and operational managers in Vhembe and Mopani districts of the Limpopo Province to assess the knowledge, skill and practices on cervical cancer screening programme. Descriptive statistics was used to analyse the data. Descriptive statistics was found to be suitable as it describes and summarize data by converting and condensing collected data in an organised visual presentation or picture in various ways to portray the meaning of the data. The data was analysed using the SPSS version 23.0 in which the findings were presented in frequency tables, graphs, charts and furthermore the chi-square test and crossed tabulation were conducted to establish the relation between key study variables. The study findings for quantitative are presented in sections as shown in the questionnaire and these sections are **Section A**-Socio-demographic information, **Section B**- Knowledge about cervical screening program, **Section C**-Perception/Attitude regarding cervical cancer and **Section D**- Screening technique for cervical screening.

**Table 5.1. The sociodemographic profile of the study respondents (N=130)**

<b>Gender</b>	<b>Variables</b>	<b>Frequency (n)</b>	<b>Percentage (%)</b>
	Female	111	85.4
	Male	19	14.6
	<b>Total</b>	<b>130</b>	<b>100</b>
<b>Professional Qualifications</b>	Degree	88	67.7
	Diploma	39	30
	Other	03	2.3
	<b>Total</b>	<b>130</b>	<b>100</b>

<b>Years of Experience</b>	1-5 years	17	13.1
	5-10 years	61	46.9
	10-15 years	15	11.5
	<b>Total</b>	<b>130</b>	<b>100</b>

The table 5.1 above present the demographic characteristics of the study respondents, wherein the majority (n=111;85.4%) of them were women with only 14.6% (n=19) of males. A larger number had a degree qualification (n=88; 67.7%) and (30)39% acquired diploma in nursing. Furthermore, the majority 61(47%) of the study respondents had working experience of 5-10 years, followed by 37(29%) who had more than 15 years' experience and the least 15(12%) is those who had worked for 10-15 years. It is noted in this study that only few (n=30;23.1%) respondents have attended the cervical cancer training program while a larger group of 76.8% (n=100) have never attended.

In terms of gender about 111(85.4%) of the respondents were females, 19 (14.6%) were males. High number of female nurses is a reflection that nursing originated as a female dominant profession in South Africa. This is confirmed by 2013 mid-year population estimations in South Africa of 22 689 males versus 230 000 female nurses employed in different facilities of South Africa (SANC,2014)

Findings also shows the highest number of respondents holding degree which has an impact on empowering clients and enrolled nurses on performance of daily activities to improve the outcomes of health care systems and encourage high standards of maintaining quality health care practices on cervical cancer screening services.

According to the study conducted in Tanzania by Urasa and Darj (2011) indicated that the level of education can have a positive effect in cancer screening as majority of whom had bachelor degrees where by higher proportion able to correctly identify causes, transmission, symptoms, treatment and prevention. The study further indicated that only a small proportion of the nurses had attended continuing education session at the hospital.

## 5.2. SECTION B: KNOWLEDGE ABOUT CERVICAL CANCER

### 5.2.1. Risk factors for cervical cancer

Table 5.2. Risk factors for cervical cancer (N=130)

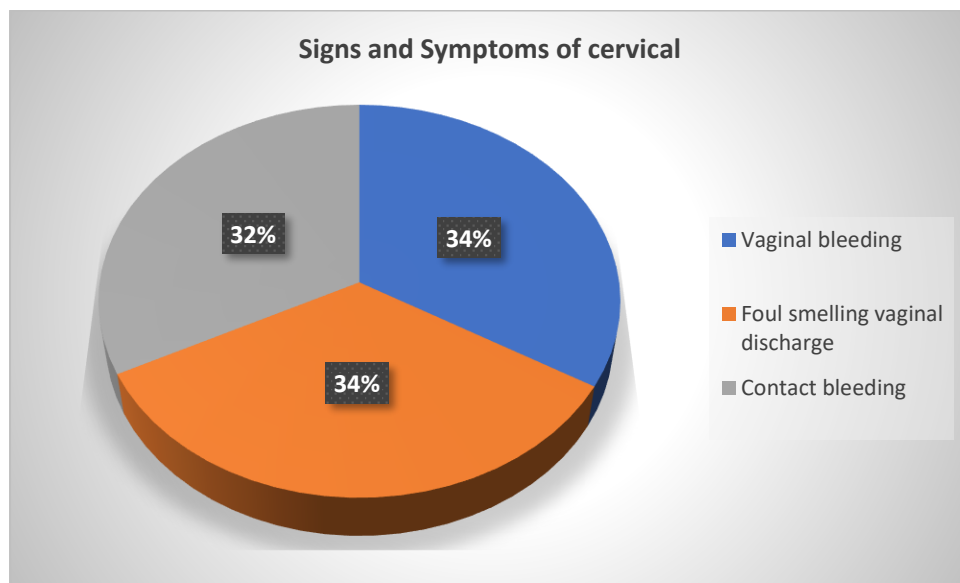
Statement	Response rate			
	Yes		No	
	n	%	n	%
Multiple partners	128	98.5	2	1.5
Having genital warts	118	90.8	12	9.2
Sexual intercourse before 18	126	96.9	4	3.1
Having contracted STIs	122	93.8	8	6.2
Smoking cigarettes	119	91.5	11	8.5
Use of oral contraceptive	116	89.2	14	10.8
Human Papilloma virus	126	96.9	4	3.1

\*\*\* **Average** Yes=93.9% and No= 7.8 %

The above table 5.2 shows the risk factors of cervical cancer, it clearly reveals that respondents had sufficient knowledge regarding the risk factors of cervical cancer. The average response rate on “**Yes**” was 93.9% as compared to a lower 7.8% of “**No**” this clearly confirms a high knowledge level. In summation, it can be argued that having multiple partners (Yes=98.5%; No=1.5%), having STIs (Yes=93.8%; No=6.2%) such Humana Papilloma virus

(Yes=96.9%; No=3.1) and genital warts (Yes=90.8; No=9.2%) and smoking cigarettes (Yes=91.5; No=8.5%) are risks factor that can predispose one to cervical cancer among others. In this study health care professionals had a good level of knowledge on cervical cancer. The findings is in line with the study carried in Ethiopia, findings indicated that 327(86.9%) had a good level of knowledge on cervical cancer, they knew about the risk factors symptoms and outcomes of cervical cancer respectively (Dulla, Daka and Wakgari, 2017). However, this study contrast with the study that was conducted by Hogue, Ghuman, Coopoomay and Vanhal (2014) study results indicated that lack of knowledge of professional nurses regarding cervical cancer was identified.

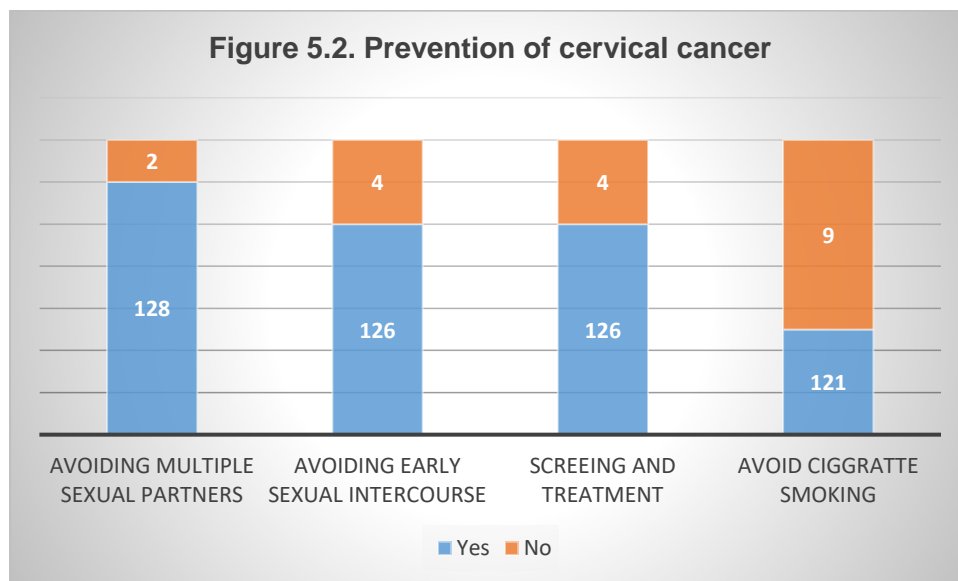
### 5.2.2. Signs and symptoms for cervical cancer



**Figure 5.1. Signs and symptoms of cervical cancer**

The figure 5.1. shows that the signs and symptoms of cervical cancer as presented by the study respondents. The respondents could identify the signs and symptoms of cervical cancer, which was not satisfactory as all the signs were below fifty percent. All the signs and symptoms of cervical cancer got a response rate which clearly shows that the respondents got sufficient information regarding the disease under discussion as 34% attested foul smelling vaginal discharge and vaginal bleeding (34%) as the main signs and symptoms and followed by contact bleeding of 32%. The results indicate a lower percentage below fifty percent, which may indicate a low level of knowledge. However, Rahman and Kar (2015) in their study in India the most common symptom of cancer cervix reported by nursing staff were offensive foul-smelling discharge (63.8%), irregular bleeding (50.6%) and postmenopausal bleeding (26%) which is way higher than nurses in Limpopo province.

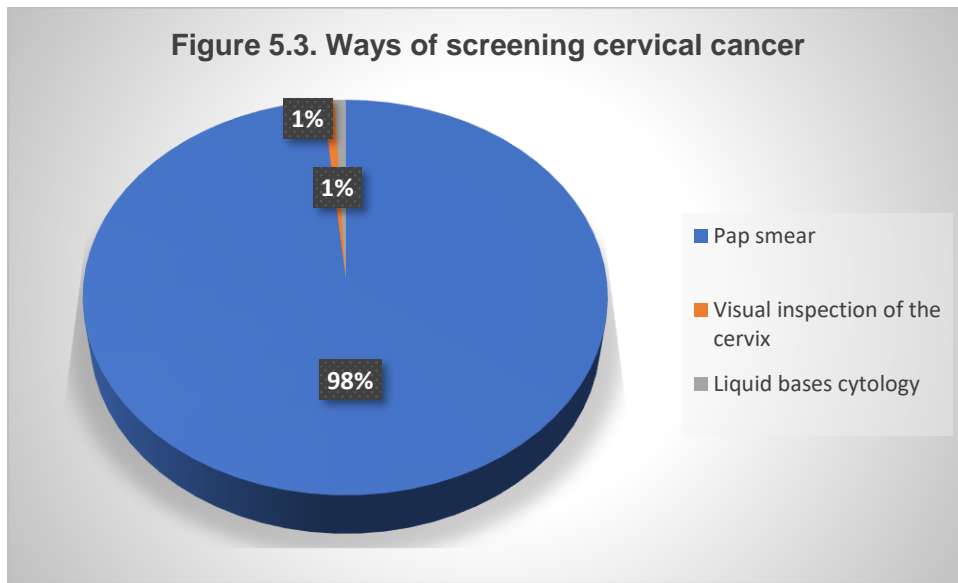
### 5.2.3. Prevention of cervical cancer



As shown in the figure 5.2 above it is clear that majority of respondents are quite informed and aware of the prevention practices which includes avoiding multiple sexual partners screening and treatment and avoiding early sexual intercourse. Although the knowledge level is high on the aspect of avoiding smoking cigarette a 6.9% (n=9) is worrisome and it needs to be noted with concern.

According to study conducted by Heena, Durrani, Alfayyad, Riaz, Tabasim, Parvez and Abu-Shaheen (2019) indicated that many of the respondents were not knowledgeable about cervical cancer, majority knew that multiple sexual partners placed women at risk for cervical cancer, Signs and symptoms women may experience are vaginal bleeding, foul smelling, vaginal discharge however majority of participants did not have knowledge about the different knowledge about different ways of screening.

#### 5.2.4. Ways of screening cervical cancer



**Figure 5.3. Ways of screening cervical cancer**

The figure above shows the most common and known ways of screening cervical cancer. Although five ways have been suggested, most respondents (98%) cited pap smear and a minority 1% indicated liquid base cytology and visual inspection, which indicates that the conventional method of pap smear is the most popular method used in rural facilities. The high percentage of pap smear as the main way of cervical cancer screening is all confined as respondents attested that 99.2% (n=129) of them have had the test before. All the 130 respondents attested that pap smear is a useful tool for early detection of cervical cancer, however only 90% (n=113) of them had done pap smear against the 10% (n=13). The findings are supported by Ali, Ayub, Manzoor, Azim, Afif, Akhtar, et al., (2010) where 75% nursing staff knew that Pap smear is a screening test for cervical cancer.

#### 5.2.5. Pap smear test, commencement, interval, best time and benefits.

**Table 5.3. Pap smear test, commencement, interval, best time and benefits.**

At which age is pap smear test be started	Answers	Frequency (n)	Percentage (%)
	During adolescent stage	3	2.3
	From 20 years	11	8.5
	From 30 years	116	89.2

	After menopause	-	-
	<b>Total</b>	<b>130</b>	<b>100</b>
Intervals for pap smear test	Monthly	4	3.1
	Yearly	65	50
	After menopause	4	3.1
	Not sure	57	43.8
	<b>Total</b>	<b>130</b>	<b>100</b>
Reasons for Not sure***	Not interested	7	5.4
	Lack of information	10	7.7
	<b>Total</b>	<b>113</b>	<b>86.9</b>
Best time for doing pap smear	During	5	3.8
	A week after period	107	82.3
	During pregnancy	2	1.5
	During breast feeding	1	0.8
	Not sure	15	11.5
	<b>Total</b>	<b>130</b>	<b>100</b>
Benefits of pap smear	Early detection of cervical cancer	126	96
	Early detection of cervical mucosa changes	109	83
	Early detection of STIs	106	81

The table above indicate the time which pap smear test should commence, the majority (n=116; 89.2%) of study respondents revealed that the test should start from 30 years and the 8.5% agreed that it is supposed to begin at 20 years. The interval for test for cervical cancer was revealed by 50% respondents to be done yearly, and a worrisome percentage of 43.8% were not sure about the exact interval with 3.1% saying monthly and 3.1% saying after menopause. The higher percentage of those who not sure about the intervals, reasons given included lack of information (7.7%) and lack of interest (5.4%). A week after monthly period

was suggested by 82.3% as the best time for pap smear, with 11.5% who were not sure. Although pap smear is key to the detection of cervical cancer (96%), the early detection of cervical mucosa changes (83%) and detection of STIs (81%) has been noted.

According to the study conducted in Tanzania by Urasa and Darj (2011) indicated that most of nurses were not aware of the recommended pap smear screening interval similarly in Uganda.

## SECTION C-PERCEPTION/ATTITUDE REGARDING CERVICAL CANCER

### 5.2.6. Perceptions of health professionals regarding cervical cancer and screening

**Table 5.4. Perceptions of health care professionals regarding cervical cancer and screening (N=130)**

**Key: A=Agree, N=Neither, D=Disagree**

Statements	Agree		Neither		Disagree	
	n	%	n	%	n	%
Carcinoma of the cervix is highly prevalent and is a leading cause of death in women	125	96.2	4	3.1	1	0.8
Any young women including you can acquire cervical carcinoma	125	96.2	4	3.1	1	0.8
Carcinoma of the cervix cannot be transmitted from one person to another	112	86.2	2	1.5	16	12.3
Screening helps in preventing of carcinoma of the cervix	124	95.4	1	0.8	5	3.8
Screening cause no harm	123	94.6	1	0.8	6	4.6
Screening for cervical cancer is not expensive	127	97.7	2	1.5	1	0.8
Cervical cancer screening guidelines are very influential	129	99.2	--	--	1	0.8
Do you believe that pap smear is an effective tool for early detection	128	98.5	--	--	2	1.5

Do you empower women about HPV Vaccine for their daughters	86	66.2	2	1.5	42	32.3
Are you able to perform pap smear to two clients daily	33	25.4	7	5.4	90	69.2
Do you always provide information about cervical cancer screening to women	70	53.8	1	0.8	60	46
Do you always make follow up to women post cervical cancer screening	54	41.5	6	4.6	70	53.8
Do you mentor neophyte, registered nurses at your clinic about cervical cancer screening	39	30	9	6.9	82	63.1
Do you think only those trained should perform cervical cancer screening	110	84.6	1	0.8	19	14.6
Are you achieving 70% adequacy rate in your clinic quarterly	38	29.2	7	5.4	85	65.4
Is interpretation of pap smear results a problem?	104	80	5	3.8	21	16.2
Does shortage of resources affect your cervical cancer screening programme	111	85.4	6	4.6	13	10
Does structural factors affect your cervical cancer screening programme	112	86.2	2	1.5	16	12.3
Does administrative factors affect your cervical cancer screening programme	117	90	3	2.3	10	7.7
Is cervical cancer screening programme effective	115	88.5	3	2.3	12	9.2
I am satisfied with the frequency of cervical cancer training on site training	51	39.2	4	3.1	75	57.7
Are you satisfied with the content of cervical cancer screening training	33	25.4	6	4.6	91	70

Do you think competency should be measured	115	88.5	8	6.2	7	5.4
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The above 5.4. illustrate the perceptions/attitudes of health care professionals' regarding the cervical cancer and the majority (96.2%; n=125) study participants perceive that that carcinoma of the cervix a is a leading cause death to women and any young women can acquire it, and 86.2% attested that the cancer of the cervix cannot be transmitted from one person to another. Most (95.4%; n=124) health care professional agreed to the perception that screening for cervical cancer does not cause harm, it is not expensive. Furthermore, the majority (98.5%; n=128) indicated that pap smear is the most influential to detect early cervical cancer. Although a considerably 66.2% of health care professionals agreed that they empower women about the HPV vaccine for their daughters, a worrisome 32.3% disagreed. The study indicates that very few (25.4%) health professionals can perform pap smear to two clients daily with a higher 69.2% (n=70) disagreed. Mentorship among registered nurse regarding cervical cancer was reported by only 30% (n=39) and a larger number of 63.1% (n=82) disagree to doing mentorship. Apart from mentorship which is low, the study established that the majority (84.6%; n=110) argued that only the trained nurses should perform screening, however the 70% adequacy rate was reported by many (65.4% ;n=85) that in their clinic it is not achieved quarterly. Interpretation of pap smear is perceived by many (80%; n=104) to be a problem and shortage of resources, administrative (90%;n=117) and structural factors was also perceived by the majority (85.4%;n=111) to be a problem affecting cervical cancer screening. Although many (88.5%;115) respondents reported that cervical cancer screening programme is effective, the majority (57.7%) further attested that they were not satisfies with the on-site training for screening against 51% satisfied. Lastly majority perceived that the competency of health professional should be measured to improve the outcomes.

The adequacy rate (quality smear obtained from a woman i.e. a smear with endocervical component present) of a screening facility is expected by National cervical cancer screening policy (2017) to reach at least 70%. It is also expected from cytology laboratories to audit and control the proportion of adequate smears from each screening facility and inform the facilities of adequacy rate and training of staff be conducted should a facility consistently achieve 70% of adequacy rate in this study the adequacy rate was also reviewed and found to be low and the findings attested to that regard. In this study 65.4% reported that their facilities did not reach 70% adequacy rate for pap smear and further reported that 57.7% that they were not satisfied with the onsite training for cervical cancer screening and 80% of respondents reported that interpretation of results was also a problem. Results reveals a need for training

of all health care professionals to achieve above 70% adequacy rate in all clinics in Vhembe and Mopani districts. According to the study conducted by Sibiyi and Grainger (2010) in KZN there should be a need for retraining of staff on cervical cancer screening as confirmed by the policy. The structural and administrative aspects also contribute to the attitudes of health care professionals in performing cervical cancer screening due to shortage of resources and lack of space/ cubicles for privacy and confidentiality of clients (Urasa and Darj 2011).

## SECTION D- SCREENING TECHNIQUE FOR CERVICAL SCREENING.

### 5.2.7. Screening techniques for cervical cancer screening

**Table 5.5: Screening techniques for cervical cancer screening**

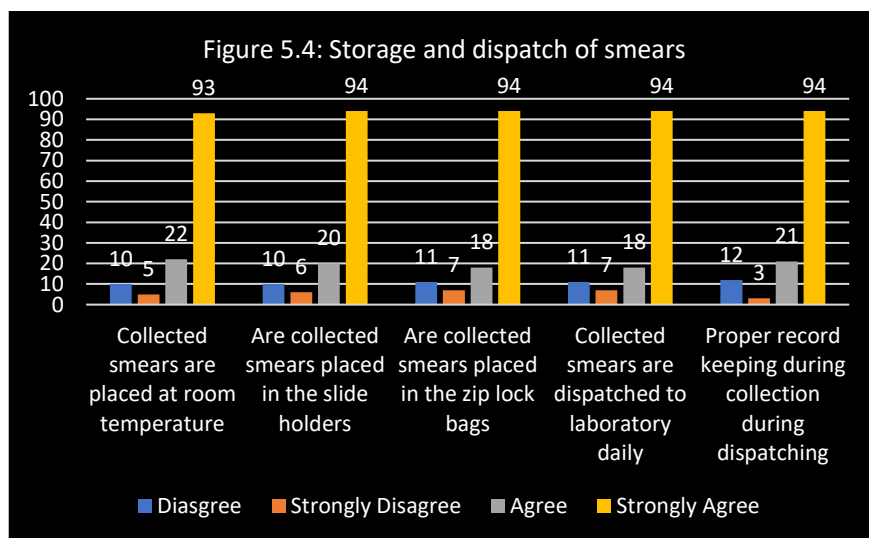
Statement	Disagree		Strongly Disagree		Agree		Strongly Agree	
	n	%	n	%	N	%	n	%
The patient should not make an appointment for her pap smear during her menstrual periods.	27	20.8	43	33.1	19	14.6	41	31.5
The preferred time for the examination is two weeks after the first day of last menstrual period.	18	13.8	5	3.8	25	19.2	82	63.1
The patient should be instructed not to use vaginal medication, vaginal contraceptives, lubricants, or douches for 48 hours before her appointment	10	7.7	3	2.3	28	21.5	89	68.5
Intercourse is not recommended the night before the examination	25	19.2	14	10.8	18	13.8	73	56.2
The physician should not use lubricant during his examination prior to collection the sample.	14	10.8	11	8.5	29	22.3	76	58.5
Excess blood, mucus or inflammatory exudate may be gently blotted away with a gauze pad.	18	13.8	5	3.8	20	15.4	87	66.9

Do not scrape or wash this material away since such actions may adversely affect the subsequent cellular sample	13	10	6	4.6	26	20	85	65.4
The pap test should always be taken prior to other testing e.g. cultures, tissues sampling, application of acetic acid	14	10	6	4.6	26	20	85	65.4
Endocervical specimen are collected with cyto brush using 360-degree rotation within the canal	18	13.8	7	5.4	18	13.8	87	66.9
Ecto cervical specimen are collected with a spatula using 360-degree rotation just inside the os	14	10.8	9	6.9	20	15.4	87	66.9
Scrape the endo-cervix with a spatula and spread the material very rapidly on to the upper end of the slide.	17	13.1	4	3.1	20	15.4	89	68.5
Immediately spray fix by thinly soaking the cellular sample while holding the spray fixative container above 6-8 inches from the slides allow spray fixative to evaporate roughly	12	9.2	10	7.7	19	14.6	89	68.5
Quickly roll the endo cervical brush through the ecto cervical material to the end of the slides.	14	10.8	6	4.6	25	19.2	85	65.4

Table 5.5 above indicates the study findings regarding the practices of health professional in dealing with techniques in cervical cancer screening and the responses where measured using a five point Likert scale. The respondents noted that even if they agree (A=19.2%; SD=63.1%) that time for examination is two weeks after the first day of last menstrual period, they the disagreed about not making appointment during menstrual period. This means that appointment can be done anytime but the examination should be done according to guidelines. Good practices are revealed in this study wherein in 68.5% strongly agreed and

21.5% agree respectively that the patients are not supposed to use vaginal medical, vaginal contraceptives, lubricants or douches for 48 hours before their appointment for pap smear. It is also noted in this study that majority (56.2%) respondents attested that sexual intercourse is not recommended the night before the examination, a considerable percentage (D=19.2%; SD=10.8%) of disagreement is of concern. There was a higher response rate that the excess blood, mucus and inflammatory exudate may be blotted away by gauze pad and furthermore a positive practice is as well not as the majority (A=16.2%; SD=68.5%) attested that pap test should follow other testing like cultures, tissues sampling and application of acetic acid. In the collection of endocervical specimen for test the majority respondents are aware of this practice that cyto brush and spatula, however a concern is noted with a considerable percentage of those who disagreed (13.8%;10.8% respectively) about the use of the mentioned equipment. In summation, the study established a positive practice which is supported with enough knowledge and skill among the health care professional in this study, which clearly states that they are well trained.

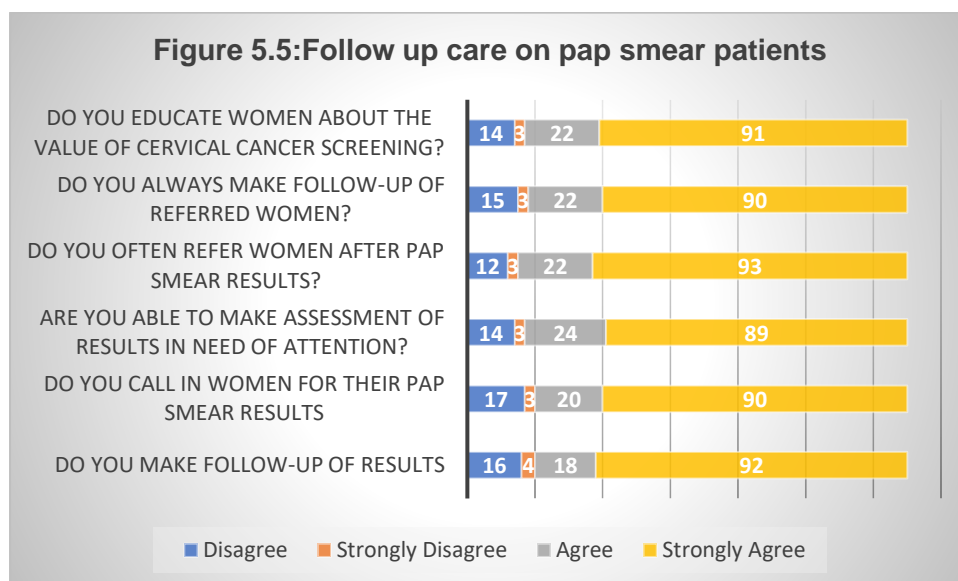
### 5.2.8 Storage and dispatch of smears by health care professionals



**Figure 5.4: Storage and dispatch of smears**

The figure 5.4 above illustrate the practice of storing and dispatching of smears by health care professionals during screening for cervical cancer. The pie charts clearly show that the majority respondents strongly agreed with all the clinical procedures of storing and dispatching of smears. The smears are placed in a room temperature and placed in zip lock bags and they are dispatched to the laboratory daily and a proper record keeping is ensured. All these practices were alluded to by the majority with average of over 70% agreeing, the average of those who disagree was below 10% and it is a slight concern.

### 5.2.9. Follow up care on pap smear patients



**Figure 5.5. Follow up care on pap smear patients**

In the above figure 5.5. shows a positive responded rate to the follow up care on pap smear patients in which majority of respondents educate women about the importance of cervical screening. Agreeing that they make of follow -up on results, patients are called for their results and if the results are positive the women are referred with education and follow-up being key.

### 5.3. STATISTICAL TESTS

In conclusion, the researcher selected few statements in each section of the study and the cross tabulation and chi square was conducted in which socio demographic information was compared to the major variables that is knowledge, perception and practice regarding cervical cancer.

**Table 5.6. Crosstabulation of gender and knowledge, perceptions and practices of health professional regarding cervical cancer.**

Variables	Statement	p-value (0.005)	Degree of freedom	Significance	X <sup>2</sup>
Years of experience vs Knowledge	Multiple sex partners	0.004	5	ST	9.262

<b>Professional qualifications vs Perceptions</b>	Use of oral contraceptive	0.000	9	ST	14.531
	Do you empower women about HPV Vaccine for their children	0.001	6	ST	46.969
	Do you think competency should be measured	0.000	6	ST	26.457
<b>Gender vs Practices</b>	The preferred time for examination is two weeks after the last first day of last menstrual period	0.000	6	ST	28.512
	Do you make follow up of results	0.002	4	ST	16.015

KEY= **ST**-Statistically Significant,  $\chi^2$ -Pearson Chi-square

Table 5.6 illustrates the study findings on the years of experience of participants and their knowledge regarding cervical cancer and the cross tabulation and the chi-square test was statistically significant, as it shows that number of years of experience influences the knowledge assimilation (p-004). Professional qualifications of the health care professionals was compared with the perceptions regarding cervical cancer and screening and the findings were statistically significant, that means that the more a person is educated the higher the level of positive person towards a subject (p-0.000, p-0.001). Furthermore, the practice was compared with gender and the findings were statistically significant in which it was found that the female nurses were more into good practices than males (p-002).

#### 5.4 MIXED METHODS DATA ANALYSIS

In an exploratory design, qualitative data is first collected and analysed, and themes are used to drive the development of a quantitative instrument to further explore the research problem (Creswell and Plano Clark 2011). Because of this design, three stages of analyses are

conducted: after the primary qualitative phase, after the secondary quantitative phase, and at the integration phase that connects the two strands of data and extends the initial qualitative exploratory findings (Creswell and Plano Clark 2011).

#### 5.4.1. Integration of data sets

The integration or linking of the two strands of data is the highlight the value of mixed methods research. Creswell and Plano Clark (2011) indicates that integration can happen at multiple levels of a study, design-level, methods-level, or interpretation-level and can happen in a variety of different ways such as connecting, building, merging, or embedding. In this study, the first linking of data happened at the design-level with the use of a sequential design, where the results from the first phase of the research were used to build the second stage of the research design.

Themes from the qualitative interviews were compared to results from the statistical analyses of the survey data. Points of contention and areas of convergence between the qualitative and quantitative phases are described in the final analysis phase to form meta-inferences, or an overall understanding developed through integration of data strands.

#### Biographic data

Eighteen health care professional participated in a qualitative study and sixteen were females and only two were males. Their ages were between 35- 60yrs which indicate their state of maturity in the profession. Ten professional nurses were having a degree in nursing and only eight had diploma in nursing and their years of experienced differed with eight nurses having more than 15yrs, three between 10-15yrs and two between 5-10yrs and five between 1-5 years. Wherein in the quantitative strand the majority (n=111;85.4%) of them were women with only 14.6% (n=19) of males. A lager number had a degree qualification (n=88; 67.7%) and (30)39% acquired diploma in nursing. Furthermore, the majority 61(47%) of the study respondents had working experience of 5-10 years, followed by 37(29%) who had more than 15 years' experience and the least 15(12%) is those who had worked for 10-15 years.

Findings also shows the highest number of respondents holding degree and majority were females in both design, confirmation of the female dominated profession.

**Theme 1:** The importance of cervical cancer screening was highlighted as decreasing morbidity and mortality, early diagnosis and referral, diagnosis of Sexually transmitted infections and prevention of progression of cancer. In the quantitative strand, table 5.3 majority of participants 128 (98.5%) reported that it is an effective tool for early detection, furthermore,

Item 5.2.3. prevention of cancer, the respondents highlighted the different measures of preventing cervical cancer to reduce morbidity and mortalities which include among other things avoiding multiple sexual partners screening and treatment and avoiding early sexual intercourse.

**Theme 2** Challenges of health care professional on cervical cancer screening programme was highlighted by participants being attitudes of health care professionals, insufficient training, shortage of resources Majority 111(85.4%) indicated shortage of resources; 112(86.2%) structural factors and 117 (90%) administrative factors as indicated in table 5.4.

**Theme 3** Policy formulation and revision, and follow up- the participants highlighted their dissatisfaction in the implementation of the policy regarding age limits, co- morbidities such as HIV/AIDS, time-lines on follow-up and contradictions with maternal health guidelines. The quantitative results indicated majority 91(70%) strongly disagreed with the policy in table 5.4.

**Theme 4** Incompetency in cervical cancer practice and performance of pap smear- Participants acknowledged their lack of competency in performing the skill and failing to locate the transformation zone and having inadequate cervical component resulting in failure to reach the 70% adequacy rate and set target. In table 5.4. of the quantitative study the respondents 33 (25.4%) indicated that they can perform two pap smears in a day and in terms of reaching the 70% adequacy rate a minority 38(29.2%) indicated so, suggesting that the majority 85 (65.4%) do not perform the skill and 90 (69.2%) cannot reach the set target. These findings reflect a convergent or a similarity relating to the theme. In terms of interpretation of results respondents 104(80%) agreed as being problematic which is in line with the qualitative strand.

**Theme 5** Educational support to strengthen cervical cancer programme- Participants highlighted their plight to have a formal training session, have mentors and the training be formalised and structured because there were for formal educational support. In the quantitative strand, table 5.4. only a minority 39(30%) agreed to have mentoring the professional nurses at their clinics which translate to 82(63.1%) who are not mentoring their neophyte professional nurses and majority 115(85.5%) also saw the importance of the cervical cancer training to be competency based.

## 5.5. CONCLUSION

The quantitative findings indicated that health care professionals have knowledge of cervical cancer and clearly understood the importance of cervical cancer screening. The qualitative strand also highlighted many challenges regarding cervical cancer screening and being on the implementation level it is important that their plight is supported in all respect. Operational managers in senior position should ensure a positive workplace environment that is conducive to cervical cancer screening by mentoring and supporting the programme. The mixed method

analyses findings highlighted that inadequate training and support is available at clinics and that the adequacy rate is far from being reached and the 70% target rate which suggests the need for development of an educational training programme for cervical cancer screening. The next chapter describe the theoretical framework.

## CHAPTER 6

### CONTEXTUALIZATION OF FINDINGS IN THE THEORETICAL FRAMEWORK

#### 6.1. INTRODUCTION

The previous two chapters presented and interpreted the findings of the study and revealed that professional nurses and operational managers were not fully implementing the cervical cancer screening programme, the training was not standardised and thus some lack of knowledge and competency were highlighted.

#### 6.2. CONCEPTUAL FRAMEWORK

The study was guided by precede- proceed as a model of frame work. This conceptual model minimizes the risk of subjectivity by synthesizing disparate sources of data to ensure that initiatives with the greatest potential of achieving the best health outcomes are implemented. The Model was based on the premise that the determinants of health and health risks are multi-factorial and that multifaceted and multi-sectorial efforts are required to effect behavioral, environmental, and social change.

##### 6.2.1. Core concepts of the framework

The framework of precede-proceed model was useful for grouping together factors that are likely to be used to bring about the desired program outcomes. The three broad groupings are predisposing factor, enabling factors, and reinforcing factors. Predisposing factor are those that include personal attributes such as person's knowledge, attitudes, believes, values and perceptions that can promote or hinder motivation for change.

Enabling factors are those skills, resources and barriers that encourage or hinder the desired change. Enabling factors are mainly societal forces or systems, often enabling factors are availability of personal and community resources, accessibility, referrals, laws, status, personal skills, services and facilities.

Reinforcing factors are the behaviours and attitudes or those around the person such as the rewards and incentives received or the feedback that was received from peers, parents, family, employers and social group for adopting the desired outcome. The precede component of the model was the diagnostic phase that was useful for identifying the predisposing, enabling, reinforcing constructs associated with the phenomenon and, the proceed component was the development phase outlining the policy regulatory and organizational constructs. The model

asserts that predisposing, reinforcing, and enabling factors influence that behavioural and environmental change would occur.

The precede structure directs attention to what must precede the desired outcome in this case women getting an adequate cervical screening. To determine what causes the desired outcome must be diagnosed before intervention strategies can be designed. Without an adequate diagnosis of the important factors, the researcher runs the risk of designing ineffective intervention strategies.

Phase five involved establishing which health promotion, health education and policy related interventions encouraged the desired changes in the behaviours or environment's and in the factors, that supported those behaviours and environments was the most prominent tool for designing and administering an experiment in intervention to change high risk behaviours (Green and Keuter,2005). The precede-proceed model had been adopted within long term, experimental health promotion programs. It provided a framework that helped health makers effectively designed health programs based on the assessment and analysis of the situations, the most basic assumptions in this model was the active participation of the audience.

### **6.3. CONTEXTUALISATION OF FRAMEWORK**

In this study the constructs of the precede-proceed model were retrospectively applied to the development of a context specific training programme to strengthen cervical cancer screening programme in Limpopo Province to determine how the model can be used to evaluate and potentially improve the programme goals. The retrospective application of this model start with the five preceding phases followed with the four proceeding phases. Each assessment phase was applied retrospectively. The method in which they were employed is outlined below.

The first phase of the precede-proceed model was **social assessment**. This phase address the needs of a given population which were health care professionals and the operational managers of Vhembe and Mopani districts, the problems that was identified during district audits realised that there were inadequate smears within the selected district that led to failure to reach the 70% target. With the typical prospectively application of the precede-proceed model this information was obtained through interviews of health care professional and operational managers from selected clinics of Vhembe and Mopani districts on perception and challenges experienced by health care professionals about cervical cancer screening programme within this assessment phase demographic information was obtained from health care professional and operational managers. Findings of the study indicated that most of the clinics were not implementing the cervical cancer programme.

The second phase of the precede- proceed model was the **epidemiological assessment** that included data specific to the primary problem identified in the social assessment. This assessment included provincial and districts representative data from National health laboratory services on cervical cancer screening cytology results with high number of inadequacy rate for pap smear. A pap' smear results from the clinics were found to be unsatisfactory for evaluation which was a threat to the cervical cancer screening program as it delayed treatment and diagnosis resulting in high morbidity and mortality.

Phase three includes the **behavioural and environmental assessments**. This phase serves to identify the key behavioural and environmental factors that contributed to the problem. For both components of this assessment data was obtained from the health care professionals and the operational managers from Vhembe and Mopani districts through one on one interview and self- reported questionnaire. The findings indicate that there were attitudes problems among health care professional as some were not interested in implementing the programme. However, positive attitudes were also observed where other health care professionals were providing on-site support through orientation and mentoring. For the environmental assessment, the context in which data the National guideline for cervical cancer screening, 2017 was reviewed the regulation present within cervical cancer screening and the National health laboratory services report for cervical cancer cytology result for the Province was reviewed and the pap' smear cytology results from selected visited clinics were reviewed. Environmental factors included infrastructural factors that impeded the implementation of the cervical cancer programme as the findings indicated that there were no enough consultation rooms, there were no privacy where women were counselled. At times, there were no resources and the auto-clave machines were out of order. Furthermore, it was sometimes difficult to trace women when results were back as women lived in remote areas with no specific addresses and that contributed to delayed treatment and referral.

The fourth phase involves the **ecological and educational assessment** which address the predisposing, reinforcing, enabling factors contributing to the problem and behaviour. To meet the element of this phase, component of the training programme for cervical cancer screening were categorised as predisposing, reinforcing or enabling factors

The predisposing factors includes the individual's knowledge, attitudes, values beliefs and perceptions. The enabling factors includes skills resources or barriers that contribute to the problem and relate to the availability and accessibility. The enabling factors are that the health care professionals are registered nurses and have undergone basic nursing training for registration as professional nurses and the programs R425, R683 have laid adequate foundation for them to practice. Furthermore, others have additional qualification in Primary

Health Care Assessment, Treatment and Diagnosis (R112) in that they can assess, provide treatment and refer where necessary. The scope of practice for registered professional nurses requires professionalism or competence in provision of care. Finally, the enabling factors are the peer and social support that serves as either positive or negative reinforcement of a behaviour. In summary, these factors are considered modifiable contributors to the problem and should promote the maintenance of the behaviour change.

In this phase the study findings revealed that under predisposing factor most health care professionals were not competent in performing cervical cancer screening. The high number of inadequacy rate for cytology results was therefore linked to the low levels of competencies and lack of knowledge in cervical cancer screening. Training of health care professionals on cervical cancer screening differed regarding the period of training professional nurses, some received comprehensive training but majority received once-off training or peer support and on-job training. So, the development of context specific training programme should therefore improve the skill of cervical cancer screening.

Lack of standardised cervical cancer screening training to health care professionals create challenges in the provision of cervical cancer screening services. Inadequate information/knowledge and challenges to health care professionals was also revealed in the study. Results also revealed that some health care professional displayed lack of interest which was linked to poor uptake of cervical cancer screening, results further indicated that some health care professional considered cervical cancer screening as important in early detection and early treatment reducing morbidity and mortality of women which was a positive reinforcement to facilitate the development of an educational programme.

The importance of cervical cancer screening emphasised by Hoste, Vossger and Poppe, (2012) who stated that the incorporation of HPV testing in to cervical cancer screening strategies can increase disease detection (benefits) and increase length of screening interval (decreasing harm)

Furthermore, the results indicated that lack of resources was a challenge and made it difficult for the implementation of national cervical cancer screening programme by health care professionals. Availability of resources ensures that women access the cervical cancer screening services always. Results revealed that incorrect allysberies are sometimes supplied to the clinics for performance of pap' smear whereas brushes were not supplied at all making it difficult in obtaining quality of cervical cancer.

Reinforcing constructs, the results revealed that health care professionals were never trained on cervical cancer screening some received in-service training somewhere shown the skill by colleagues on how to conduct cervical cancer screening. According to the study findings all

factors in the Precede model influenced the development of a training programme to strengthen cervical cancer screening programme which was step five of Proceed model.

The fifth phase (phase five) of the precede- proceed include **the administrative and the policy assessment** which identifies all the political and organizational resources that could inhibit or support the development of a training programme, to address the element of this phase the National cervical cancer screening guide line and National health laboratory cytology reports for pap smear were examined more specifically on the National cervical cancer screening guideline (2017) because they provide insight on cervical cancer screening, current cervical cancer screenings cytology results for adequacy rate at the clinic were examined and revealed that there were high number of inadequacy rate for pap'smears. The district health service need to keep a data base of the health care professionals that have been trained for administrative purpose to ensure efficiency and sustainability of the educational programme.

Policy guidelines for implementation of cervical cancer screening should be strictly implemented and the province should strive for the 70% adequacy rate, as the findings suggested that the health services were failing to reach the set targets. Findings further revealed that the national cervical cancer screening policy requires a review regarding initiation age of 30yrs to screening, looking at the surge of HIV and AIDS among women 18-24yrs as a co-morbidity.

Phase six include the implementation of the training programme, the developed programme is to be implemented in the Primary Health Care Services in both districts of Limpopo Province. The district co-ordinators and the facilitators should ensure roll- out of the program, to correct the inconsistencies and have a standardised training for all.

The final three phases are the evaluative phase of the model including the process (phase 7) impact (phase 8) and outcome phase (phase 9) evaluations. The process evaluation can be described as a formative assessment of programme performance throughout the implementation of the programme. This review includes the assessment of the supporting organization and the training programme length, frequency, duration of activity and grouping of the identified participants. These phases were detailed under validation of the educational programme in chapter 8.

The process evaluation is a way for reviewers to assess the programme performance and identify areas for improvement before programme completion. The context specific training programme the researcher has developed an assessment tool that would be considered aspect of process evaluation.

The impact and outcome evaluation were addressed by analysing the actual assessment data of the programme while considering effort, efficiency and effectiveness. This refers to how successfully the goal and objectives were met. Effort can also describe how well programme performed about the program design and implementation procedures. Effectiveness refers to how well the desired outcome were achieved and efficiency refers to how much were achieved with the minimum use of resources. Everything was factored in the impact and outcome evaluation of the programme using the precede- proceed model.

## **7. CONCLUSION**

This chapter contextualised the findings within the framework of the study. The contextualisation guided the researcher on the development of the educational programme for cervical cancer screening based on the gaps identified. The following chapter discusses the development of the educational programme based on the study findings.

## CHAPTER 7

### DEVELOPMENT OF A TRAINING PROGRAMME

#### 7.1. INTRODUCTION

The development of a training programme emanated from the perception and challenges of health care professionals regarding the collection of quality smears for cervical cancer screening. The researcher further realised that no formalised training programme for health care professionals for cervical cancer screening in Limpopo Province therefore the researcher was motivated to assist the health care professionals by developing this programme, The training programme focuses on the provision of quality smears for cervical cancer screening because they would be empowered with skills to be competent in the collection of quality cervical smears in ensuring the provision of quality care to patients.

The findings based on merging the qualitative and quantitative data were the foundation for the development of the context-specific training programme for professional nurses regarding the collection of adequate cervical smears as revealed that most professional nurses were not keen in the implementation of cervical cancer screening and for those who were collecting pap smears acknowledged their inefficiencies in the performance of pap 'smear collection, the filling of forms, the application of the smear, the location of the endo-cervical component as well as the interpretation of results. The professionals should be motivated in the implementation of cervical cancer screening policy and ensuring that the 70% target is attained. Provincial master trainers and the district trainers at the clinics as the facilitators of the training programme should be an inspiration to and motivators of health care professionals who lacked motivation during the specific times that might lead to poor performance of health care professionals on cervical cancer screening (Werner,2010).

Objective three is in phase two of the study indicates to:

- Develop training programme to strengthen cervical cancer screening services in Limpopo Province.

#### 7.2. THEORETICAL FOUNDATION OF MODEL DEVELOPMENT

The research findings on perceptions and challenges of health care professionals regarding cervical cancer screening guided how the training programme be structured. This study used different theories and SAQA framework to guide the development of the transition support programme. The precede component of the model was the diagnostic phase that was useful for identifying the predisposing, enabling, reinforcing constructs associated with the phenomenon and, the proceed component was the development phase outlining the policy

regulatory and organizational constructs and further provided structure that support implementation and evaluation. Bloom's taxonomy of learning domains was applied in developing the content of the cervical cancer screening programme. This taxonomy was relevant for health care professionals to possess different levels of cognitive, affective and psychomotor skills to collect cervical smears of quality and provide safe nursing care. Knowles andragogy learning theory represents adult learning principles and was therefore deemed appropriate to guide the implementation of the cervical cancer screening programme.

### **7.2.1. Application of adult learning theory by Malcolm Knowles**

The following are important aspect of Knowles andragogy learning theory described by (Graig, 1996) that should be considered when the programme is offered. Detail about this theory is provided in this chapter.

The theory is part of the theoretical point of departure that was used to develop the training programme for health care professionals. It was acknowledged that adult learners want to learn what is useful to them before attending any training, they ask themselves whether the programme is worth attending, otherwise it would be waste of time. The training programme address the experiences of health care professionals that should be considered during training because adult learners attend learning event with previous experience, knowledge, self-direction, interest and competencies.

Malcolm Knowles (1980) indicated that for an adult to learn the trainer must carefully consider the emotional context in which this education takes place. Learning environment should be conducive to learn, the facilitator should take measures to ensure that the physical and social environment training space should be safe, comfortable and enjoyable. Learning should be reinforced, the training methods that should enable the participant practice new skill and ensure prompt re-enforcing feedback. Learning should be applied immediately, facilitator should provide opportunity for participants to apply new information and skill they have learned, learning occurs in small groups, the facilitator should use the method that encourage participants to explore feelings, attitude and skill with other learners.

Adult learning theories provides insight into how adults learn, and can help instructors be more effective to the needs of learners they serve. Malcom Knowles (1980) posited set of assumptions about adult learners, namely that the adult learner:

- Moves from dependency to increasing self-directedness as he/she matures and can direct his/her learning. In this study health care professionals, would be given an opportunity to work in group to actively participate in the learning.

- Draws on his/her accumulated reservoir of life experience to aid learning. In this study, adult learners attend the learning event with previous knowledge, experience, self-direction, interest and competency. Adult learners have vast experience in work related topics, should be considered when providing supplementary training.
- Is ready to learn when he/she assumes new social or life roles
- Is problem-centred and wants to apply new learning immediately. In this study, the training programme ought to be task centred and problem based scenarios would be formulated to assist the health care professionals to solve work related problems for further assistance in their actual work setting. The master trainer ought to provide information which could assist in problem solving and task centred activities.
- Is motivated to learn by internal rather than external factors that empowered them to learn with more curiosity. The learning activities should clearly demonstrate to the learner how it would benefit them in their area of work.
- The outcome of the aspect that should be learned by adult ought to be realistic important and specific to their learning needs in their own context for them to commit themselves for learning. In this study the training programme is context specific to Vhembe and Mopani districts in Limpopo province.
- Adult learners require learning activities that addresses the needs. The training in this study include the topics suggested by health care professionals and remain context specific
- Adult learners need to be realistic that the training programme that was aimed at professional development should address their daily functions and should not be irrelevant to what they were doing. The modules of the training programme were based on the themes from data analysis.
- The adult learners require tangible activities which could be applied in their real situations, they are not interested in their aspect that only theorise and which could not be implemented after the training had been conducted. The activities in this training programme were based on themes including suggested topics about the cervical cancer screening adequacy rate by health care professionals
- The adult learner expects to be given feedback about their performance. The training programme contained evaluation aspect which would assist in giving feed back to health care during the process of training.

#### **7.2.1.1. Trainer guidelines**

Malcolm Knowles often referred as the father of adult education and indicate that adult learning occurs best when it follows certain principles, if trainers follow this guideline they would greatly

enhance the learning experience for participant. Therefore, for participant to retain what they have learned in cervical cancer education workshops they need a chance not only to hear a lecture or discussion, see a demonstration or visual aids and discuss the material but they must also have an opportunity to do something with the new information and skill. This can take a form of applying their new insight to case studies or role-play exercise or it can take a form of developing action plan of ways to use their training insight in their real-life. Participatory training is the whole mark of adult learning. It moves participants through four phases of adult learning cycle and it is important to move participants through this adult cycle.

- The learning experience is active and not passive; facilitator should actively engage participant in their learning.
- They accept responsibility for their own learning. The facilitator should make sure that the training content and skill are directly relevant to participant experiences so that they would want to learn.
- The learning experience fills their immediate needs; facilitator should identify participant's needs and tie the training concepts in to this identified needs
- The training is self-directed and meaningful to them; the facilitator should involve the participant to decide their learning and skill that would be covered during the training
- Their learning experience address, ideas, feelings and actions, the facilitator should use multiple methods knowledge, attitude and skill
- New material is related to what participant already know, the facilitator should use method that would enable participant to enable this relationship and integration of new material.
- Trainer values their contribution as both a learner and a teacher, facilitator encourage participants to share their expertise and experience with others.

#### **7.2.1.2. Different learning approaches**

The training programme will be facilitated by the researcher as a master trainer in sexual reproductive health services in Vhembe district. She would be able to empower the health care professionals with expert competencies regarding cervical screening adequacy rate for pap's maar results, her expertise would assist them in collecting quality smears with endocervical component.

The following approaches to assist the accomplishment of the implementation of the training programme:

### Self-directed learning

Self-directed learning is an effective learning approach that will be used for training programme. Adults need to be free to direct their learning. The learning engagement would be a classroom based for theory and assimilation of procedures during practical's therefor the facilitator should actively involve adult participants in the learning process. Specifically, they should be sure to act as facilitators guiding participants to their own knowledge rather than supplying them with all the facts (Meyer and Van Niekerk, 2008).

- Self-directed learning because it would assist the learners in taking responsibility for accomplishment of specific outcome for the programme, self-directed learning would further be used during the programme to encourage active participation by health care professional because they would be given work related problem to solve and small group discussion, presentation would be encouraged.

### Facilitation

Sithole (2011) attested that facilitation is a process of drawing together all categories of learning approach namely, teacher centred. Student centred demonstrations and practical work with the aim of helping the student to achieve the required outcome. Facilitation is a process during which an adult learner is engaged in acquiring knowledge by interacting with colleagues and facilitators during training. The role of the facilitator in the learning process include the provision of guidelines on the required information and on how and where learners should obtain outcomes (Meyer and Van Niekerk, 2008). The facilitator should make it easy for the learner to understand the learning material than to force the learners to learn what they do not want to learn. To accommodate learners with slower tempo of learning the facilitator should also use more examples. The facilitator would also be expected to assist, reassure, encourage and motivate the health care professionals during the roll out of the programme. It is therefore necessary the context specific training programme be facilitated by someone with relevant knowledge and skill in cervical cancer screening.

In this study the master trainer for sexual reproductive health in Limpopo Province together with other trainers would be responsible for facilitation for learning for health care professionals and would consider the individual capabilities of learners.

### Small group discussion

Small group discussion is valuable when dealing with adult learners. According to Killen (2007) adult learners learn more in a group context than in whole class teaching. The aim for group discussion in the context specific training programme is to encourage and exchange of views and enhance socialization among health care professionals. The health care

professionals in the training programme would be divided in small groups with group leaders look at problems encountered during pap'smer collection, The facilitator should act as a resource who also initiate the discussion by posing pre prepared questions to guide learner's thoughts (Meyer and Van Nieker,2008).

Killen (2007) Identify factors that ought to be observed in small group discussion as follows

- The group leader and the secretary should be chosen for the group
- The facilitator should express clear guidelines for the learner
- The facilitator should assess the learners by providing direction
- There should be a clear focus on learning among the group members
- Learners should assist each other in the in the careful management of the learning environment to enable them to learn effectively
- All learners should actively participate during group discussion
- The facilitator should monitor the progress of the learners while the learners should know that it is their responsibility to give the facilitator feedback of the work completed
- Learners and facilitators should monitor time

According to Meyer and Van Niekerk (2008) group discussion can become ineffective if

- Outcome are not well formulated
- Learners do not prepare and thus the facilitator make over and the group and the group discussion becomes a lecture
- Some learners dominate the discussions
- Groups are too big then not all learners can participate

The facilitator of the context specific training programme would carefully plan execution of small group's discussions.

Reflecting teaching

Reflective teaching is a step in experiential learning. This approach would assist the facilitator and the learner to look back, think about what had happen in the past and the reason why it had happened (Killen,2007) A reflective practitioner according to Bruce, Klopper and Mellish (2011) is characterized by a range of personal and abilities such as the ability to

- To engage in self-assessment
- Criticize existing state of affair
- Practice as an autonomous professional

During the training programme there would be the group context, where in within the group, individuals who had participated in the collection of pap' smears, share with colleagues and peers what they saw and felt during their activity. The facilitator can then guide the participants

along systematic analysis by asking a series of broad questions (Bruce et al., 2011). Reflective teaching would actively involve the health care professionals in their learning and promote changes that would engage them in dealing with the challenge of high number of inadequacy rate for cervical cancer smears in Limpopo Province.

#### Role play

Role play is based on simulation technique and it requires the spontaneous acting out of situation by two or more participants under the direction of the facilitator (Bruce et al., 2011). Role play would allow health care professionals to explore realistic situations by interacting with each other to develop experience in a supported environment. This strategy can incorporate drama, simulation, games and demonstration on real- life cases related to cervical cancer topics to be covered by the training. Role play would enable the health care professionals to immediately apply the content in a relevant real world context.

#### Lecture

Russell, Comello and Wright, (2007) state that even with so many teaching strategies the oldest and most frequently used method in classroom teaching today remains the lecture as it had so many advantages including the ability to provide information to many students, to cover a large amount of material quickly and to provide cost effectiveness as well as the efficient use of classroom time. The lecture is a way to introduce new material, continue discussion of a topic and sum up course content, as well as present large blocks of complex and confusing content. In this study, health care professionals would be given overview lectures on the suggested topics for the training programme.

#### Case study

Case-based teaching is regarded as superior instructional methods compared with lecturer in promoting a student critical thinking skills. While much is known about the role a discussion facilitator plays in case-based teaching. The debate around the influence of the format and structure of cases on learning is controversial (Kim, Phillip, Pinsky, Brock, Phillips and Keary, 2006). The facilitator would provide case scenarios where health care professionals would learn communicating skills, apply counselling to clients during screening and ethical considerations.

### **7.3. Bloom's Taxonomy of Learning**

Bloom's taxonomy is a set of three hierarchical models used to classify educational learning objectives into levels of complexity and specificity. The taxonomy is organized into three domains: Cognitive, Affective, and Psychomotor (Cook, 2013). Educators have primarily

focused on the Cognitive model, which includes six different classification levels: Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation. The group sought to design a logical framework for teaching and learning goals that would help researchers and educators understand the fundamental ways in which people acquire and develop new knowledge, skills, and understandings (Cook, 2013). This learning knowledge is appropriate for health care professionals to have a mastery of competency of objectives on knowledge (cognitive), attitudes (affective) and skills (psychomotor).

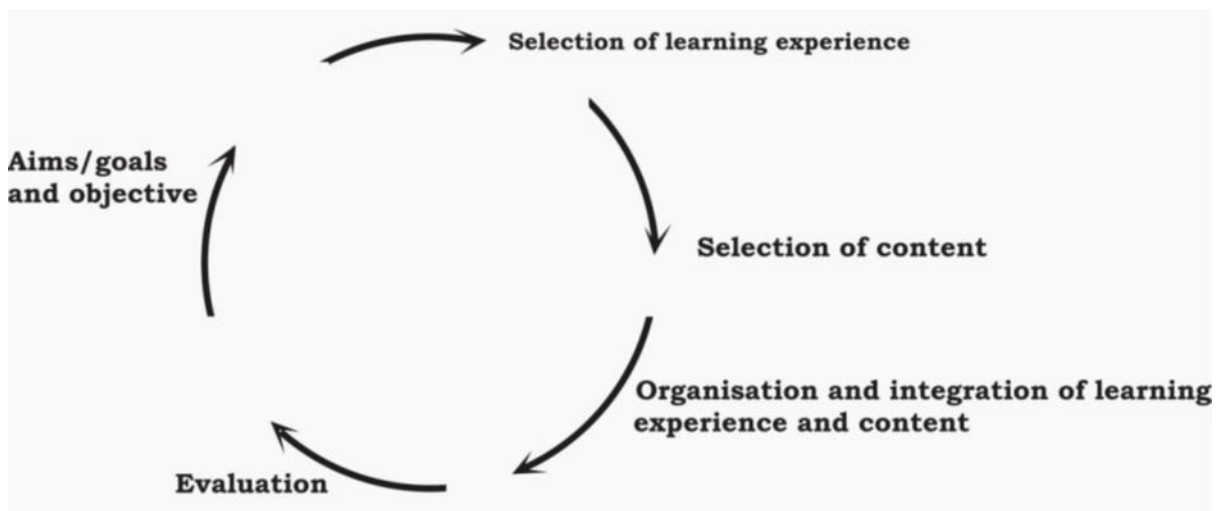
For a course to meet the required standards it must have learning objectives that are measurable. Quality requires that your course assessments (activities, projects, and exams) align with your learning objectives. Bloom's taxonomy to help your health professionals reach mastery of the course level objectives. The use of Bloom's Taxonomy is to make sure that the verbs chosen for your lesson level objectives build up to the level of the verb that is in the course level objective.

To ensure educational excellence, Bloom's taxonomy of learning domains was applied in the development of the content of the cervical cancer screening programme (Cook, 2013). This learning approach was deemed appropriate, as health care professionals are expected to possess knowledge and skills to deliver quality cervical cancer screening services. To ensure mastery of competency for health care professionals, the programme included objectives on knowledge, skills and attitudes. These intellectual abilities include cognitive, affective and psychomotor skills, which are essential in nursing education training.

Cognitive skills concentrate on knowledge and understanding of facts, concepts, rules and policies as outlined in the different domains of competencies regarding cervical cancer. Affective skills include the compassion and caring aspects of nursing, it focuses on ethical conduct, legal issues, and professional standards, as outlined in the professional, ethical and legal competency domain during the practice of cervical cancer screening. Psychomotor skills deal with the hands-on skills of health care professionals in the collection of pap' smears. Health care professionals are expected to be competent in executing nursing of the procedures as incompetency results in false-negative results and delayed treatment (Mogotlane et al., 2018).

#### **7.4. Context- specific training programme to strengthen cervical cancer screening**

The development and implementation of the training programme is discussed using Wheeler (1971) cyclic model and SAQA guidelines for short courses or unit standards, Bloom's taxonomy of learning and Malcom Knowles Adult Learning Theory (Wheeler, 1971; Graig, 1996).



**Figure Error! No text of specified style in document..1: Wheeler Curriculum development steps**

Source: Wheeler (1971)

The key elements of Wheeler’s model include:

- Selection of aims, goals and objectives
- Selection of learning experiences
- Selection of content (subject matter) through which certain types of experiences may be offered.
- The organization and integration of learning experiences and content with respect to the teaching learning process within school and classroom.
- Evaluation of the effectiveness of all aspects of all other phases in attaining the objectives.

The components of the cervical cancer screening training programme will be discussed next.

#### **7.4.1. Title of the programme**

The programme is titled: **“A training programme to strengthen cervical cancer screening services in Limpopo Province”**.

##### **7.4.1.1 The NQF level**

This programme will be offered at NQF Level 5.

#### 7.4.1.2 The credits

The programme will be awarded 5 credits.

#### 7.4.1.3 The duration of the programme

The programme would be offered over five days (40 hours).

### **7.4.2. The aim of the cervical cancer screening programme**

The aim of the programme is to provide knowledge and skills that assists health care professionals to develop cognitive, affective and psychomotor skills in the provision of cervical cancer screening services. It is also aimed at developing a formal standardised cervical cancer screening programme for the public health care services in Limpopo province.

### **7.4.3. The objectives of the programme**

This module sets out to assist students on the following:

Screening is testing of all women at risk of cervical cancer, and to detect precancerous changes, which, if not treated, may lead to cancer. To enhance a well-organized system for follow-up and treatment.

Reduce the number of people who die from the disease, or prevent deaths from **cancer**

### **7.4.4. Critical- cross-field**

- Identifying and solving problems in which responses indicate that responsible decisions using critical and creative thinking have been made
- Working effectively with others as a member of a team, group, organization or community
- Organizing and managing oneself and one's activities responsibly and effectively
- Collecting, analyzing, organizing and critically evaluating information
- Communicating effectively using visual, mathematical and/or language skills in the modes of oral/written persuasion
- Using science and technology effectively and critically, showing responsibility towards the environment and health of others
- Demonstrating and understanding of the world as a set of related systems by recognizing that problem-solving contexts do not exist in isolation.

### **7.4.5. Learning outcomes**

On successful completion of the training programme, the student will be able to:

- Understand the rationale behind cervical screening while recognising the importance of the criteria for early detection of cervical cancer.
- Demonstrate their knowledge of the National Cervical Screening Programme.
- Understand the relevant normal anatomy, physiology and cytopathology of the cervix and demonstrate competence in performing HPV cervical screening tests.
- Demonstrate the ability to produce and document, with appropriate history, a quality laboratory sample and dispatch it appropriately
- Demonstrate competence in performance of cervical screening test
- Interpret laboratory cervical screening test results accurately and apply screening recommendations as appropriate to each situation
- Explain treatment options available for women who receive abnormal screening tests or who have cervical cancer
- Maintain client comfort, safety and confidentiality
- Communicate effectively on all aspects of the cervical screening process.
- Develop support and counselling skills in relation to client needs.

#### **7.4.6. Learning experiences**

- Learning is therefore pillars in this programme. Essential elements in this approach are student preparation and active participation during class and group work. It is impossible to reach your goals without thorough preparation. A variety of strategies will be used to facilitate learning: Active involvement of learners by means of assignments, case studies (scenarios) in small group discussions, debates, quizzes, role playing, visual illustrations, and solving challenging case studies/problems. This was highlighted during phase 1a of findings that peer teaching, demonstrations were suggested as some of the learning experiences.

#### **7.4.7. Selection of content**

- Anatomy and physiology of the pelvic organ.
- Aetiology of Cervical Cancer and the burden of HPV-related cancers: cervix, anus, vulva, vagina.
- HPV and HPV vaccine
- Other screening tests for cervical cancer
- Sexual behaviour and reproductive health indicators and Sexually Transmitted Infections
- The NHS Cervical Screening Programme and guideline

- Background to Cervical Screening
- The art of Communication and counselling skills
- Practical Aspects of taking Cervical samples
- Cervical Screening sample requests
- Understanding the test results
- Treatment methods
- Legal and Ethical Issues

#### 7.4.8. The organization and integration of learning experiences and content

**Table 7.1 Outline of module content**

Units	Content	Teaching strategies	Teaching /Learning Approach(es)	Sources
<b>Unit 1: Introduction and overview</b>  <b>Unit 1.1</b>	Overview of the programme  Anatomy and physiology of the pelvic organ	Lecture: PowerPoint slides	Adult learning theory	Presentation slides
<b>Unit 2: Etiology and burden of disease and HPV</b>	Etiology of Cervical Cancer and the burden of HPV-related STIs, HPV types and types of vaccine	Lecture: PowerPoint slides  Group discussions, Case studies	Adult learning theory	Oncology Nursing- Langhorne, M., Fulton, J., Shirley Otto, S. 2007. 5 <sup>TH</sup> edition  Lewis, SL; Dirksen, SR; Heitkemper, MM. & Bucher, L. 2014. Medical – Surgical Nursing. Assessment and Management of Clinical Problems. 9th Edition. Evolve. Elsevier. Canada.  Brunner & Suddarth's Textbook of Medical-Surgical Nursing 10th edition

Units	Content	Teaching strategies	Teaching /Learning Approach(es)	Sources
<b>Unit 3: Policies and guidelines</b>	The NHS Cervical Screening Programme and guideline  Background to Cervical Screening	Lectures, demonstrations, group discussions, case scenario	Adult learning theory	<p>National guidelines and relevant policies</p> <p>National Department of Health. National Cancer Strategic Framework 2017. Pretoria. Available from: <a href="http://www.health.gov.za/index.php/2014-08-15-12-53-24">http://www.health.gov.za/index.php/2014-08-15-12-53-24</a>.</p> <p>National Department of Health. Cervical Cancer Prevention and Control Policy. Pretoria; 2017. Available from: <a href="http://www.health.gov.za/index.php/gf-tb-program/361-launch-ofcancer-policies-2017">http://www.health.gov.za/index.php/gf-tb-program/361-launch-ofcancer-policies-2017</a>.</p> <p>World Health Organization. Human papillomavirus (HPV) and cervical cancer. Geneva; 2019. Available from: <a href="https://www.who.int/news-room/fact-sheets/detail/human-papillomavirus-(hpv)-and-cervical-cancer">https://www.who.int/news-room/fact-sheets/detail/human-papillomavirus-(hpv)-and-cervical-cancer</a>.</p>
<b>Unit 4: Professional practice, ethics and communication and counselling</b>	Professional roles and responsibilities- Overview of the Nursing Act <i>Patient safety</i>	Lectures, demonstrations, group discussions, case scenario	Adult learning theory	<p>The Constitution of the Republic of South Africa, Act 108 of 1996 chapter 2 section 27.</p> <p>-The Nursing Act no 33 of 2005 as amended.</p> <p>-The South African Nursing Council Rules and Regulations, R2598.</p>

Units	Content	Teaching strategies	Teaching /Learning Approach(es)	Sources
	Communication and counselling skills			<p>-The South African Nursing Council Rules and Regulations R387.</p> <p>Mellish, JM, &amp; Paton, F.1999. <i>An Introduction to the Ethos of Nursing. A text for basic student nurses.</i>2nd edition. Cape Town. Heinemann.</p> <p>-Bathopele principles</p> <p>-Patients right charter</p> <p>-Ethical guidelines</p>
<b>Unit 5: Knowledge - competency based</b>	<p>Practical Aspects of taking different types of Cervical samples</p> <p>Cervical Screening sample requests</p> <p>Understanding the test results</p> <p>Treatment methods</p>	<p>Lectures, demonstrations</p> <p>Procedure manual</p> <p>Video clips</p>	Adult learning theory	<p><a href="http://www.slh.wisc.edu/clinical/cytology/analytical-services/conventional-pap-smear/">http://www.slh.wisc.edu/clinical/cytology/analytical-services/conventional-pap-smear/</a></p> <p>nsu.govt.nz/health-professionals/national-cervical-screening-programme/ncsp-workforce/smear-takers</p>

#### 7.4.9. Evaluation

The term 'assessment' and evaluation are often used similarly or interchangeably. Coates (2015) interpret assessment as broadly involving the measurement, reporting and interpretation of student learning and development. The analysis embraces formative and

summative assessment, and ranges from in-class to cross-national practice, but emphasis is placed on formal assessment that is relevant to establishing the quality of individual learning.






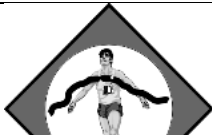
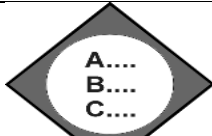



Assessment provides essential assurance to a wide variety of stakeholders that people have attained various knowledge and skills, assessments should reflect and be determined by the learning goals of a lesson or a course.

Evaluation of the developed programme will also be evaluated for impact if its intended purpose was realised.

## 7.5. IMPLEMENTATION OF THE PROGRAM (COURSE CONTENT)

### 7.5.1. STUDY ICONS

Table 7.3. Study icons used in units

 <p>Test your current knowledge and insight.</p>	 <p>Read the prescribed material.</p>
 <p>Important information</p>	 <p>Lecture overview</p>
 <p>Study carefully</p>	 <p>Outcomes</p>
 <p>List of concepts</p>	 <p>Activity</p>
 <p>Group activity</p>	 <p>Practice</p>

## 7.6. UNIT 1: Overview of the programme: Lecture overview



At the end of the session the participant should be able to:

- To reduce the incidence of cancer of the cervix by detecting and treating pre-invasive stage of the disease.
- Reduce morbidity and mortality associated with cancer of the cervix.
- Reduction of health costs associated with treatment of cervical cancer.



**Activity 1.1. Group Activity:** Pre-test on knowledge on generic competencies.

At the end of the session the participant should be able to:

- Explain the term “health education”
- Identify the levels of prevention of disease.
- Describe the activities in each of the levels.
- Consolidate all answers from the group and report back.
- The facilitator will summarise answers and input if necessary.



Clarke, M.2015. Vlok’s community health (sixth edition). Cape Town: Juta

Stanhope, M & Lancaster, J. 2002. Community Health Nursing: Process and Practice for Promoting Health London: Mosby

Hattingh, S, Dreyer, M, & Roos S. (4th edition). Community Nursing: A South African Manual. Cape Town: Oxford University Press.

### 7.6.1. Unit 1.1. Anatomy and physiology of the pelvic organs



At the end of the session the participant should be able to:

- Explain the anatomy and physiology of the uterus and the cervix

- Describe the origin of cervical cancer
- Describe the squamous metaplasia and transformation zone



Lecture overview

Power-point presentation



Self-Activity: At the end of presentation the last slide has a self- activity:

Please label the diagram.

- Differentiate between the normal and pathologic cervix



Oncology Nursing- Langhorne, M., Fulton, J., Shirley Otto, S. 2007. 5<sup>TH</sup> edition.

-Lewis, SL; Dirksen, SR; Heitkemper, MM. & Bucher, L. 2014. Medical – Surgical Nursing. Assessment and Management of Clinical Problems. 9th Edition. Evolve. Elsevier. Canada.

-Brunner & Suddarth's Textbook of Medical-Surgical Nursing 10th edition

### 7.6.2. Unit 2: Aetiology, burden of HPV disease and HPV vaccine



At the end of the session the participants should be able to:

- Describe the prevalence of cervical cancer
- Explain the causes of cervical cancer
- List the types of cervical cancer
- Identify the risk factors for cervical cancer
- Outline the signs and symptoms of cervical cancer
- Describe the relationship of cervical cancer and HPV
- Describe the different types of HPV
- List the types of HPV Vaccines and their implications



### Pre-reading and pre-knowledge assessment

Divide into groups and choose a group presenter for reporting time.

Each of the group to tackle one of the above objective. (Facilitator to ensure all objectives are distributed among groups).

### SELF-ASSESSMENT



-Case scenario: Provide health education to a group of mothers pertaining to HPV vaccines

-Provide health education to group of teenagers about the different types of HPV Viruses



Oncology Nursing- Langhorne, M., Fulton, J., Shirley Otto, S. 2007. 5<sup>TH</sup> edition.

-Lewis, SL; Dirksen, SR; Heitkemper, MM. & Bucher, L. 2014. Medical – Surgical Nursing. Assessment and Management of Clinical Problems. 9th Edition. Evolve. Elsevier. Canada.

-Brunner & Suddarth's Textbook of Medical-Surgical Nursing 10th edition

### 7.6.3. Unit 3: Policies and guidelines

At the end of the session participants should be able to:

Explain the policy guidelines from a South African context using the following sources:



### Pre-reading and pre-knowledge assessment

National Department of Health. National Cancer Strategic Framework 2017. Pretoria. Available from: <http://www.health.gov.za/index.php/2014-08-15-12-53-24>.

National Department of Health. Cervical Cancer Prevention and Control Policy. Pretoria; 2017. Available from: <http://www.health.gov.za/index.php/gf-tb-program/361-launch-ofcancer-policies-2017>.

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Debate: Around table discussion and reflection of how guidelines are implemented in practice.

Participants should be able to:

-Demonstrate understanding of the national cervical cancer screening policy and other related guidelines

#### SELF-ASSESSMENT

-Evaluate the time frame, frequency age -specific and underlying factors to application of cervical cancer policy

#### 7.6.4. Unit 4: Professional practice, ethics and communication and counselling skills



**At the end of the session the participant should be able to:**

Define ethics

- Differentiate between human values and ethics
- Explain the seven principles in ethics
- Identify any human value
- Outline moral values for corporate codes of ethics
- Define counselling

- Distinguish between counselling and advise
- Describe qualities needed for effective counsellor
- Identify the necessary steps skill and attitudes in each stage of counselling
- Demonstrate the technique of counselling
- Demonstrates the ability to appropriately communicate abnormal cytology results to women, and provide advice on the need for further investigation.

SELF -ASSESSMENT- Describe the ethical concepts used in health care services

-Evaluate the day to day practice of providing service where the principles have been violated.



Create a case scenario where a client visit the health care service and is being counselled (Demonstrate the pre-and post-counselling scenarios). Participants divide into groups

The participant should be able to: demonstrate understanding of the ethical concepts.

Peer assessment/ reflections: Each group to give a reflection of the ethical and counselling principles.



Mellish, JM, & Paton, F.1999. *An Introduction to the Ethos of Nursing. A text for basic student nurses.*2nd edition. Cape Town. Heinemann.

#### 7.6.5. Unit 5: Knowledge- competency based



By the end of this session learners should:

- Take a good quality pap' smear
- Becomes confident and skilled in sample-taking
- Recognises abnormalities from clinical findings
- Determine when to consult with or refer to a medical practitioner or specialist



- The learner should be able to identify the endocervical component
- Understand the Bethesda System of reporting smears:
  - presence of sufficient number of cells;
  - presence of metaplastic and/or columnar cells as well as squamous cells;
  - fixation of the cell material; - absence of excessive numbers of erythrocytes or inflammatory cells;
  - absence of extensive cytolysis of the squamous cells; - even, thin spread of the cellular material, absence of aggregations of cells
- Describe the other types of screening methods



### **Simulated based learning to be used to practice the pap test procedure**

**Each learner given opportunity to demonstrate the skill and feedback given**

- Peer review for cervical screening
- Individual assessment by an experienced sample taker
- Individual assessment for cervical screening- self reflection

#### **SELF- ASSESSMENT**



#### **Individual activity**

- Collect five pap smears and keep a record thereof

#### **Continuous quality improvement**

- Demonstrates a commitment to ongoing development of cervical screening practice
- Keep a record of pap smears taken- to identify strengths and areas of improvement.

### **7.7. Implementation of the training programme**

The purpose of the study was to develop the programme, however the implementation of the programme can be facilitated over a week period that is 40hrs for short course programmes. The thesis will not deal with its operationalisation but will outline the guidelines to its implementation, this can be dealt with in a future post-doctoral study.

Table 7.4. Summary of implementation of the programme

<p><b>Initiation phase</b></p>	<ul style="list-style-type: none"> <li>• Welcome and introduction of participants</li> <li>• Overview of the workshop</li> <li>• Outlining the aim and objectives of the workshop</li> <li>• Setting up ground rules for the workshop</li> </ul>
<p><b>Facilitation phase</b></p>	<ul style="list-style-type: none"> <li>• Teaching/learning activities on generic competencies of registered nurses: professional, ethical, legal, and knowledge-based practice.</li> <li>• Clinical practice sessions on practical procedures</li> <li>• Daily evaluation of sessions</li> </ul>
<p><b>Termination phase</b></p>	<ul style="list-style-type: none"> <li>• Evaluation and discussion of activities (post-test evaluation)</li> <li>• Evaluation of training programme</li> <li>• Closure of the workshop</li> </ul>

### **The initiation phase**

During this phase the facilitator tries to level the learning environment, so that learner facilitator rapport is built. The objectives of the training programme and the learner expectations are outlined. Ground rules are also set for creating a conducive environment for learning.

### **Facilitation phase**

The facilitation phase ensures that the programme objectives are met, so that knowledge and practice base competency is achieved at the end of the programme. Facilitation encompass delivering the subject matter through different facilitating strategies as well as making an evaluation of the learning that has occurred.

### **Termination phase**

This phase designates the end of the training programme, to evaluate the effectiveness and impact of the programme. Learners will be able to evaluate the whole programme, the course content as to whether it made an impact on their future practice.

## 7.8. Programme evaluation

Programme evaluation is about examining how an initiative is functioning in relation to its goals or objectives, determining the status of operations, or deciding what future direction the program might take. Evaluation helps instructors and administrators determine how to modify instruction or program requirements to ensure that the content has the appropriate breadth and depth.

The following are tools aimed at evaluating the programme:

### Daily evaluation tool

The tool is to evaluate the content or unit objectives if they have been met, as well as facilitation, learning environment so that improvements can be made in the upcoming units.

Table 7.5. Daily evaluation tool

<b>Dear Participant</b> <b>Please indicate your views on the training by answering the following questions</b> <b>Module:</b>
1. What did you learn in today's training? .....
2. What did you like most about today's activities? Provide a reason. .....
3. What did you not like about today's activities? Provide a reason. .....
4. What did you not understand in today's sessions? .....
5. What suggestions do you have to improve the presentations? .....

### Programme evaluation

Programme evaluation is to determine if the programme had met its intentions, by determining if the exit level outcomes been met, so that future amendments and refinement can be made.

The questionnaire, which is a self-report will assist in determining areas for improvement. A 4 point Likert scale is used, ranging from 4=strongly agree; 3=agree;2=Disagree; 1= Strongly disagree.

### **Programme evaluation tool**

Dear Participant

After completing each module, please fill out the appropriate section of the evaluation, including any comments you have. **Answer the following questions by ticking the appropriate space provided.**

#### **Module 1: Introduction and overview of the transition support programme**

1. Introduction and overview of the programme was adequately conducted

<b>Strongly agree</b>	
<b>Agree</b>	
<b>Disagree</b>	
<b>Strongly disagree</b>	

#### **Module 1.1: Anatomy and physiology of pelvic structures**

<b>Strongly agree</b>	
<b>Agree</b>	
<b>Disagree</b>	
<b>Strongly disagree</b>	

#### **Module 2: Etiology and burden of disease and HPV**

2.1. The trainer clearly explained the prevalence of the disease

<b>Strongly agree</b>	
<b>Agree</b>	
<b>Disagree</b>	
<b>Strongly disagree</b>	

#### **Module 3: Policies and guidelines**

3.1. Facilitator/s clearly explained the national cancer screening policy and related guidelines

<b>Strongly agree</b>	
<b>Agree</b>	

<b>Disagree</b>	
<b>Strongly disagree</b>	

### 3.2. Objectives of screening clearly outlined

<b>Strongly agree</b>	
<b>Agree</b>	
<b>Disagree</b>	
<b>Strongly disagree</b>	

### 3.3. Role of the nurse in screening programme

<b>Strongly agree</b>	
<b>Agree</b>	
<b>Disagree</b>	
<b>Strongly disagree</b>	

## Module 4: Ethical competencies

### 4.1. Facilitator clearly explained the ethical concepts

<b>Strongly agree</b>	
<b>Agree</b>	
<b>Disagree</b>	
<b>Strongly disagree</b>	

### 4.2. Ethical duties in health care were clearly discussed

<b>Strongly agree</b>	
<b>Agree</b>	
<b>Disagree</b>	
<b>Strongly disagree</b>	

### 4.3. Ethical principles and values were clearly outlined

<b>Strongly agree</b>	
<b>Agree</b>	
<b>Disagree</b>	
<b>Strongly disagree</b>	

4.4. The principles of counselling were clearly outlined

<b>Strongly agree</b>	
<b>Agree</b>	
<b>Disagree</b>	
<b>Strongly disagree</b>	

4.5 Qualities of the counsellor were clearly described

<b>Strongly agree</b>	
<b>Agree</b>	
<b>Disagree</b>	
<b>Strongly disagree</b>	

4.6. Communication techniques were explained and described.

<b>Strongly agree</b>	
<b>Agree</b>	
<b>Disagree</b>	
<b>Strongly disagree</b>	

4.7 Barriers and enhancers of communication were clearly explained

<b>Strongly agree</b>	
<b>Agree</b>	

<b>Disagree</b>	
<b>Strongly disagree</b>	

## Module 5: Knowledge competencies

5.1. The pap test procedure was clearly demonstrated

<b>Strongly agree</b>	
<b>Agree</b>	
<b>Disagree</b>	
<b>Strongly disagree</b>	

5.2 Learners were given adequate time to practice the mastery

<b>Strongly agree</b>	
<b>Agree</b>	
<b>Disagree</b>	
<b>Strongly disagree</b>	

5.3. The training provided sufficient knowledge and skills to practice confidently

<b>Strongly agree</b>	
<b>Agree</b>	
<b>Disagree</b>	
<b>Strongly disagree</b>	

## 7.9. Guidelines for implementation of the developed programme

### The learning environment

A positive learning environment is created when you value participatory teaching and learning and when there is trust and rapport among students and between yourself and students. To establish trust that leads to true participation and engagement in learning, the facilitator need to set the stage by establishing a learning environment in which all students feel valued, safe, and supported.

Key areas to consider when reflecting on learning environment and the promotion of student motivation to learn include:

- Accessing tools and materials.
- Opportunities to share accomplishment.
- Promoting reflection.
- Promoting quality and success among ALL students.
- Opportunities to have choice in their learning through access to quality, relevant materials
- Students feel physically and emotionally safe. They see the classroom as a place where they can be themselves and express themselves and their ideas without judgment.
- There is a positive rapport (relationship) between the teacher and students and among students in the class.

### **The facilitator**

The facilitator is a co-constructor of knowledge, a facilitator that guides and activates student learning, while fostering the necessary skills to comprehend learning. The facilitator should guide effective student learning, fostering strong collaboration in the classroom.

Key areas to consider when reflecting on learning environment and social-emotional engagement include:

- Supporting and encouraging collaboration.
- Communicating expectations for positive interactions among students, and between students and teachers.
- Opportunities for students to foster and experience positive interactions.
- Encouraging clear expectations for collaboration.
- Promoting students to be open to the ideas of others.
- Encouraging trying, failing, reflecting, and learning.
- Providing a safe, supportive place for students to truly learn.

### **The learner**

Learners who are self-directed take initiative and direct most aspects of their learning, including: diagnosing their own learning needs; formulating learning goals; identifying resources for learning; and independently managing time and effort.

Key areas to consider when reflecting on learning environment and the learner as self-directed

- Opportunities to be self-directed through flexible schedules, open-ended assignments, and group sessions.

- Putting students in charge of planning and managing work that is developmentally appropriate.
- Providing natural opportunities for students to check their understanding and seek assistance when needed.

### **Learning and teaching goals**

Learning resources, materials as well as the use of technology should be available so that learners are technologically informed, able to solve problems, discover meaning, analyze and synthesize information, communicate, collaborate, develop identities, think critically, represent ideas and learn.

- Provide relevant recommended reading materials and visual materials
- Provide opportunities for experimental learning- have models (anatomical models)
- Encouraging understanding of technologies in search for information.
- Accessing learning environments that are limited to one classroom, allowing students to make use of other spaces such as libraries, labs, virtual spaces, meeting rooms, and informal meeting locations that can support learning goals.
- Promoting problem solving, inquiry, and/or wondering, with digital tools positioned as key ways of enhancing, documenting, and extending those processes.

### **Assessment/Evaluation**

Learners need the opportunity to try new things, receive constructive and accurate feedback, and to try again, with the addition of data, feedback and prompts that will help them progress. Key areas to consider when reflecting on learning environment and the integration of continuous feedback include:

- Establishing feedback as a routine part of student learning.
- Encouraging students reflecting on feedback and talking with peers or teachers to clarify next steps.
- Staging to support students in setting and achieving personal learning goals, informed and guided by continuous feedback.
- Designing intentionally for students to seek feedback from others.
- Providing time and space necessary for meaningful self-reflection and planning.
- Establishing time and space for one-on-one discussions.
- Encouraging students to ask, “What did I learn?” instead of, “What grade did I get?”

## 8. CONCLUSION

This chapter discussed the development of a context-specific training programme for the health care professionals in Limpopo province. The development of the programme was grounded on the study results from the analysis of both qualitative and quantitative merged findings. It explains the rationale, objectives and approaches to the development of this programme and guidelines to the implementation of the programme were provided.

## CHAPTER 8

### VALIDATION OF THE TRAINING PROGRAMME, SUMMARY, LIMITATIONS, RECOMMENDATIONS, AND CONCLUSIONS

#### 8.1. INTRODUCTION

This chapter presents the validation of a training program to strengthen cervical cancer screening in Limpopo province through a consensus method using an e-Delphi technique. The development of a training program was based on data obtained from participants in phase 1 and phase 2 of this study.

#### 8.2. The Delphi Technique

The Delphi method is considered a mixed approach as it allows the use of different research strategies for data collection and analysis. The Delphi method has come to be regarded as favourable and reliable for studies which aim to obtain the consensus of a group of specialists regarding a complex problem, or for planning and forecasting for the future of a specified area (Massaroli, Martini, Lino, Spenassato, Massaroli, 2017). The Delphi technique is used to systematically combine expert opinion to arrive at an informed group consensus on a complex problem. This is achieved using iterative rounds of sequential surveys interspersed with controlled feedback reports and the interpretation of experts' opinion (Donohoe, Stellefson, Tennant, 2011).

The main characteristics of the Delphi method are the consulting of experts on a specified topic and the anonymity of those participating in the research (Massaroli, Martini, Lino, Spenassato, Massaroli, 2017).

#### 8.3. Population and sampling

The Delphi Technique is used to further clarify or validate findings from surveys, focus groups, and interviews. Experts volunteer to spend the minimal amount of time that is required to complete a Delphi questionnaire. The population of expert panellist were from health care professionals. The sample composed of nurse educators, medical doctors and laboratory technicians because they were thought to be relevant people in the field that could contribute to development of a comprehensive cervical cancer screening programme.

Purposive theoretical sampling was used to sample those experts the researcher thought may add value to the programme. This sampling technique was used as it allowed the

researcher to choose the sample that had some special characteristics that served the purpose of the study (De Vos, 2011). The sample consisted of four nurse educators, three oncology nurses, one laboratory technician and one medical doctor. The total sample were nine experts.

### 8.3.1. Demographic characteristic of panel experts

Table 8.1. Demographic characteristic of panel experts

Demographics		Frequency	Percent
<b>Gender</b>	Male	1	11%
	Female	8	89%
<b>Age</b>	35-44	1	11%
	45-54	4	44.4%
	55-64	4	44.4%
<b>Experience in Education</b>	5-9 years	1	11%
	10-14 years	4	44%
	20-24 years	4	44.4%
<b>Level of Education</b>	Doctoral	4	44.4%
	Master's degree	1	11%
	Bachelor's degree	4	44.4%
<b>Job Title</b>	Lab Specialist	1	11%
	Lecturers	4	44%
	Oncology nurses	3	33%
	Medical doctor	1	11%
<b>Total</b>		9	100%

The sample consisted of 4 (44%) nurse educators, 3(33%) oncology trained nurses, 1(11%) medical doctor and 1(11%) laboratory technician. Their educational qualifications ranged from a bachelor's degree to doctoral qualification. The nurse educators were having doctoral degree, three oncology nurse and the laboratory technician had a bachelors' qualification while the medical doctor had a masters' qualification. Regarding their age range all the expert panellists were matured adult persons, only 1(11%) oncology nurse was in her thirties whilst the medical doctor, laboratory technician and two oncology nurses were in their mid-forties and all 4(44%) nurse educators were in their late fifties. Most of the expert panellists had more than 10yrs of professional service with only 1(11%) having less than 10yrs experience.

#### 8.4. Data collection process and management

The participant experts were recruited through a telephonic conversation, the purpose of the study was outlined and their expectations, and they agreed to participate. The information leaflet and consent form were attached and sent to the experts through e-mails together with the developed training programme and the self-administered questionnaire.

#### 8.5. Data collection

The developed training programme was sent through an e-mail to participant experts in round one and a developed questionnaire with Likert scale (1-5) was attached for them to indicate their scores for the criteria indicated on the Likert scale. The questionnaire comprised a covering letter and instructions for the participants, electronic consent. The expert panellists had to go through the developed programme and evaluate it for relevancy, feasibility, appropriateness and importance. The questionnaire provided a space for providing comments on how each aspect can be improved. This phase of data collection will be analysed to inform the basis for the next phase of Delphi round. Participants were given a week to return their responses and were reminded telephonically a day before due date.

Table 8.2. Round one questionnaire

<p>The purpose of the Delphi technique is to rank the statements according to their relevancy, feasibility, appropriateness and importance. You been chosen as a part of an expert panel to rank the following eleven statements as the following instructions.</p> <p>In your own opinion please rank statements in each statement in the questionnaire provided according to their importance, feasibility, and appropriateness using 5 point scale where one is the <b>Least appropriate feasible relevant, appropriate and important</b> and five is the <b>Most appropriate feasible, relevant, appropriate and important</b> and add any comments or possible items that are not in this questionnaire.</p>						
Data Distribution						
	5	4	3	2	1	Comments
1. Is the name of training programme clear?						
2. Is the programme purpose relevant						
3. Are the exit level outcomes of the programme clear and relevant?						
4. Are the exit level outcomes of the programme achievable?						

5. Are the unit objectives of the training programme clear and simple?						
6. Are the unit objectives of the training programme achievable?						
7. Is the content adequate in relation to the exit level outcomes?						
8. Are the units well structured?						
9. Is the training programme learner centered/self-directed learning?						
10. Are learning assessments adequate?						
11. Do you think this training programme important and relevant?						
12. Do you think the one week facilitation time frame is adequate?						
Key: 5=strongly agree; 4=agree; 3= neutral; 2= disagree; 1=strongly disagree						

### 8.6. Data Analysis

In the Delphi technique expert panellists rate the items on the questionnaire using a predetermined scale. The Delphi moderator uses measures of central tendency to determine consensus (Massaroli, 2017). Data from the first round was analysed using both qualitative and quantitative data analysis (Keeney, Hasson and McKenna 2001). Firstly, qualitative content analysis was used in order to group all similar statements together (Keeney et al., 2001). Content analysis was used to analyze the qualitative data present in the first round. Content analysis aims to put into effect logical and justified deductions based on the messages (Massaroli, 2017). Secondly, the researcher used the quantitative descriptive statistics for the ranked statements. Descriptive statistics is used for describing the data through use of the mean, median and percentages.

**Table 8.3. Reaching agreement of round one**

	Criteria1	Criteria 1		Criteria 2		Criteria 3		Criteria 4		Criteria 5		Criteria 6		Criteria 7		Criteria 8		Criteria 9		Criteria 10		Criteria 11		Criteria 12		
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Agreement	1= strongly disagree 2. 3. 4. 5= most important, feasible and appropriate																									
		1	12%	1	12%			1	12%	1	12%															
		1		2	25%	2	25%	2	25%	4	50%	2	25%	3	37%	2	25%			2	25%					
		6	75%	5	62%	6	75%	5	62%	3	37%	6	75%	5	62%	6	75%	8	100%	6	75%	8	100%	8	100%	10
Importance	Mean	3.5		2.6		4		2.6		4		4		4		4		4		4		4		4		
	Median	3.5		2		4		2		4		4		4		4		4		4		4		4		
	Mode	1.5		1		2		1		3		2		3		2		0		2		0		0		



### 8.6.1. Analysis of round one

After the expert panellist emailed back their responses, they were analysed using descriptive statistic, the mean, median, mode and percentages for each criteria. Initially all nine participants agreed to participate, however only eight responded, as the other panellist member was no longer responding to e-mails. The results are in table 8.3. The comments that were highlighted on the qualitative aspect concerned the exit level outcome, the objectives of the study and the title. In a nutshell, we should include the objective of “Demonstrate competence in performing cervical screening test, include other different screening methods, different HPV types and screening. The title indicates services but the programme dwells on one procedure, so the different methods were also added in the units. The next round of the Delphi was sent with the improved document so that they rate again.

Table 8.4. Some Inputs from first round

<p>The purpose of the Delphi technique is to rank the statements according to their relevancy, feasibility, appropriateness and importance. You been chosen as a part of an expert panel to rank the following eleven statements as the following instructions.</p> <p>In your own opinion please rank statements in each statement in the questionnaire provided according to their importance, feasibility, and appropriateness using 5 point scale where one is the <b>Least appropriate feasible relevant, appropriate and important</b> and five is the <b>Most appropriate feasible, relevant, appropriate and important</b> and add any comments or possible items that are not in this questionnaire.</p>						
Data Distribution						
	5	4	3	2	1	Comments
1.Is the name of training programme clear?						
2.Is the programme purpose relevant						Should cover all screening services
3.Are the exit level outcomes of the programme clear and relevant?						
4.Are the exit level outcomes of the programme achievable?						Demonstrate competence in performing cervical cancer screening test.
13. Are the unit objectives of the training programme clear and simple?						

14. Are the unit objectives of the training programme achievable?						
15. Is the content adequate in relation to the exit level outcomes?						The objective of performing HPV test should be included
16. Are the units well structured?						
17. Is the training programme learner centered/self-directed learning?						
18. Are learning assessments adequate?						They need to be assessed the theoretical part
19. Do you think this training programme important and relevant?						
20. Do you think the one week facilitation time frame is adequate?						
Key: 5=strongly agree; 4=agree; 3= neutral; 2= disagree; 1=strongly disagree						

## Phase two

The second questionnaire was sent out and after a week all respondents returned the feedback and qualitative and quantitative analysis were done and the scores were above 70% which meant that the experts reached consensus of the statements.

### 8.6.2. Analysis of round 2

Of the eight response in round 2 questionnaire consensus was achieved as no comments were indicated, meaning that the mean, median and mode were closer to one another which indicates that the responses were stable, and the consensus is achieved between the expert panellists. The table below indicates the results of consensus.

**Table 8.5. Reaching agreement of round two**

	Criteria1	Criteria 1		Criteria 2		Criteria 3		Criteria 4		Criteria 5		Criteria 6		Criteria 7		Criteria 8		Criteria 9		Criteria 10		Criteria 11		Criteria 12			
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
Agreement	1= strongly disagree 2. 3. 4. 5= most important, feasible and appropriate																										
		2	25%	2	25%	2	25%	3	37%	4	50%	2	25%	3	37%	2	25%										
		6	75%	6	75%	6	75%	5	62%	4	50%	6	75%	5	62%	6	75%	8	100%	8	100%	8	100%	8	100%	8	100%
Importance	Mean	4		4		4		4		4		4		4		4		4		4		4		4			
	Median	4		4		4		4		4		4		4		4		4		4		4		4			
	Mode	2		2		2		3		4		2		3		2		0		0		0		0			





### **8.7. Validity and reliability**

Validity is explained as the accuracy, authenticity, and genuineness of the data collecting instrument (de Vos *et al*, 2011). Validity was achieved by ensuring that the questionnaires measure aspects of the phenomenon under study, the questionnaire was reviewed by peers, and the supervisor before data collection. Reliability is the consistency with which the research instruments measure the intended aspects (Polit & Beck, 2008). A pilot study was done with two participants to evaluate the clarity of the of questions and instructions given to respondents to complete the questionnaires.

Validity and reliability with e Delphi technique is increased because of heterogeneous Delphi panels ensure a reduction in polarization and desirability bias, and enable bracketing and Diversity in a panel proves to be beneficial for obtaining useful results in several ways because advice comes from multiple independent sources; the panellists experts have different skills and points of view (Förster and von der Gracht, 2014). In this research, a focus on the diversity was achieved by from selecting participants from different occupations, where individuals work in diverse fields and perform differing professional tasks, resulting in professional background and knowledge base heterogeneity. The participants' anonymity is one of the most striking characteristics of the Delphi method, and is one of the advantages it has over the data collection methods, as a participant's position or status cannot influence the group. It is believed that this confidentiality makes it easier for the participants to give and defend their points of view (Massaroli et al., 2017).

### **8.8. Ethical considerations**

The panellist were contacted telephonically due to Covid-19 precautionary measures and the purpose of the call was explained, thereafter the purpose of the research and processes explained. Then informed consent was obtained. The questionnaire and the programme were e-mailed individually to ensure privacy and confidentiality. An electronic consent form was sent after having communicated with them telephonically about the study purpose and processes.

## 9. LIMITATIONS OF THE STUDY

The study was conducted in the primary health care facilities in the Limpopo Province. The findings are limited to the health care facilities in Limpopo Province, and cannot be generalized to other provinces. The study aimed at developing a training programme to enhanced cervical cancer screening in Limpopo province, however not all relevant stakeholders involved in the programme were involved, such as laboratory technicians and oncology specialist to determine their perspective in the issues. However, the findings of the study revealed a wide range of matters that need to be considered in cervical cancer screening which may be explored further in future research.

## 10. RECOMMENDATIONS

The recommendation of the study was based on study findings, after thematic analysis was done, the following themes emerged.

### **Theme 1: Perceptions of health care professional on cervical cancer screening programme**

The participants highlighted the benefits of cervical cancer screening. However, knowing the benefits requires adequate knowledge about cervical cancer etiology, staging, treatment options as well as skill competency in providing care and information. Therefore, the study recommends adequate in-service training and refresher courses of new updates regarding cervical cancer screening, because knowledge should translate to action, knowing the benefits without action/implementation is of no use. The health trainers and nurse managers should ensure implementation of the programme.

### **Theme 2: Challenges of health care professional on cervical cancer screening programme**

Participants highlighted structural and human resource barriers to implementation of cervical cancer screening. The department is advised to improve on structural problems to provide privacy and confidentiality to clients by either providing extra facilities like make shift buildings (zozos) where screening can be done privately and provide adequate screening tools and mini-autoclaves in each health facility. Health professionals should be encouraged to participate in the screening programme and it should also be included as part of a key performance criteria in the Performance management system and those who achieve targets be acknowledged. Provision of human resource based on the health facility needs.

### **Theme3: Policy implementation and revision**

Participants highlighted on the revision of policies in relation to recent developments in managing different diseases because they have realised that working with HIV/AIDS, maternal health and oncology some concerns were observed where the policy override or conflict one another, that policy makers should be able to integrate and merge policies were necessary since the prevalence of sexually transmitted diseases/HIV/AIDS are prevalent and the age of screening be adjusted.

### **Theme4: Practice competence regarding cervical cancer screening programme**

Participants acknowledged their shortfall in cervical cancer screening and management such as recording storing, transportation and most of all unable to identify the transformation zone. This highlights the importance of implementation of a training programme to enhance screening services, training should be scheduled throughout the year, more trainers need to be trained to provide peer support. Competency- based training can be applied that the training be accredited with SAQA under short- course and be certificated.

### **Suggested measures to development of a training program for health professionals**

Participants acknowledged that some of them were never trained and that the training was not structured and well organised. The study recommends that peer training should be improved and training should be structured and data based be kept of personnel who are trained, so that they can act as mentors. All health care professionals should be trained as part of an orientation programme.

### **Recommendations for nursing practice and education**

Nursing is a profession that requires competency in the provision of care, similarly in the provision of cervical cancer screening, competency in terms of knowledge, attitudes and skills is required. Health professionals should maintain the best standard of care in providing cervical cancer screening. Standards is about quality care. Therefore, managers and nurse educators should ensure that quality ensures in their facilities as women will feel safe to use the facilities. When nurses are knowledge competent they will collect adequate and quality cervical smears. The affective skills are important in communicating the benefits of screening to women and win their cooperation thus reducing the burden of cervical cancer.

### **Recommendation to future research**

Development of the programme was done, and it is anticipated that future research be done on implementation of the programme and thereafter evaluation the programme in Limpopo province.

## **Contributions to the body of knowledge**

This study has provided a major contribution to the body of knowledge in nursing education and in nursing practice as it has developed a training programme for health care professionals in Limpopo province. Cervical cancer screening practice may improve from the competencies (knowledge, attitudes and skill training) of health care professionals. Competency in health care professionals translate to improved standard of cervical cancer screening.

## **Dissemination of information**

The findings of the study will be shared with the academic community in workshops and academic conferences. Articles will be published in accredited journals. Furthermore, the study findings will be presented to the department of health in Limpopo province as well as district facilities and the training programme will be implemented on a small scale until it is rolled out to other districts in Limpopo province.

## **11. CONCLUSION**

The purpose of the study was to develop a training programme to enhance cervical cancer screening in Limpopo province. This chapter described validation of the training programme, to determine if the purpose of the study was achieved. Limitations of the study was highlighted and recommendations for the study were described. The study reflected interest and good intentions amongst health professionals which suggest that the training programme is widely accepted and can impact nursing practice positively and cervical cancer screening service can improve and the adequacy rates can improve if takes off the ground.

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**ANNEXURE: A**

**RESEARCH ETHICS COMMITTEE**

**UNIVEN Informed Consent**

**Appendix B**

**LETTER OF INFORMATION**

**Title of the Research Study : Development of a training programme to strengthen cervical cancer screening in Limpopo Province, South Africa**

**Principal Investigator/s/ researcher : Ngambi Doris, MCur**

**Co-Investigator/s/supervisor/s : (Ramathuba DU, PhD & Tshililo AR PhD)**

**Brief Introduction and Purpose of the Study**

Cervical cancer is a preventable if screened for and diagnosed and treated early. In South Africa, it is the major cause of morbidity and mortality and the second most prevalence among women. Organised screening programmes has resulted in a dramatic decrease in the incidence of cervical cancer in many developed countries, but because these programmes require a relatively well functioning health care system, success has been somewhat limited in less developed countries. The National guideline for cervical cancer screening programme in South Africa stipulate that the adequacy rate of a screening facility is to reach at least 70% of cytological laboratories to audit and control the proportion of adequate smears from each screening, facilities consistently achieve below 70% adequacy, the staff is to be re-trained (National guideline for cervical cancer screening programme, 2000). In Limpopo Province, the districts are unable to reach the adequacy rate of 70% as indicated by the National health laboratory services during quarterly reviews meetings. Where performance of all facilities under Vhembe and Mopani Districts are reviewed, and discussed. Indicating the high number of inadequacy rate / or unsatisfactory cytology results for evaluation. Most of the pap smear collected are of poor quality with no endocervical component or unsatisfactory for evaluation as confirmed by pap smear results from most facilities within the two district. High inadequacy has significant associated opportunity cost as women need to be re-screened in the event of an inadequate specimen, The researcher propose the development of a training programme to upgrade the technique necessary concerning pap smear and to strengthen the cervical cancer screening programme. The goal of a training programme is to ensure that there is

sufficient competent staff to attract women to service, screen eligible women with an appropriate test (World Health Organization, 2004).

The overall aim is to determine the health professionals' perceptions about cervical cancer screening and develop training programme to strengthen cervical cancer screening in Limpopo Province

**Outline of the Procedures** : *(Responsibilities of the participant, consultation/interview/survey details, venue details, inclusion/exclusion criteria, explanation of tools and measurement outcomes, any follow-ups, any placebo or no treatment, how much time required of participant, what is expected of participants, randomization/ group allocation)*

Health professionals who have consented to participate in the study will be individually interviewed and if the participant agrees an audio voice recorder will be used to record all interview sessions. In addition, the researcher will also take brief notes (words and phrases) to keep abreast with what transpired during the interviews. The researcher will later rewrite the notes in more detail. Data will be collected until data saturation is reached. The interview will be conducted in English or the language the participant feels free to express themselves to assure comfort during interview in qualitative research. In quantitative research a self-administered questionnaire will be used which will contain both structured and semi structured questions. The questionnaire will cover the demographic variables, issues related to availability of resources for pap smear collection, environment, privacy, technique of collection, readiness if health professional to collect pap smear infect the practices about pap smear screening. The study will be conducted at Vhembe and Mopani districts from all selected clinic. Participants will be given 30 to 45 minutes to participate in the study.

#### **Inclusion of criteria**

- Having worked at the clinic for more than a year
- Agreed to participate in the study

**Risks or Discomforts to the Participant:** *(Description of foreseeable risks or discomforts to for participants if applicable e.g. Transient muscle pain, VBAI, post-needle soreness, other adverse reactions, etc.) No risk of discomfort is expected as the study only involves interviews and survey to the participants*

**Benefits** : *(To the participant and to the researcher/s e.g. Publications)*

The study may also benefit the health care professionals with knowledge and skills regarding correct technique for pap' smear collection. The study may also benefit other researchers who will be interested in researching the same topic in future to add to the body of knowledge. As

a result of this study policy makers will have informed data which will guide them when developing policies.

**Reason/s why the Participant May Be Withdrawn from the Study:**

They will also be informed of their right to withdraw from the study if they are not satisfied with the proceedings. Only participants who give their written consent will be included in the study

**Remuneration:** None

**Costs of the Study:** None

**Confidentiality:** The participants will be assured that the information provided by them and all forms of documentation received from them will be secured from the public domain. The document will be kept by the researcher for a period of 4 years after the end of the study. Furthermore, they will not be asked to provide any form of identification, by way of their names and address. Finally, they will be assured that the results of the study will not be traceable to them.

**Research-related Injury:** No injury is expected

Persons to Contact in the Event of Any Problems or Queries:

(Supervisor and details) Please contact the researcher, NGAMBI D (tel no.), my supervisor Ramathuba DU (tel no. 015 962 8684) or the University Research Ethics Committee Secretariat on 015 962 9058. Complaints can be reported to the Director: Research and Innovation, Prof GE Ekosse on 015 962 8313 or Georges Ivo.Ekosse@univen.ac.za

## ANNEXURE B

### CONSENT

Statement of Agreement to Participate in the Research Study:

- I ..... hereby confirm that I have been informed by the researcher, (*name of researcher*), about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number: \_\_,
- I have also received, read and understood the above written information (*Participant Letter of Information*) regarding the study.
- I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerized system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

Full Name of Participant	Date	Time	Signature
I, .....	.....	.....	.....

(*Name of researcher*) herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

Full Name of Researcher	Date.....	Signature.....
.....		

Full Name of Witness (If applicable)	Date .....	Signature.....
.....		

## **ANNEXURE C : INTERVIEW GUIDE**

Interview guide for health professionals for clinics with low adequacy rate cytology results

### Section A: Socio demographic

Gender.....

Female.....

Male.....

### Education

1. Degree
2. Diploma
3. Other

### Years of experience

- 1-2
- 3-5
- 5-10

## **Perception about cervical cancer screening program**

In your opinion

- 1 .How do you perceive cervical cancer screening program
2. Why there is high number of inadequacy rate for pap smear results in your clinic?
3. Do you consider cervical cancer screening important and why?
- 4 Do you consider cervical cancer screening procedure/ skill easy to conduct and how?
5. Where you trained or ever attended in-service on cervical cancer screening when?
6. Do you consider the National cervical cancer screening guideline easy to implement ?

7. How is your adequacy rate for cervical cancer screening in your clinic?
8. In your opinion are women seeking health care informed about cervical cancer screening?
9. What can be done to improve the adequacy rate?
10. What are the challenges of cervical cancer screening program?

### **Perception about cervical cancer screening**

1. Do you have any recommendation regarding cervical cancer screening?
2. Do you Perceive cervical cancer as a major health program?
3. What changes would you like to see?
4. In your view, what are some suggestions that would make it easier to screen adequately?
5. What are the barriers hindering achievement of 70% adequacy?
6. Is there an optimal number of supervised cervical cancer samples taken by a health care professional before they are considered competent in this technique?
7. Is there any validated tool; for assessing competency in taking cervical cancer samples?
8. Do health care professionals trained in taking cervical samples/ requires/ repeated training post qualification?
9. Is there any evidence based guidelines on training requirements of trainers or assessors delivering training on cervical smears taking?
10. Is there any availability of quality and adequate equipment's for pap smear collection?
11. Is there any adequate number of staff to perform cervical cancer screening?

## ANNEXURE D: QUESTIONNAIRE

### SECTION A- SOCIO- DEMOGRAPHIC DATA

Female .....

Male .....

- Professional qualifications
- Degree.....
- Diploma.....
- Other.....

Years of experience

1-5 years	
5-10years	
10-15years	
>15years	

### SECTION B. KNOWLEDGE ABOUT CERVICAL CANCER

Risk factors for Cervical cancer can be:

Multiple sex partners	Yes	No
Having genital warts	Yes	No
Sexual intercourse before 18	Yes	No
Having contracted STIs	Yes	No
Smoking cigarettes	Yes	No
Use of oral contraceptive	Yes	No
Human papilloma virus	Yes	No

Cigaret smoking	Yes	No
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### Signs and symptoms

Vaginal bleeding	Yes	No
Foul smelling vaginal discharge	Yes	No
Contact bleeding	Yes	No

### Prevention

Avoiding multiple sexual partners	Yes	No
Avoiding early sexual intercourse	Yes	No
Screening and treatment	Yes	No
Avoid cigarette smoking	Yes	No
All of the above		

### What are the ways of screening

Pap'smear	Yes	No
Visual inspection of the cervix	Yes	No
Human papilloma virus testing	Yes	No
Liquid bases cytology	No	Yes
There is no way of screening	No	Yes

## SECTION C. ATTITUDE TOWARDS CERVICAL CANCER SZ

Statements describing attitudes of health care professionals towards cervical cancer

Indicate if you agree or disagree with the statement by ticking, Agree (A), Neither (N), Dis agrees (DA)

Statement	Agree	Neither	Disagree
Carcinoma of the cervix is highly prevalent and is a leading cause of death in women			
Any young women including you can acquire cervical carcinoma			
Carcinoma of the cervix cannot be transmitted from one person to another			
Screening helps in prevents of carcinoma of the cervix			
Screening cause no harm to clients			
Screening for cervical cancer is not expensive			
If screening is free and cause no harm will you screen			
Cervical cancer screening guidelines are very influential			

## PRACTICE AND KNOWLEDGE OF CERVICAL CANCER SCREENING

Have you ever heard about pap smear test for cervical cancer screening	Yes	No
Pap smear is it a useful tool for early detection of cervical cancer		
At which age papsmear test be started		
During adolescent stage		
From 20years		
From 30 years		
At menopause		
Have you ever done pap smear		
If yes to above, interval for pap smear	Monthly, yearly, after menopause, not sure	
Best time for doing pap smear	During menstrual flow, a week after period, during pregnancy, during breast feeding, not sure	
Abnormality in pap smear test	Leave it to God and pray, do	

what should be done	some lab-test, not sure other	
Benefit of pap smear	Early detection of cervical cancer, detection of any early abnormal changes in the cervix, not sure, above two	

#### SECTION D. SCREENING TECHNIQUE FOR CERVICAL CANCER SCREENING

Indicate if you agree or disagree with the statement by ticking strong disagree (SD), Disagree (D), Agree (A), Strongly agrees (SA)

NO	Practices	D	SD	A	SA
1.	The patient should not make an appointment for her papsmear during her menstrual periods.				
2	The preferred time for the examination is two weeks after the first day of last menstrual period.				
3	The patient should be instructed not to use vaginal medication, vaginal contraceptives, lubricants, or douches for 48 hours before her appointment				
4	Intercourse is not recommended the night before the examination				
5.	The physician should not use lubricant during his examination prior to collection the sample.				
6.	Excess blood, mucus or inflammatory exudate may be gentle blotted away with a gauze pad.				
7.	Do not scrape or wash this material away since such actions may adversely affect the subsequent cellular sample				

8.	The pap test should always be taken prior to other testing e.g. cultures, tissues sampling, application of acetic acid				
9.	Endocervical specimen are collected with cyto brush using 360 degree rotation within the canal				
10.	Ecto cervical specimen are collected with a spatula using 360 degree rotation just inside the os				
11.	Scrape the endocervix with a spatula and spread the material very rapidly on to the upper end of the slide.				
	Immediately spray fix by thinly soaking the cellular sample while holding the spray fixative container above 6-8 inches from the slides allow spray fixative to evaporate roughly				
12.	Quickly roll the endo cervical brush through the ecto cervical material to the end of the slides.				
<b>Storage and dispatch</b>					
	Collected smears are placed at room temperature				
	Are collected smears placed in the slide holders				
	Are collected smears placed in the zip lock bags				
	Collected smears are dispatched to laboratory daily				
	Proper record keeping during collection during dispatching				
<b>Follow-up care</b>					
	Do you make follow-up of results				
	Do you call in women for their pap smear results				

	Are you able to make assessment of results in need of attention?				
	Do you often refer women after pap smear results?				
	Do you always make follow-up of referred women?				
	Do you educate women about the value of cervical cancer screening?				

## CONSENT FORM- ELECTRONIC-DELPHI

1. I understand that I am being asked to participate in the validation of a research study. I hereby volunteer to participate in the study titled “**Development of a training programme to enhance cervical cancer screening programme in Limpopo Province**”.
2. If I agree to participate in the study, I will complete the questionnaire which will take 15-20 minutes regarding the developed training programme.
3. I have been made aware of my right to withdraw from being a participant in the study without being prejudiced for choosing to do so.
4. No identifying information will be included in the questionnaires.
5. There are no risks associated with this study.
6. I realize that my participation in this study is entirely voluntary, I understand that all study data will be kept confidential.
7. The research may take two to three rounds since at each round we collate the results of each round to reach consensus. Anonymity and confidentiality is key factor in each round as a questionnaire is mailed directly to you without knowledge of other participants.
8. The study has been explained to me. In addition, I have read and understand this consent form, all my questions have been answered and I agree to participate. I understand that I will be given a copy of this signed consent form.

**Name of Participant:** .....

**Signature of Participant:** ..... **Date:** .....

**Name of Witness:** Prof DU RAMATHUBA

**Signature of Witness:** ..... **Cell: 0782 078 9555**

**Name of Researcher: Ms DORIS NGAMBI** Cell: 072 201 4264

**Signature of Researcher:** .....

**Date:** .....

## ANNEXURE F

### E- Delphi questionnaire

The purpose of the Delphi technique is to rank the statements according to their relevancy, feasibility, appropriateness and importance. You been chosen as a part of an expert panel to rank the following eleven statements as the following instructions.

In your own opinion please rank statements in each statement in the questionnaire provided according to their importance, feasibility, and appropriateness using 5 point scale where one is the **Least appropriate feasible relevant, appropriate and important** and five is the **Most appropriate feasible, relevant, appropriate and important** and add any comments or possible items that are not in this questionnaire.

Data Distribution						Comments
	5	4	3	2	1	
21. Is the name of training programme clear?						
22. Is the programme purpose relevant						
23. Are the exit level outcomes of the programme clear and relevant?						
24. Are the exit level outcomes of the programme achievable?						
25. Are the unit objectives of the training programme clear and simple?						
26. Are the unit objectives of the training programme achievable?						
27. Is the content adequate in relation to the exit level outcomes?						
28. Are the units well structured?						
29. Is the training programme learner centered/self-directed learning?						
30. Are learning assessments adequate?						
31. Do you think this training programme important and relevant?						

32. Do you think the one week facilitation time frame is adequate?						
Key: 5=strongly agree; 4=agree; 3= neutral; 2= disagree; 1=strongly disagree						

## **ANNEXTURE F: PARTICIPANT TRANSCRIPT [P 10]**

**KEY: R = Researcher**

**P = Participant**

**Researcher:** Good morning

**Participant:** Good morning

**Researcher:** How are you

**Participant:** I am fine

**Researcher:** I am here today to interview you as I have already explained

**Researcher:** How do you perceive cervical cancer screening program

**Participant:** Mm...., In my opinion I think ee...h, the best way is to do campaigns and most early in the morning at work we have to talk to women first explain what is pap smear what do we expect from them and talk about the abnormalities and the normalities of pap smear what are we expecting from pap smear what are we collecting from the cervical smear

**Researcher:** Why are we doing that?

**Participant:** Because sometimes ee women they have got this perception myth that when doing the pap smear we are taking the tissue where as we are not taking the tissue we are just doing the cervical smear

**Researcher:** Why do we have to screen these

**Participant:** Isn't that most of the women they take long they do not understand themselves they have got this fear of unknown that the pap smear is something that is dangerous and early detection is the best than late detection some they are those women who bury many children, and those who have sexual active and those who still having the myth using traditional medication when doing the pap smear you are helping them to know themselves because if they are not doing the pap smear they won't know what is going on inside them

**Researcher:** Ok You spoke about early detection why do we have to do the early detection what is the reason behind for early detection

**Participant:** The reason behind is because if we do early we are minimizing the spread of cancer and inside the women and we are minimizing maternal mortality if we do not do early

detection a women can come at the fourth stage of cancer where they wont be any help for that lady and also we are trying to minimize the up and down of transferring the patient to higher level tertiary level where as if you did the early detection the women there wont be the que go to the higher level or tertiary level we are cutting the load, yes

**Researcher:** So you spoke about prevention of maternal mortality when one will be screening these women, You spoke about early detection when we need can you explain more about early detection, how can you assist as a professional nurse can you tell me more about early detection

**Participant:** By doing early detection if we are like doing the smear and it comes saying the women should repeat the smear within one year instead of telling the women to wait for that one year we will tell the women to come back within six month not a year because for those who are on ARVS who are positive is fast to multiply is in it than those who are healthy but we do not have to divide them to say these are healthy because if she is not tested by then she will be tested after three month and she will wait to be tested after six month we do not have to is rather give that women 6 month not to wait one year

**Researcher:** Still on early detection how many pap smear do you do on daily basis

**Participant:** Ok to me as I am a reproductive nurse sometimes I can do 20 clients per day, out pf that 20 I can get maybe 5 that does not have the component inside but the rest they have got but what I have detected ever since I started working at the clinic is that women are sick and women they do not comeback you can call and do all those things they don't come they come at a later stage and its painful because you have got the results and that lady when you call she was at work and the boss did not allow her to come and collect the results so that you can refer her sometimes you even you will send the home base carers to go and collect that women and transfer the women to the hospital then most of the time I do ten from ten to twenty that's how I do because at the end of the month I did fifty or thirty

**Researcher:** It sound as if you are saying that you do twenty on daily basis and five out of twenty you find that there is no endocervical component what is it that you do if you do normally come across that there is no endocervical component what is the reason for us to make sure that we collect smears with endocervical component what is the reason behind

**Participant:** The reason behind for us to collect endocervical component is that if you are saying pap' smear you are talking about getting that endocervical component and then when they say no endocervical component meaning that I won't get the results for that women we have to repeat so that I can get the correct results for that women and there is this thing of not

getting the endocervical component they are wiping cleaning their cervix before they come to the clinic they insert the fingers inside saying they are cleaning the cervix and then out of twenty you may found maybe four being dry the only thing you can get is the discharge and the results when they come back they will say there is only the discharge no component meaning that I have to call that women and do the test again and now I have I will have to tell this women not to clean or put anything inside the vagina you

**Researcher:** Ok what are the impact of no endocervical component for the results that when coming back they will say no endocervical component

**Participant:** Some of the women because they do not understand our language they will be afraid to come and repeat and the impact is that when you go to this Bathopele principles the money thing that we are wasting the value for money on that time I will be having that thing that I misused the money instead of collecting that thing saying that there is no endocervical component suppose let the women go and ask her to come and when she comes must give her health education what I am expecting to her to do the results

**Researcher:** You were talking about Bathopele principles that says value for money of which maybe after you have collected the smear and the results comes back saying there is no endocervical component, can you tell me more about the wastage of government's money.

**Participant:** Is in it that when you collect the specimen there is a certain amount that is being charged for the slide each slide you can find that is five hundred per person for one slide let say I have collected twenty and out of twenty maybe five or six has been waisted meaning that I would have wasted three thousand five hundred for the government I am not counting the vaginal speculum I am just counting the slides

**Researcher:** how does that impact on our clients, what is it that we are going to miss in our clients

**Participant:** I am going to miss the diagnose of clients that is the most important thing and it cause frustration of clients and the clients when she sees me say I do not know my job

Researcher: Ok, thank you

**Researcher:** How do you perceive high number of inadequacy rate for pap smear results in your clinic?

**Participant:** Ok if I am on leave the other nurses they collect the pap smear then we sit down and we do the health education to us as the staff and then we check where did we go wrong

and the only thing that I have discovered there are other people who are still using the rubbing method the circling method which was cancelled long time ago that is why we will be having that inadequacy and the other thing this thing of putting the slide under the sun I do not go for that because it is going to stay there for three to four days what do you expect it is going to come back being inadequate because the sun is too much to this slide than to put it on the cooler a place where it is going to be dry not being interfered

**Researcher:** So what about those other nurses that are collecting the smears when you are on leave and I understand that they are the ones that are contributing to inadequacy smears 1 I think its lack of skill because we do not practice daily and lack of equipments

**Participant:** Yes because they are still using their own method, they are still using the KY jelly which is not allowed ee you can't use the lubricant when you are collecting the endocervical component because is like also the jelly there when it goes to lab they will see the jelly they won't see the component then meaning that that specimen has to come back then what we do we try to those consulting rooms they have to call me or whoever if they can't see the endocervical component they rather use water than using the lubricant

**Researcher:** How best can we improve this adequacy rate apart from all those aspects you have just mentioned

**Participant:** The adequacy rate we can improve by starting using those disposal ee vaginal speculum and also stress the thing of stopping the use of lubricant because thr lubricant is the one I am suspecting that it is the one that is causing the inadequacy of the endocervical component because you can't mix the endocervical component with the lubricant rather use water is the best because it is not going to disturb anything there even on the microscope they won't see that you have put water on the vaginal speculum yes

**Researcher:** You spoke about dryness where you find that it is difficult to found the endocervical component where you find the they come being dry the vagina being dry, how can we educate these women so that when they come you need to have endocervical component

**Participant:** Last time what I did (laugh) but wena you want be to take the secret ok what I did in the morning after prayer I had a slide I took those specimen bottles there is jelly down there for blood those that has expired then I take that jelly i put it on that slide then I go there in front of clients then I talk about the slide what is needed on the slide how do we collect it and how do we put it on the slide what is it look like its what I do

**Researcher:** Meaning that you are educating the clients

**Participant:** Yes, why they must not put fingers or washing rack when they are bathing they must just leave it like that they must just bath outside you not inserting they don't put things inside isn't, they must see that thing that sister does not like that they must not put fingers inside at list now they understand what I want

**Researcher:** What about professional nurses because they are also expected to collect the endo cervical component

**Participant:** You know what I have discovered if you are not hands on you are just collecting the pap smear saying that sister so and so is the one who is collecting the pap smear what you are doing you don't care whether there is endocervical component or not you can talk to them and climb the mountain and say hela guys let's do like this only one or two they will do it but there are still having that old method putting the slide on the sun on the window that's it for that day the following day is going which they never thought of putting it on the sun because the sunrays are dangerous is in it they are going to kill those kemikies there but since you ever put me there it is so much improvement they understand what I want and if you find that the slide does not have nothing do not send it away because it is going to come being negative because it does not have they won't do nothing

**Researcher:** Were you trained on pap' smear collection?

**Participant:** Yes, I was partially is in it that before I came a reproductive nurse I was working in male medical then in the hospital nobody is going to train you on how to collect it but only the doctors they showed us how to do it but also they were doing it anti clock wise of the smear of which it is not allowed but the rest I have learned in the reproductive side yes

**Researcher:** It sound as if you were trained by the doctors what about the formal training

**Participant:** I have never received any formal training I don't want to lie the only thing is that I am positive and asking the doctor even the specialist and they told me and in the reproductive side they told us what is being expected from us yes

**Researcher:** In your clinic, how many professional nurses were trained

**Participant:** I am not sure because I am only having four years here I am not sure who is trained who is not trained but I can see that they can do it it was only that thing of saying let me just do it and put it there, yes

**Researcher:** And how many professional nurses do you have in this clinic

**Participant:** Nine

**Researcher:** Meaning that you are collecting the pap 'smears every body

**Participant:** Yes

**Researcher:** You are saying you collect twenty per day, what about others how many normal do they collect

**Participant:** What is happening in our clinic I am a reproductive nurse and an advance midwife and we have agreed that I have to look after a women from head to toe I am doing mother and baby, when I am saying mother I am saying the women and the child that's what I am saying then if they see that I am busy and there are clients who want to be done pap smear they collect it they do not wait for me, the only thing is that in the morning when they are to collect chronic medication they via through my consultation room to collect pap smear first is not a force I just go there in the morning I say today is the day of pap smear they do not complain they already know me uri is a green gown (laugh)

**Researcher:** Meaning that on daily basis every morning you start by giving health education after they would have received the health education do they come forth to be taken the pap smear, all of them

**Participant:** All of them yes except those who are on menstrual period and jaa only those I think by doing pap smear it helps them last I did the pap smear to a lady she was 32 years so by doing pap smear we find that she is having bilharzia which we never thought the pap smear can show bilharzia

**Researcher:** Meaning the pap smear that you have taken showed the women had bilharzia ok

**Researcher:** Do you consider cervical cancer screening important and why?

**Participant:** To me I think It is important because women really are dying most cases I think HIV they come at a later stage I think it is important and the government should say let's go to those younger less than 30 years and above this small they have got polyps, STI which they do not know they will end up having infertility and those women who are sexual active those who are twenty to thirty they need to be taken pap smear and be put on the statistic because

people that we are leaving behind they are those who are late twenties they are the ones who are sick

**Researcher:** Are you saying we need to make sure that these women might not present late what is it that you are going to do to make sure that they are aware and they need not need present late could be having problem

**Participant:** Ok if a women we have to give them a health education about sexual reproductive health we have to teach them about sexual transmitted diseases and we have to talk about heredity for those who have people who died of cancer at home, They must not say its her fault no mina I wont have it you can have the cancer of the throat that one have the cancer of the cervix but early detection is better than late I think health education is needed and when it comes to a push women need to have just one weekend per month you go to the market and ask the women and test them all because you find that out of 50 you find that ten or fifteen they need to be transferred immediately

**Researcher:** So, what about the National cervical cancer screening guideline, do you have it in this clinic have you ever gone through this guideline, do you implement this guideline

**Participant:** Yes, we implement them and we also some of the clients we are who are educated they ask to read sometimes I photocopy those pages I think it is important then I give them, yes

**Researcher:** What is it content

**Participant:** It talks about early detection and signs and symptoms and the importance, what age should a women do pap smear it is important that a women should do at least is it five years or ten years she has to do three smears done to her life

**Researcher:** And what else in terms of the pap smear collection

**Participant:** Those who are HIV positive they have to do if we find that they are they are saying we have to repeat them after one year we do not wait we transferee them to hospital those who have typical squamous we do not have to keep them in the clinic have to transferee them to hospital immediately

**Researcher:** You spoke about typical a squamous can you tell me about that

**Participant:** On that one we will say (laugh) included or excluded but that patient has to be repeated in one year or six month some doctor that I was working with two years back and the

reproductive consultant told us that those clients with HIV we are no longer going to wait for one year or six month because it can say a squamous when the cancer is already in situ

**Researcher:** Still on the national cervical cancer screening guideline is there anything you would like to add related to cervical cancer screening guideline in terms of 30years and above the interval can you tell me more about that

Participant: What can I add there is so painful we are doing our job we are collecting the endocervical component they are coming being hundred percent with a diagnosis that they have got high squamous cells we the need to be done biopsy, problem is high if you are in a clinic situation your hands are bind but those being diagnosed being in the hospital they are easy to be collected the biopsy but those that are outside the outskirts at the clinic its hard they go to the hospital its high they be given attention but they will be given to come in May, I do not know what they are doing or they just say its ok let her come we will see her in May and if they are HIV positive with high squamous patient need to be done immediately why should they be book for many month she comes in April she will be booked in December for a biopsy if it was me by the time I was working in the hospital by then I was free because I know how to collect it but there is no formalin but I have tried to order but there is no formalin and they say it is only used in the hospital

**Researcher:** You spoke about the high grade-sill is only the high grade sill that may only be seen in the results

Participant: No there is CIN1andCIN2, there was a lady with CIN four let me say stage four because she was draining things like dry wood you understand and fluid like smelling complaining that she can't walk long distance all those signs to show this is the last stage of cervical cancer, the we send the patient to the hospital the patient was returned back to come when and when whereas the things were there you can see when you put the vaginal speculum its uses outside and spread I think both things that is why nurses they give up

**Researcher:** so how best can we improve this so that our clients can get

**Participant:** The only thing that we can do the campaigns and check all the women not to wait for the national campaign of the of cervical cancer they should be a campaign everyday if it comes to let's say if I see clients who are coming to collect medication and those that are bringing babies for immunization lets make one Friday or one Saturday for those who are working and do the campaign in the stadium and put something there and we collect those smears and the women and they will come the only thing is that we do not have a strategy to do that

**Researcher:** You are saying that you don't have strategy to do that

**Participant:** Because the consumables is scared to get it, you can get it maybe after three month, the only thing is to take your car you go clinic by clinic saying can you borrow me five because you see that the month is coming and ending you need to do the statistic

**Researcher:** Don't you have ee the pharmacist who assist you with the ordering, they are trying their level best the thing is there up at the depot because you can't get all maybe you can order hundred and you find maybe you find that you have been given fifty and the pharmacy will come and say borrow us two the other clinic does not have and then you can't say no

**Researcher:** Meaning that the deport is the one that is having a problem is failing you as professional nurses

**Participant:** Yes, I can say that because at this present at least for these three month we have some of the clinics they were doing the campaigns they did not have at least with us we do have we manage to do it but now we do not have

**Researcher:** Do you consider cervical cancer screening procedure/ skill easy to conduct and how?

**Participant :** To me I find it that it is easy and I enjoy it(laugh) even if they say my eyes have a problem because I am seeing things that I am not supposed to see, for me I do not need a skill now I am perfect, the only thing is that it is difficult for those gogos because they only have elapse cervix, polyps, ulcers there with their ulcers and others are on the third stage , others is in situ and they do not know they will say ashii.... my waist is painful my back is painful when I am urinating is painful sometimes I get some blood when you do pap smear you find its late

**Researcher:** How do you deal with those patients who present late

**Participant:** I refer them to the doctor the doctor refer them to the hospital because some are bleeding because at the clinic we do not have treatment to stop that bleeding we have to refer

**Researcher:** Do you make follow up after you would have referred this woman

**Participant:** Yes, I tell clients that if she is not admitted she must come and see me and tell them what to do

**Researcher:** How do you do the procedure

**Participant:** Firstly I have a pack for cervical smear and I have which is being sterilized I wash my hands first I talk to my client introduce myself she introduce herself and then I tell her that we are going to do the pap smear and then she will say its fine sister and from there before I fill the forms is in it that later we talked about the value for money before I fill the forms I first check if it is adequate to collect the smear because sometimes you will fill that form and do everything you find that the women is dry you can't find nothing I first open the cervix and see what is going on because I have got assistant who is feeling the forms I tell her that the cervix is like this and this she knows were to write then I collect my cervical smear, on my trolley is my pack , my trolley, it's a slide, it's a vaginal speculum is in it that we are using the disposable ones nowadays and is a asybury speculum and from there and the light and then my patient sleep on my back and then do the lithotomy open the thighs and take the speculum and open it I it talking to the patient to release anxiety and I collect my endocervical smear and then I do anticlockwise and I come out I do not have to touch the walls of the vagina

**Researcher:** And what else what about the technique itself

**Participant:** The technique when I finish to take out the aysbury speculum I go to my slide I do it then I through it on the binonce slowly nicely then I throw it on the bin then I took my spray I put it far from my eyes I spray it ones not many times and I put it on the cover and then I put it where there is no sun that is going to get in there and also I put the code on the cover on the slide we have to write the name, the age

**Researcher:** What about the in-service training have you ever attended the in-service training, like previously you have indicated that you were not trained but other doctors are the one who helped you

**Participant:** I attended the in-service training when we were doing the workshops on the days of reproductive health

**Researcher:** What is it that you have learned in this in-service training

**Participant:** What I have learned in that in-service training is the technique of pap smear collection to put the component on the slide because the doctors were using the old one that one of rubbing like chuku, chuku yes but we are no longer rubbing we just smear one's you do not smear this side and then you go that side only once and is finish

**Researcher:** What about those other professional nurses did not attend the in-service training

**Participant:** Yes, they have attended because this year there was an in-service training they ask me that there is the other one who did not do the in-service training she must be the one

who goes there the reason why they said that(laugh) is because they know what I am doing yes that is why they have said I must give those ones a chance

**Researcher:** Meaning that is only one who have attended the in-service training

**Participant:** The other ones have been done long time ago because she was the only one who was selected

**Researcher:** She was the only one selected because she did not attend the in-service training and others have attended long time ago

**Participant:** Yes

**Researcher:** What is your perception of this in-training, is it adequate or comprehensive?

**Participant:** It was a comprehensive

**Researcher:** Why are you saying that

**Participant:** Because we were all of us and it was last even there was people from the laboratory who came and show us what they are expecting from us 2013 when we were at Polokwane before I resigned

**Researcher:** Meaning that they have educated you

**Participant:** Yes

**Researcher:** What is it that they were focusing on

**Participant:** They were focusing on results that are inadequate and the waist that we are doing as professional nurses they so that we do not have infor about what they expect to us from the lab concerning the endocervical component because they are dry they do not even have a spray that is needed the main others there is the component but they do not know who is the patient and the filling of the form that we not filling on the clinical form, there is that part that we write they explain how did I see the cervix the condition of the cervix it was pink it had polyps it was bleeding we have to explain everything

**Researcher:** What about the training do you think it should be a once off training or frequent training

**Participant:** I think per quarter it should be twice per quarter not once per year because once per year they are those newly qualified they do not know anything and if you say go and do

pap smear sister Ndou is going on pension not late soon meaning that the whole sister for pap' smear (laugh) this is high time they should have the training at least twice per quarter

**Researcher:** What is the reason being if we have it twice per quarter that's where we are going to talk about why we discover how are our patients handling the situation whether they are coming to be send to the hospital come and give us the report that they are not by doing the training that where we verbalize what we are seeing in our patients

**Researcher:** Should this training be assessed for competency

**Participant:** I think that one it has to as I have said previously nurses just do it because I want to do for PMDS or because they have said one professional nurses should do two pap smears per day otherwise they are not like me who say I am going to work that's a thing that I plan to say every week I will have to do two, ten, twenty

**Researcher:** What about those professional nurses who work so that they can be given PMDS what about the protocol can you tell me more about the protocol for two clients per day

**Participant:** That one is a national thing because each professional nurse they expect her to do two per day that one I don't want to lie I did not read it on the guideline it was just when they go for managers' meetings they came with that first we were doing ten they were expecting ten. One professional nurse to have ten per month but now they see that people are being over loaded they reduced it to two yes

**Researcher:** Ok

**Researcher:** What about professional nurses assessed for competency

**Participant:** Yes I think that I can be done because there are those nurses who are doing the pap smear for the sake of doing the pap' smear as I said before they are not doing the pap smear because they are going to help the client and also they need to know what is it expected on this slides, they do not know the value for money maybe if they knew how much each slide cost maybe they will do the right thing there will be a competency but for now I do not think competency has to be done for all professional nurses

**Researcher:** What do you think this training should cover/ composition?

**Participant:** Mina what I want to learn from these programme they must not forget to show us the fourth stage if the patient comes to us and the patient is refusing to go to the hospital what must we do what measures must we do on patient, what should we collect they must train us

on how to use formalin , most of PHC they do not they know nothing about formalin from school is not like those nurses who are from hospital who goes to PHC to work there but if they can say ok here we are doing we have got a reproductive nurse let it be a thing of saying ok in that clinic there is an advance midwife there let us try to reduce thee intake in the hospital for this biopsy booking is in it that we can do it and then ee... and send to the lab and when the results come back you need to send that person to the hospital rather than queuing for one for gynae doctor and as the hospital has got ee is it a regional hospital or district hospital people has got this tendency thing of no I am not going to Thilidzini. I am going to Vhufuli, people has to learn where to get help

**Researcher:** What do you want thi training program to cover

**Participant:** To cover the adequacy what is expected when they say the endocervical component is present because they do not know what is present what is absent, the person will say, a mara the slide was full of what it was a discharge that patient will be seeing trichomonas's instead of giving us the endocervical component

**Researcher:** And what else

**Participant:** I think the attitude is needed not to she is a professional nurse being trained to deliver a patient can't collect the endocervical smear

**Researcher:** And what else

**Participant:** Ok there are those who do not know what is CIN1 and CIN2 CIN3 and what is biopsy and those thing they have to be elaborated and taught so that when the results came the endocervical component is there is a high grade squamous cell is in it you understand exclude C1,C2,C3. They need to know what do they mean about that include C2,C3 they really have to know that it is in situ or stage three, the other thing the signs and symptoms of the cervical cancer because others patient will represent in difficult in breathing and swollen legs and not urinating and most of the time we do not do the PV because we will be seeing the swollen legs patient being pale, the stomach is being distended you are not going to think about the CA you will think maybe about the liver failure were as it say its CA stage 4 or stage 3, and I think it is important to us to examine when she comes to collect the treatment let do the pap smear if she if she is complaining of cough let's do the pap smear because also cough is a sign that something is on fourth stage is up there yes so they are so many like signs and symptom see early detection how do we collect adequate smears, how do we interpret the results how do we communicate at tertiary level follow up of the patient until the final diagnoses

**Researcher:** Do you consider the National cervical cancer screening guideline easy to implement?

**Participant:** No, it is not easy to implement unless you give yourself to read it and understand it

**Researcher:** Do you think it should be a once-off training or should be frequent?

**Participant:** No frequent and continuous training is needed so that we have more time to practice

**Researcher:** Should this training be assessed for competency?

**Participant:** Yes, continuous assessment is required and we need to practice the skill in front of our teachers to become competent.

**Researcher:** What do you think this training should cover/ composition?

**Participant:** Should cover theory and practice

**Researcher:** What can be done to improve the adequacy rate?

**Participant:** Continuous formal training and assessment for competency before doing pap 'smears

**Researcher:** Do you have any recommendation regarding cervical cancer screening?

**Participant:** Yes the policy should be reviewed and be revised so that it can cover also young girl who are sexual active. It also limit the professionals to reach the target as it dictate screening from 30 years and above

**Researcher:** What are the challenges of cervical cancer screening program?

**Participant:** shortage of resources and equipments e.g. we don't have a sterilizer as we have to travel 20 km for use to sterilize our equipments

**Researcher:** In your opinion are women seeking health care information about cervical cancer screening?

**Participant:** No, it is very rare for women who comes to the clinic for other services like sugar and high blood sugar. It is very rare for women to ask for this services. I think we need to sell this service

**Researcher:** Is there an optimal number of supervised cervical cancer samples taken by a health care professional before they are considered competent in this technique?

**Participant:** No unless if I can call the supervisor to come and check but it's rare

**Researcher:** Are there any validated tool for assessing competency in taking cervical cancer samples?

**Participant:** No, no we do not have validated tool for assessment of competency

**Researcher:** Do health care professionals trained in taking cervical samples requires repeated training?

**Participant:** Yes, repeated training it is required so that they can learn the skill for pap smear collection and reduce the high number of inadequacy rate for pap' smear

**Researcher:** Are there any evidence based guidelines on training requirements of trainers or assessors delivering training on cervical smears taking?

**Participant:** No, we do not evidence based guideline on training on training requirements of trainers or assessors delivering training on cervical cancer taking

**Researcher:** Is there any availability of quality and adequate equipment's for pap smear collection?

**Participant:** No we do not have available quality or adequate equipments for pap' smear

**Researcher:** Is there any adequate number of staff to perform cervical cancer screening?

**Participant:** No, we do not have adequate number of staff because other nurses are not interested in performing pap smears

**Researcher:** What changes would you like to see?

**Participant:** As from now in-service training for professional nurses performing the skill and equipments should be there

**Researcher:** In your view, what are some suggestions that would make it easier to screen adequately?

**Participant:** Ok as I have already indicated we need repeated training so that to revise the skill for pap' smear collection

**Researcher:** Thank you very much for your time

**Participant:** Thank you

**ANNEXURE: G**

LETTER TO REQUEST PERMISSION TO CONDUCT RESEARCH

P.O. Box 5574

Thohoyandou  
0950

LIMPOPO DEPARTMENT OF HEALTH

PRIVATE BAG X 908

POLOKWANE

0700

REQUEST FOR PERMISSION TO CONDUCT RESEARCH IN PUBLIC HOSPITALS AND  
SELECTED PHC FACILITIES UNDER VHEMBE DISTRICTS

Dear Madam/Sir

I am Doris Ngambi a PHD student at the University of Venda, I have been granted a permission to conduct research at your facilities. My research topic is Development of a training program to strengthen cervical cancer screening in Limpopo Province South Africa, under the supervision of Professor Ramathuba DU and Dr Tshililo A.R. The study will be conducted in selected PHC clinics under Vhembe District. The information collected will remain confidential and ethical consideration will be maintained in all aspects

Hoping that my application will reach you in favourable condition

Yours faithfully

Ngambi D.

## ANNEXURE H

### LETTER TO REQUEST PERMISSION TO CONDUCT RESEARCH

P.O. Box 5574

Thohoyandou  
0950

LIMPOPO DEPARTMENT OF HEALTH

PRIVATE BAG X 908

POLOKWANE

0700

### REQUEST FOR PERMISSION TO CONDUCT RESEARCH IN PUBLIC HOSPITALS AND SELECTED PHC FACILITIES UNDER MOPANI DISTRICTS

Dear Madam/Sir

I am Doris Ngambi a PHD student at the University of Venda, I have been granted a permission to conduct research at your facilities. My research topic is Development of a training program to strengthen cervical cancer screening in Limpopo Province South Africa, under the supervision of Professor Ramathuba DU. and Dr AR Tshililo. The study will be conducted in selected PHC clinics in hospitals under Mopani District. The information collected will remain confidential and ethical consideration will be maintained in all aspects

Hoping that my application will reach you in favourable condition

Yours faithfully

Ngambi D.

RESEARCH AND INNOVATION  
OFFICE OF THE DIRECTOR

NAME OF RESEARCHER/INVESTIGATOR:

**Ms D Ngambi**

Student No:

**9729987**

**PROJECT TITLE: Development of a training programme to strengthen cervical cancer screening services in Limpopo Province South Africa.**

PROJECT NO: **SHS/19/PDC/08/1305**

SUPERVISORS/ CO-RESEARCHERS/ CO-INVESTIGATORS

NAME	INSTITUTION & DEPARTMENT	ROLE
Prof DU Ramathuba	University of Venda	Promoter
Dr AR Tshililo	University of Venda	Co - Promoter
Ms D Ngambi	University of Venda	Investigator – Student

ISSUED BY:

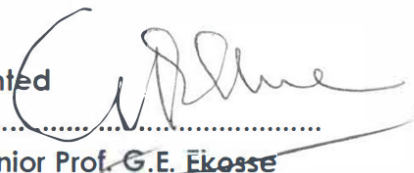
**UNIVERSITY OF VENDA, RESEARCH ETHICS COMMITTEE**

Date Considered: May 2019

Decision by Ethical Clearance Committee Granted

Signature of Chairperson of the Committee: .....

Name of the Chairperson of the Committee: Senior Prof. **G.E. Ekosse**



UNIVERSITY OF VENDA DIRECTOR RESEARCH AND INNOVATION  2019 -05- 14  Private Bag X5050 Thohoyandou 0950
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University of Venda

PRIVATE BAG X5050, THOHOYANDOU, 0950, LIMPOPO PROVINCE, SOUTH AFRICA  
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**LIMPOPO**  
PROVINCIAL GOVERNMENT  
REPUBLIC OF SOUTH AFRICA

**DEPARTMENT OF HEALTH**

Ref : LP\_201907\_003  
Enquires : Mrs K. Letseparela  
Tel : 015-2936028  
Email : [Kurhula.Hlomane@dhsd.limpopo.gov.za](mailto:Kurhula.Hlomane@dhsd.limpopo.gov.za)

Doris Ngambi  
Faculty of Health Science  
University of Venda

**PERMISSION TO CONDUCT RESEARCH IN DEPARTMENTAL FACILITIES**

Your Study Topic as indicated below;

**Development of a training programme to strengthen cervical cancer screening**

1. Permission to conduct research study as per your research proposal is hereby Granted.
2. Kindly note the following:
  - a. Present this letter of permission to the institution supervisor/s a week before the study is conducted.
  - b. In the course of your study, there should be no action that disrupts the routine services, or incur any cost on the Department.
  - c. After completion of study, it is mandatory that the findings should be submitted to the Department to serve as a resource.
  - d. The researcher should be prepared to assist in the interpretation and implementation of the study recommendation where possible.
  - e. The approval is only valid for a 1-year period.
  - f. If the proposal has been amended, a new approval should be sought from the Department of Health
  - g. Kindly note that, the Department can withdraw the approval at any time.

Your cooperation will be highly appreciated

Head of Department

25/07/19  
Date

Private Bag X9302 Polokwane  
Fidel Castro Ruz House, 18 College Street, Polokwane 0700. Tel: 015 293 6000/12. Fax: 015 293 6211.  
Website: <http://www.limpopo.gov.za>

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**LIMPOPO**  
PROVINCIAL GOVERNMENT  
REPUBLIC OF SOUTH AFRICA


DEPARTMENT OF HEALTH  
MOPANI DISTRICT

Ref: S4/2/2  
Enq: Mohatli Isiraele  
Tel: 015 811 6543

To **Ngambi D**  
**Faculty of Health Science**  
**University of Venda**

**Re: PERMISSION TO CONDUCT RESEARCH IN MOPANI HEALTH FACILITIES: YOURSELF**

1. The matter cited above bears reference
2. This serves to respond to the request submitted to research on the topic: **“Development of a training programme to strengthen Cervical Cancer Screening in Limpopo, South Africa.”**
3. It is with pleasure to inform you about the decision to permit you to conduct the cited research at hospitals and PHC facilities within Mopani District.
4. You will be required to furnish hospitals and PHC authorities with this letter for purposes of access and assistance.
5. You are further advised to observe ethical standards necessary to keep the integrity of the facilities.
6. The Mopani District wishes you well in your endeavour to generate knowledge.



Director: Corporate Services

Date: 22.08.2019



LIMPOPO  
PROVINCIAL GOVERNMENT  
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF HEALTH  
VHEMBE DISTRICT

Ref: S5/6  
Enq: Muvuri MME  
Date: 01.08.2019

Dear Sir/Madam. Ngambi S

Permission to conduct a research on the  
"Development of a training programme to strengthen..."

1. The above matter refers.
2. Your letter received on the 01.08.2019 requesting for permission to conduct an investigation is hereby acknowledged.
3. The District has no objection to your request.
4. Permission is therefore granted for the study to be conducted within Vhembe District. You are expected to submit the results to the District.
5. You are however advised to make the necessary arrangements with the facilities concerned.

Wishing you success in your endeavors.

p.p. Skucce  
CHIEF DIRECTOR: DISTRICT HEALTH

2019/08/10  
DATE

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