

Improving cervical cancer screening utilisation in Keetmanshoop Urban Namibia: An
intervention study

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DECLARATION

I, Temptation Chigova, declare that this thesis is my own, unaided work. It is being submitted for the degree of Doctor of Philosophy at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any other degree or examination at this or any other University.



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19 August 2020

Dedication

To my extraordinary supportive husband Dr Arthur T, my son Asher T,
daughter Andra T and my loving mother Enia Mukarati.

Presentations arising from this research work

1. Cervical cancer screening – Why women do not come and what can we do? Temptation Chigova. Namibia Women's Health Conference, Windhoek, Namibia. July 2019. <https://is.gd/namibiawomenshealth>
2. Cervical cancer Educational Program Launch. Temptation Chigova. Keetmanshoop Namibia. June 2019. <https://www.nbc.na/news/mohss-can-launch-cervical-cancer-awareness-campaign-keetmanshoop.21070>
3. Community Based Educational program. Temptation Chigova. Keetmanshoop. September 2019. https://youtu.be/rEHZBOvG_NQ

Abstract

This was a three phased study using a sequential multi-method design. Phase 1 was a scoping review which concluded that the interventions employed in Africa to improve cervical cancer screening for the period 2008-2018 were health education, HPV testing, integrating services and multi-faceted health promotion activities.

Phase 2 consisted of in-depth interviews with 19 nurses, 18 women and 16 men. Barriers to screening utilisation were inadequate knowledge about cervical cancer, inadequate knowledge about the screening test, shortage of resources, influence of fear and woman's demographic characteristics. Suggestions to improve screening utilisation were; health education, nurse training on cervical cancer and screening and modifications in the health care delivery system.

The third and final phase was the intervention study that saw the structuring of a community based educational intervention program. Twenty-one (n=21) lay community-based workers called Health extension workers (HEWs) were trained to assist in recruiting women for the community based educational program. Knowledge of HEWs was improved through training and education. The community based educational program was launched with the support of political and local organizational leadership. A total of 105 women (n=105) participated in the community based educational program of which all four outcomes namely, screening uptake, women's knowledge, attitude, and the clinic readiness to offer cervical cancer screening. Statistical analysis using Chi square showed that the odds ratio (OR) of woman getting screened after the educational session was 2.4 times.

All three phases of the current study provided evidence that lack of knowledge is a barrier to screening uptake and educational interventions have been employed with varying outcomes. In this study, education coupled with closing other operational gaps in the healthcare delivery system, improved screening utilisation. However, education alone without addressing structural barriers such as resource shortages and lack of training will be insufficient to improve screening.

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Table of Contents

CHAPTER 1: ORIENTATION TO THE STUDY

1.1	INTRODUCTION.....	1
1.1.1	<i>Interventions to improve cervical cancer screening utilisation in Sub-Saharan.....</i>	2
1.1.2	<i>Namibia, cervical cancer and its screening.....</i>	2
1.2	PROBLEM STATEMENT	3
1.3	THE STUDY SETTING	4
1.4	DESIGN AND METHODS.....	6
1.4.1	<i>Phase 1: Scoping review to identify interventions used before to increase cervical cancer screening utilisation.....</i>	6
1.4.2	<i>Phase 2: Identifying barriers to cervical cancer screening in Keetmanshoop.....</i>	7
1.5	RESEARCH QUESTIONS AND OBJECTIVES	5
1.5.1	<i>Phase 3: Developing an intervention and test it.....</i>	12
1.6	ETHICAL CONSIDERATIONS.....	14
1.7	TIMING	15
1.8	STRUCTURE OF THE THESIS.....	15
1.8.1	<i>CONCLUSION.....</i>	17

CHAPTER 2: LITERATURE REVIEW

2.2	INTRODUCTION.....	18
2.3	CERVICAL CANCER	18
2.3.1	<i>Anatomy of the normal cervix</i>	18
2.3.2	<i>Abnormalities of the cervix other than cervical cancer.....</i>	19
2.3.3	<i>Epidemiology of Cervical cancer</i>	19
2.3.4	<i>Prevention of cervical cancer.....</i>	21
2.3.5	<i>Screening and Treatment of Pre-cancers.....</i>	26
2.3.6	<i>Tertiary prevention – Treatment of cervical cancer.....</i>	28
2.3.7	<i>Signs / Symptoms.....</i>	31
2.4	BARRIERS TO SCREENING.....	31
2.4.1	<i>Developed nations.....</i>	31
2.4.2	<i>Developing nations including Africa.....</i>	32
2.4.3	<i>Patient oriented barriers</i>	33
2.4.4	<i>Healthcare delivery system-oriented barriers</i>	37
2.5	INTERVENTIONS TO IMPROVE CERVICAL SCREENING UTILISATION	39

2.6	CONCEPTUAL FRAMEWORK	41
2.7	CONCLUSION	42
CHAPTER 3: DESIGN AND METHODS		
3.1	INTRODUCTION.....	43
3.2	RESEARCH DESIGN	43
3.3	RESEARCH METHODOLOGY	45
3.3.1	<i>Phase 1: Scoping review to identify interventions used before to increase cervical cancer screening utilisation in Africa.</i>	<i>45</i>
3.3.2	<i>Phase 2: Identifying barriers to cervical cancer screening.....</i>	<i>48</i>
3.3.3	<i>Phase 3: Pilot testing of the community based educational program ...</i>	<i>61</i>
3.4	LEARNING THEORY	65
3.5	STUDY DESIGN	65
3.6	CONDUCTING THE EDUCATIONAL SESSIONS	68
3.6.1	<i>Objectives and delivery of the educational sessions</i>	<i>68</i>
3.6.2	<i>Teaching method.....</i>	<i>68</i>
3.6.3	<i>The message content of the educational sessions</i>	<i>69</i>
3.6.4	<i>Assessment of outcomes.....</i>	<i>69</i>
3.6.5	<i>Data collection instrument</i>	<i>69</i>
3.7	DATA MANAGEMENT AND ANALYSIS.....	70
3.7.1	<i>Primary outcome: Assessing screening uptake</i>	<i>70</i>
3.7.2	<i>Secondary outcome: Assessing Knowledge and attitude outcome</i>	<i>70</i>
3.7.3	<i>Secondary Outcome: Assessing clinic readiness</i>	<i>70</i>
3.8	INTERNAL AND EXTERNAL VALIDITY OF THE STUDY	71
3.8.1	<i>Face validity.....</i>	<i>71</i>
3.8.2	<i>Content validity.....</i>	<i>72</i>
3.8.3	<i>Construct validity</i>	<i>72</i>
3.9	RELIABILITY	72
3.10	CONCLUSION	73
CHAPTER 4: THE SCOPING REVIEW		
4.1	INTRODUCTION.....	74
4.1.1	<i>Review of the purpose and aims of the scoping review.....</i>	<i>74</i>
4.2	METHODS	74
4.2.1	<i>Scoping review process.....</i>	<i>74</i>
4.2.2	<i>Search strategy</i>	<i>75</i>
4.3	RESULTS.....	77

4.3.1	<i>General information</i>	77
4.3.2	<i>Themes arising from the data</i>	78
4.4	DISCUSSION	92
4.4.1	<i>Limitations</i>	95
4.5	CONCLUSIONS	95
CHAPTER 5 FINDINGS OF PHASE 2 OF THE STUDY		
5.1	INTRODUCTION	97
5.2	WOMEN'S COHORT	98
5.2.1	<i>Participants</i>	98
5.2.2	<i>Themes arising from the data</i>	99
5.2.3	<i>Theme 1: women's knowledge of cervical cancer and its screening. "No idea, I don't know"</i>	100
5.2.4	<i>Theme 2: the influence of fear. "They say the pain is more than giving birth."</i>	105
5.2.5	<i>Theme 3: Strategies to improve cervical cancer screening utilisation. "The health people can go from house to house to make them aware that there is cervical cancer problem"</i>	108
5.3	MEN'S COHORT	111
5.3.1	<i>Participants</i>	111
5.3.2	<i>Themes arising from the data</i>	112
5.3.3	<i>Theme 1: barriers related to the provision of screening services: "It's more like some women are far from the clinic"</i>	112
5.3.4	<i>Theme 2: The role of knowledge and support. "The thing is I want to support, but I don't have information"</i>	115
5.4	NURSES' COHORT	118
5.4.1	<i>The participants</i>	118
5.4.2	<i>Themes and subthemes emerging from the interviews</i>	119
5.4.3	<i>Theme 1: Barriers to cervical cancer screening. "It has a debilitating effect on the woman"</i>	119
5.4.4	<i>Theme 2: Strategies suggested to improve screening utilisation. "Explain to the people in every language"</i>	130
5.5	CLINIC AUDITS	138
5.5.1	<i>First Round of clinic audits</i>	138
5.5.2	<i>Second Clinic Audits (Before Educational Intervention testing)</i>	143
5.5.3	<i>Summary of the Clinic Audits</i>	147
5.6	CONCLUSION	147
CHAPTER 6: FINDINGS OF PHASE 3 OF STUDY		

6.1	INTRODUCTION.....	148
6.2	PREPARING THE HEALTH EXTENSION WORKERS.....	148
6.2.1	<i>Education and Training Objectives</i>	<i>148</i>
6.2.2	<i>The education and training programme</i>	<i>149</i>
6.2.3	<i>Knowledge assessment.....</i>	<i>149</i>
6.2.4	<i>The evaluation of the education and training programme.....</i>	<i>153</i>
6.2.5	<i>Conclusion with regards to the preparation of health extension workers</i>	<i>156</i>
6.3	STAKEHOLDER MEETING AND COMMUNITY BASED EDUCATIONAL PROGRAM LAUNCH.....	156
6.3.1	<i>Attendees</i>	<i>156</i>
6.3.2	<i>Program and presentation</i>	<i>156</i>
6.4	THE COMMUNITY BASED EDUCATIONAL PROGRAM.....	157
6.4.1	<i>Recruitment</i>	<i>157</i>
6.4.2	<i>RESULTS OF THE PILOT TEST</i>	<i>159</i>
6.5	CONCLUSION	169
CHAPTER 7: DISCUSSION OF FINDINGS FROM PHASE 2 AND PHASE 3 OF STUDY		
7.1	INTRODUCTION.....	170
7.2	OUTLINE OF CONCLUSION FROM PHASE 1: SCOPING REVIEW.....	170
7.2.1	<i>Phase objective:</i>	<i>170</i>
7.2.2	<i>Themes that emerged from the scoping review.....</i>	<i>170</i>
7.2.3	<i>Author's conclusion of the scoping review.....</i>	<i>170</i>
7.3	OUTLINE OF CONCLUSION AND DISCUSSION PHASE 2 FINDINGS: BARRIERS TO CERVICAL CANCER SCREENING UTILISATION AND STRATEGIES TO IMPROVE SCREENING.....	171
7.3.1	<i>Phase objective</i>	<i>171</i>
7.3.2	<i>Triangulation of findings.....</i>	<i>171</i>
7.3.3	<i>Clinic Audits.....</i>	<i>181</i>
7.3.4	<i>Conclusion of Phase 2 findings</i>	<i>181</i>
7.4	OUTLINE OF CONCLUSION AND DISCUSSION OF PHASE 3: PILOT TESTING THE INTERVENTION.....	182
7.4.1	<i>Objectives.....</i>	<i>182</i>
7.4.2	<i>Discussion of the findings.....</i>	<i>182</i>
7.5	CONCLUSION OF CHAPTER	189
CHAPTER 8: JUSTIFICATION, LIMITATION, RECOMMENDATIONS AND CONCLUSION OF STUDY		

8.1	INTRODUCTION.....	190
8.2	JUSTIFICATION OF THE STUDY	190
8.3	LIMITATIONS OF THE STUDY	192
8.3.1	<i>RECOMMENDATIONS</i>	192
8.3.2	<i>Improving perceived susceptibility and severity</i>	192
8.3.3	<i>Improving perceived benefits</i>	193
8.3.4	<i>Reducing the perceived barriers</i>	194
8.3.5	<i>Cues to action</i>	195
8.3.6	<i>Self-efficacy</i>	195
8.3.7	<i>Further study</i>	195
8.4	CONCLUSIONS.....	196
8.5	CONTRIBUTIONS OF THE STUDY	197
8.6	RESEARCHER'S REFLECTION ON HER EXPERIENCE.....	198
	REFERENCES.....	200
	APPENDICES.....	229

List of figures

Figure 1. 1 A comparison of cervical cancer screening against other PHC services in Keetmanshoop District.	4
Figure 2. 1 Summary of sensitivity and specificity of cervical cancer screening tests. (WHO 2006, ACCP.)	26
Figure 3. 1 Scoping review using the Joanna Briggs Model 2015.....	48
Figure 4. 1 The four steps of the scoping review.....	74
Figure 4. 2 Flow diagram of the search and selection process for the included studies according to the Preferred Reporting items for Systematic reviews (PRISMA)	77
Figure 6. 1 The intervention process	148
Figure 6. 2 Pre and Post-test marks of attendees	150
Figure 6. 3 Box plot showing women's pre-test and post-test marks in the community based educational program.....	164
Figure 6. 4 Percentage of correct responses in pre and post-test (n=105)	164

List of Tables

Table 4. 1 Themes and subthemes arising from the studies included in the review.	78
Table 4. 2 Profile of studies excluded from the scoping review with reasons (n=6) .	80
Table 4. 3 Studies included in the scoping review.....	83
Table 5. 1 Demographic characteristics of the women's cohort	98
Table 5. 2 Themes and subthemes that arose from the women's cohort.....	99
Table 5. 3 Demographic characteristics of the men's cohort.....	111
Table 5. 4 Themes and subthemes that emerged from men's cohort	112
Table 5. 5 Demographic characteristics of the sample (n=19)	118
Table 5. 6 Themes and subthemes emerging from the data.....	119
Table 5. 7 Clinic audit of clinic 1.....	138
Table 5. 8 Clinic audit of clinic 2.....	140
Table 5. 9 Clinic audit of Clinic 3	142
Table 5. 10 Second clinical audit Clinic 2.....	145
Table 5. 11 Second clinical audit Clinic 2.....	146
Table 6. 1 Attendees marks in the pre and post-test marks	150
Table 6. 2 Attendees responses on evaluation of the education and training program (n=21).....	153
Table 6. 3 Attendees responses on attainment of objectives of the education and training programme (n=21).....	154
Table 6. 4 Attendees responses on different concepts of the education and training programme (n=21)	154
Table 6. 5 Sessions, venues, dates, sequential numbers and total number of attendees of the community based educational program	158
Table 6. 6 General characteristics of the sample (n=105).....	159
Table 6. 7 Chi-square attending educational and screening utilisation	160
Table 6. 8 Demographic characteristics of the sample and screening (n=105).....	161
Table 6. 9 Knowledge of cervical cancer before (n=105) and after community based educational program (n=105)	164
Table 6. 10 Chi-square of attitudes and education.....	167
Table 6. 11 Clinics readiness to offer cervical cancer screening services.....	168

Table 6. 12 Number of women referred but not screened due to shortage of resources	168
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LIST OF ABBREVIATIONS

AIDS	Acquired Immune-Deficiency Syndrome
CC	Cervical Cancer
CDC	Centres of Disease Control
CoVID 19	2019 Novel Coronavirus
HIV	Human Immunodeficiency Virus
HIS	Health Information Systems
HPV	Human Papilloma Virus
MoHSS	Ministry of Health and Social Services
NDHS	National Health Demographic Survey
OR	Odds Ratio
Pap	Papanicolau
PEPFAR	President's Emergency Plan for AIDS Relief
PHC	Primary Health Care
PRRR	Pink Ribbon Red Ribbon
STD	Sexually Transmitted Diseases (s)
STI	Sexually Transmitted Illnesses
VIA	Visual Inspection with Acetic
WHO	World Health Organization

CHAPTER 1: ORIENTATION TO THE STUDY

1.1 INTRODUCTION

The burden of cervical cancer varies across the globe and one of the major determinants is resources. The burden is over ten times higher in developing countries in comparison to the developed world. By 2030, cervical cancer is expected to claim nearly half a million lives per year, with over 95% of deaths concentrated in developing countries (UNAIDS, 2020a, WHO, 2020, Arbyn et al., 2020). The burden gap is primarily due to limited access to effective cervical cancer screening and treatment programs in resource limited countries (PRRR, 2016, WHO, 2014). Recent reports confirm that some developing countries do not have a national cervical cancer screening program. The Namibia Cervical Cancer Prevention Program for example was only placed in 2018 (Toliman et al., 2018, MoHSS, 2018). However, for some developing nations, despite having national population-based cervical cancer screening programs, screening coverage is low with in South Africa at 13%, Kenya at 3.2% and Ghana at 12% to mention a few (Rwamugira et al., 2019, Morema et al., 2014, Abotchie and Shokar, 2009). On the contrary, the incidence and mortality of cervical cancer in developed countries have significantly slumped over the past decade owing to highly efficient screening modalities which enhanced early detection of precancerous lesions (Haesebaert et al., 2012, Denny et al., 2012). Currently, available screening methods include the human papillomavirus (HPV) test, visual inspection with acetic acid (VIA), and cytology (Pap smear) (WHO, 2013)

Africa and cervical cancer

Several factors are hampering the control of cervical cancer in Africa. Firstly, Africa has a shortage of healthcare infrastructure particularly cervical cancer diagnostic facilities which renders the pathology services inefficiently (Catarino et al., 2015a, Denny et al., 2017). Secondly, instruments and consumables required for screening are either not available or inaccessible. Thirdly, health care providers are failing to adequately encourage women to undergo screening. Fourthly, a study in Sub-Saharan Africa showed that lack of knowledge, fear of the disease, beliefs of not being at risk, cultural and religious factors are the common barriers to Pap smear screening (McFarland et al., 2016, Chigbu et al., 2017). Lastly, systematic review and other studies on barriers to screening noted that women mentioned lack of spousal support

among the reasons for not going for screening (Lim and Ojo, 2017, William et al., 2013, Modibbo et al., 2016).

1.1.1 Interventions to improve cervical cancer screening utilisation in Sub-Saharan

A 2017 systematic review on interventions to increase utilisation by Rees et al. (2018) identified four main interventions used in programs namely; use of HPV self-testing as an alternative to cytology, use of lay health advisors for educating women, engaging in counselling and a simple mailed invitation letter to come for cervical cancer screening. These interventions are supported by findings from various studies which had similar conclusions (Fouda and Elkazeh, 2013, Ersin and Bahar, 2017, Guvenc et al., 2013). From the reports of Lim and Ojo (2017) where women mentioned lack of support from their male counterparts as a reason for low screening utilisation, one would support a notion that it is the role of every man as a head of family in the African patriarchal cultures, to encourage his partner and daughters to be screened for cervical cancer as this ultimately saves their lives. However, in a recent study, Rwamugira et al. (2019) engaged men in an educational program with the aim of equipping men to educate women about need for screening. The results showed that the men's knowledge improved after the education program nevertheless it did not guarantee that men would in turn educate women as only 55% reported that they educated their spouse/partner or a significant female.

1.1.2 Namibia, cervical cancer, and its screening

Namibia has 813,157 women aged 15 years and older who are at risk of developing cervical cancer. Current estimates indicate that every year 132 women are diagnosed with cervical cancer and 59 die from the disease in Namibia (MoHSS, 2017b). According to the Namibia Health Demographic Survey (DHS), 23.6% of eligible women were screened for cervical cancer (MoHSS, 2009) . Furthermore, 80% of newly diagnosed women in low resource settings are only diagnosed when they have advanced disease (MoHSS, 2009, Nakisige et al., 2017) . Sporadic cervical cancer screening campaigns have been conducted by the Ministry of Health and Social Services and Cancer Association of Namibia, however there is need for escalated efforts to increase the population-based routine screening. Currently, the Pap smear is the method used for cervical cancer screening in Namibian state health facilities,

while Visual Inspection with Acetic acid (VIA) is at a pilot stage. In March 2018, the cost of the Pap smear at the private practices in Keetmanshoop for example was set at R905. The cost at private practices is quite inhibitive to an average woman, hence the state is expected to be the main provider of the service. The parastatal, Namibia Institute of Pathology (NIP) is responsible for providing the cytology tests for the Pap smears carried out in the state health facilities with a target of a results turnaround time of 6 working days unless there are abnormalities in the sample which warrant further analysis. Namibia is in the process of rolling out VIA and meet the WHO recommendations of “screen and treat” (WHO, 2013, MoHSS, 2018). Cervical cancer screening is for free within the state facilities across the country as part of women’s sexual reproductive health services.

1.2 PROBLEM STATEMENT

Despite the recommendations of the Namibia Ministry of Health and Social Services on cervical cancer screening, screening in Keetmanshoop is low. Screening is done for sexually active women. At the time of commencement of this research in February 2018 the screening was mainly Pap smear based. However, by the end of the research in 2020, the Namibia Cervical Cancer Program had transitioned from cytology based to VIA based. Therefore at start of this research the recommended screening intervals using via the Pap smear as per Circular [55] of 2010 (MoHSS, 2010, MoHSS, 2016, MoHSS, 2009), and were:

- Women infected with HIV should be screened at yearly interval irrespective of age.
- Those between the ages of 25-49 years should be screened at a 3-year interval.
- Those 50 years and above should be screened at a 5-year interval whilst
- Women 65 years and above who are HIV negative, if Pap smear is negative at 65 years or above it is not necessary to do another Pap smear
- Women from 15 to 25 years should have a Pap smear 3 years after their first sexual contact
- Mothers attending 6 weeks post-natal care services at Primary Health Care (PHC) Clinics.

Despite these stipulated guidelines, in the financial year 2016-2017, only 288 women were screened across the Keetmanshoop district's eight health facilities. This translates to only four to five women on average per facility per month. Non-compliance to stipulated guidelines is clearly illustrated in the graph below which compares number of women seen for ART follow-up (N=2880) and 6 weeks post-natal care (N=5712) against those screened for cervical cancer. Additionally, more than 13 000 sexually active women of childbearing age accessed family planning within the district for which the majority are eligible for cervical cancer screening, yet only 288 were screened.

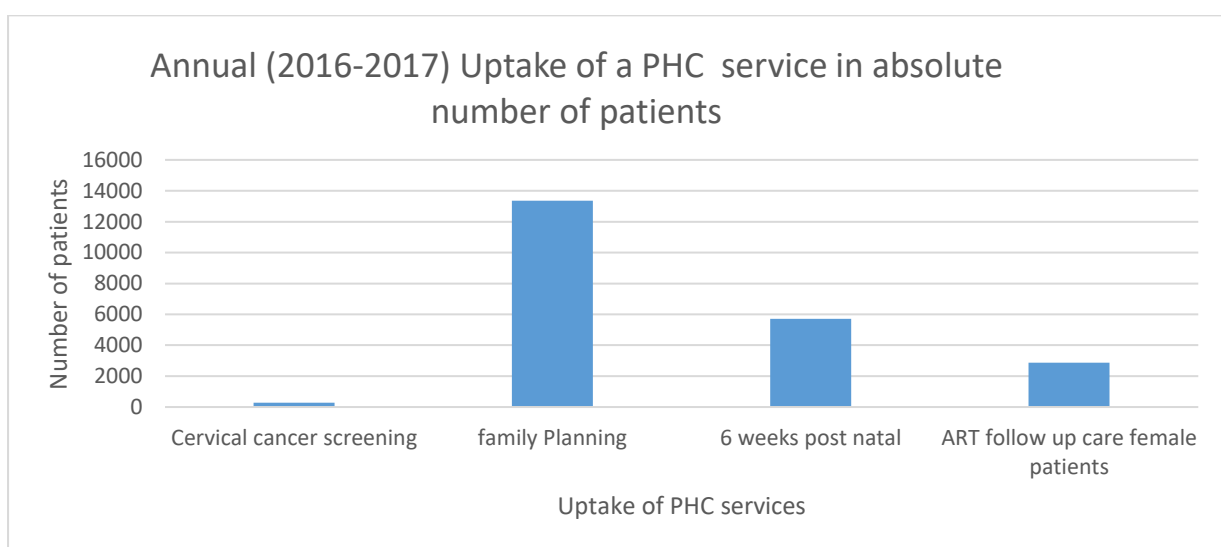


Figure 1. 1 A comparison of cervical cancer screening against other PHC services in Keetmanshoop District.

Most eligible women remain unscreened and at risk of developing cervical cancer. The utilisation of the service is far below the newly international set target of 90% of all eligible women aged 25-50 years should be screened (MoHSS, 2018, Brisson and Drolet, 2019, Canfell et al., 2020, Gultekin et al., 2020). Currently, no study had been conducted at the study site to identify barriers to screening and ultimately implement interventions to increase screening.

1.3 THE STUDY SETTING

The setting for this study was Keetmanshoop District situated in the southern region of Namibia approximately 500 km south of the capital Windhoek along the B1 route to South Africa. Keetmanshoop is the regional capital of the //Kharas Region and has a

population of approximately 36002 people of which 54% is urban population (NSA, 2013). It is a vast district with remaining 46% of the inhabitants sparsely populated in farms. The Nama-Damara speaking people constitute the majority of the populace while the remainder are other tribes from the north of the country. Due to the semi-arid climate in the district, minimal crop farming is possible due to erratic rainfall. The vegetation only sustains small animal husbandry such as goat and sheep.

Keetmanshoop population of women aged above 15 years and older is 8832 (MoHSS, 2017b). The MoHSS provides health services to the district through eight health facilities where three are in the urban area and five in the rural periphery. The outside clinics are 80 to 180 km from the Central Business District. In addition, there are four private practices of which three are in town and one outside.

1.4 AIM, RESEARCH QUESTIONS AND OBJECTIVES

The overall aim of this study was to understand interventions that have previously been employed to improve cervical cancer screening utilisation, explore barriers to screening and ultimately develop and test an intervention to improve screening utilisation.

To address the research problem, the following research questions were formulated:

1. What interventions have been employed to increase cervical cancer screening utilisation in Africa and what were their outcomes?
2. What are the barriers to cervical cancer screening in Keetmanshoop according to the women, men, nurses, and the health care delivery system?
3. Would an intervention improve cervical cancer screening utilisation in Keetmanshoop?

The objectives of the study were:

- a. To describe the interventions previously employed to increase cervical cancer screening utilisation in limited resource communities.
- b. To explore the barriers to cervical cancer screening utilisation according to women, men, nurses, and the health care delivery system.
- c. To develop and test an intervention to improve cervical cancer screening utilisation. The primary outcome was absolute numbers of women screened.

The secondary outcomes were knowledge, attitude and practices of women, and the clinic's improvement of its readiness to offer screening services.

1.5 DESIGN AND METHODS

To answer the research questions, a sequential multi-method approach was used, and the study consisted of three phases. Multi-method is a conduct of two or more research methods, each conducted rigorously and complete. The results were triangulated to form a comprehensive whole (Hesse-Biber and Johnson, 2015, Schwandt, 2014, Teddlie and Tashakkori, 2010). This was a method of choice as the three phases of study were complete in themselves yet interrelated and culminated in confirming whether an intervention can increase cervical cancer screening utilisation in Keetmanshoop. Phase 1 answered the first research question and a scoping review was conducted. Phase 2 responded to the second research question using qualitative description and structured observation using a checklist. The third and last phase was designed to answer the last research question by designing and testing an intervention to improve screening utilisation.

1.5.1 Phase 1: Scoping review to identify interventions used before to increase cervical cancer screening utilisation

A scoping review was conducted which was guided by the Joanna Briggs methods (Peters et al., 2015). Scoping reviews are conducted with the goal to gain information, summarize and disseminate research findings, note research gaps, and make recommendations (Peters et al., 2015, Munn et al., 2018).

The following databases were searched: PubMed, Scopus, Sabinet, WHO, Web of science, CINAHL and Google Scholar. The key words were interventions/programs/strategies + cervical cancer screening + Africa.

The inclusion criteria were studies within the decade period 2008-2018. A ten-year period was considered broad enough. Only studies in English were eligible as it is the language which both the researcher and supervisor are conversant with.

1.5.2 Phase 2: Identifying barriers to cervical cancer screening in Keetmanshoop.

1.5.2.1 Barriers according to the women

a. Design

A qualitative descriptive design was used as a method of choice in this study as straight descriptions of phenomena are desired. Sandelowski (2000) supported by Hammarberg et al. (2016) and Creswell and Creswell (2017) noted that researchers conducting qualitative studies aim to gather as much data as they can to enable capturing of all of the elements of an event that combine to make it the event that it is. Furthermore, qualitative description allows researchers to identify what reasons people have for using or not using a service or procedure, in this case cervical cancer screening services.

b. Population, sampling, and recruitment

The population involved in the study consisted of all women 18 years and older living in Keetmanshoop Health District. This was narrowed down/ reduced to the target population comprising were all the women who have never been screened for cervical cancer living in Keetmanshoop. Purposive sampling was used to select participants. Purposeful choosing of participants as this allows researchers to explore both the common and unique manifestations of a target phenomenon across a broad range of phenomenally and/or demographically varied cases (Palinkas et al., 2015, Creswell and Creswell, 2017, Sandelowski, 2000, Martínez-Mesa et al., 2016). It gives room for eliciting data from cases that are deemed information-rich or make a sample of expects (Polit and Beck, 2017, Creswell and Creswell, 2017). Participants were recruited from among the various social and religious groups within Keetmanshoop. Women 18 years and older who had never been screened for cervical cancer, living in Keetmanshoop were eligible for participation in the study. Participants were also requested to provide verbal and written consent (Appendix 7). Although the final sample size was determined by data saturation at 19 participants, the researcher had proposed to have 20 women. Data saturation is when themes and categories in the data become repetitive and redundant and further data collection no longer gives any new information (Palinkas et al., 2015, Creswell and Creswell, 2017, Sandelowski, 2000, Martínez-Mesa et al., 2016) .

c. Data gathering and instrument

In-depth interviews were conducted directed by an interview schedule (Appendix 2). This method allowed the researcher to ask broad questions and participants to freely tell their story in a naturistic environment (Edwards and Holland, 2013, Palinkas et al., 2015). Additionally, in-depth interview was a method of choice in this study as it afforded the participant room to elaborate on what was important to them rather than only responding to the researcher's pre-conceived notions. Section A of the interview schedule gathered demographic data of participants whilst section B focused on in-depth interview on barriers to screening. The interview schedule was pre-tested on one woman. The pre-test was informal and was aimed at determining whether the interview schedule can efficiently derive relevant data from participants. Interviews were done at a place the woman and the interviewer found appropriate for both and without distractions. Probes and prompting questions were used to facilitate an in-depth discussion (Jamshed and pharmacy, 2014, Burns and Grove, 2015, Palinkas et al., 2015). Voice recordings and necessary field notes were recorded as interviews progresses. The transcribed scripts were also given to the participants for their input.

d. Data management and analyses

Participants' demographic information was entered onto an Excel spread sheet. The voice recordings were transcribed word for word. Qualitative content analysis method was used. Qualitative content analysis is a dynamic form of analysis of verbal and visual data that is oriented toward summarizing the informational contents of the data collected (Sandelowski, 2000, Vaismoradi et al., 2013). Qualitative content analysis is data-derived, meaning that codes are systematically applied, but they are generated from the data itself as the study progresses. Data collection and analysis for qualitative studies usually happens simultaneously allowing researchers to modify their data management in order to accommodate new data and perspectives (Elo et al., 2014, Creswell and Creswell, 2017). Firstly, the participants' demographic data was presented and analysed using tables and graphs. The data from the open-ended questions was analysed using the qualitative descriptive content analysis described in Elo et al. (2014) as follows:

Preparation phase

- Select the unit of analysis. In this study the full interview transcripts were dissected and both the verbal and non-verbal data recorded was analysed.

- Make sense of the data by reading through the material several times. The researcher should understand; Who is telling? Where is this happening? When did it happen? What is happening? And why it is happening?
- i. Organising phase
 - Open coding: notes and headings are written in the text while reading it. The written in-text material was read through again and headings jotted down in the margins.
 - Coding sheets: The headings were then collected from the margins on to coding sheets
 - Grouping: The headings were grouped into higher order headings which led to generation of subcategories.
 - Categorization and abstraction. Subcategories with similar events and incidents are grouped together as categories. And categories are grouped into main categories. The researcher decides, through interpretation, which things to put in the same category.
- ii. Reporting phase
 - A report is compiled in a narrative passage to give a general description of the research findings using the generated main categories (themes).

1.5.2.2 Barriers according to men

a. Design

Qualitative descriptive design was used as explained in 1.5.2.1 numbering

b. Population, sampling, and recruitment

The population consisted of all men 18 years and older living in Keetmanshoop.

Purposive sampling was used to select men of various socio-economic and educational status from the community. Men from various social and religious groups within the community were approached face to face and invited to take part in the study. Men who were 18 years and older, living in Keetmanshoop were eligible to participate. The proposed sample size was 20 however, data saturation was reached at 16 participants which was the final sample size.

c. Data gathering and instrument

An interview schedule (Appendix 3) was used to conduct in-depth interviews. The interview schedule was pre-tested on the first participant. Each interview took place at a convenient and appropriate venue agreed upon by researcher and participant.

d. Data management and analyses

Data was managed and analysed following the process described in 1.5.2.1.

1.5.2.3 Barriers according to the nurses (Health service provider)

a. Design

A qualitative descriptive design was used.

b. Population, sampling, and recruitment.

The population were enrolled and registered nurses working in the Keetmanshoop Health District. Purposive sampling was used to select information rich participants. Participants were approached face-to-face at their respective PHC clinics they were working. The sample size was similarly proposed at 20 nurses although data saturated at 19 participants. The inclusion criteria required only enrolled or registered nurses working at a PHC clinic in Keetmanshoop for a minimum period of 3 months who had given verbal and written consent to be eligible for participation.

c. Data gathering and instrument

An interview schedule (Appendix 4) was used for data gathering. The guide was pretested on the first participant. In-depth interviews with nurses from the PHC clinic were conducted. Each interview took approximately 35 minutes. Interviews were done at the clinics in a room without distractions. Data collection on barriers to screening was completed in two months.

d. Data management and analyses

Data was managed and analysed following the process described in 1.5.2.1.

1.5.2.4 Trustworthiness in qualitative research

Shenton (2004) explained how researchers can meet Guba's four criteria for ensuring trustworthiness of research namely, credibility, dependability, confirmability, and transferability. Firstly, to promote credibility, the study adopted appropriate, well recognised research methods (Sandelowski, 2000, Elo et al., 2014). The researcher practised as a nurse in the PHC clinics of Keetmanshoop for 5 years and is familiar

with the inhabitants' cultures and that of the organisations. Site triangulation was incorporated, where three PHC clinics participated in data collection. To help ensure honesty in informants, participation was voluntary, anonymous and the right to withdraw at any time guaranteed. There were member checks of data collected and interpretations as transcripts were given to respective participants to verify if the recorded data were a true representation of the interview conducted. Secondly, to enhance transferability, contextual information about this study site was well elaborated under subtopic "study site". Limitations of the study are also stated. Furthermore, the inclusion criteria, sample size and data collection methods are all clearly stated. Thirdly, confirmability was promoted by presenting the emerged themes to the participants who verified whether the categories were a true reflection of what the participants meant. To reduce researcher bias, source triangulation of informants was employed where in-depth interviews were carried out with the women, the men, and the nurses. Three PHC clinics participated in data collection, allowing site triangulation of data. Lastly, the design had been well explained together with the methods to be used throughout all the phases of the study in order to ensure dependability. Decisions made during this study were illustrated in a step by step format summarized in a diagram called an audit trail and this trail has been kept.

1.5.2.5 Barriers according to the Health system

a. Design

A quantitative cross-sectional design was used to investigate barriers to cervical cancer screening related to the health delivery system. Cross-sectional studies are carried out at one time point over a short period (Polit and Beck, 2017, Connelly, 2016, Dang and Dearholt, 2017).

Units of analysis were all the three urban health facilities offering cervical cancer screening within the Keetmanshoop Health district. Due to the vastness of the district, the clinics outside the CBD are very distant from each other making it difficult to include them in the study. All 3 urban clinics in the district participated in the clinical audit and observation. The socio-economic demographics of the patients catered for by the three clinics differ thereby giving heterogeneity in the sample of the clinics. Whilst one clinic is in the central business district and often serve middle to high income earners, who prefer the state to private facilities, the second clinic is in the high-density suburbs serving the bulk of low-income earners or the unemployed. Lastly, the third clinic is

situated inside the district hospital providing service to people of all socio-economic status.

b. Data gathering and instrument

Structured observation was used to collect the data using a checklist. This method aimed at gathering first-hand information in a naturally occurring state with the aim to find what was going on (Burns and Grove, 2015, Fry et al., 2017, Mertler, 2016). Observational techniques were specific, and researcher used her senses to collect data on a phenomenon. In this study the environment was the PHC clinic where cervical cancer screening was offered. A checklist was used as data gathering instrument or the observation tool (Kelley and Brandon, 2012, Ameyaw et al.). This method was chosen as it allowed the researcher to have a category system on the left and tally frequency or availability on the right (Polit and Beck, 2017). The checklist was a clinic readiness tool which was adopted with permission from Sibiya (2012) and is attached as Appendix 5. A clinical audit using the tool was conducted per each of the three urban PHC clinics. The audits assessed the availability of resources for conducting the procedure of cervical cancer screening using the Pap smear at the beginning then later VIA, after the testing modality was transitioned. The researcher conducted the audit, verifying availability of the required resources for screening, documented on the audit tool and relevant notes recorded.

c. Data management and analyses

Data were entered in a table and expressed as percentages to demonstrate the availability of required resources and ultimately the readiness of each clinic for offering screening.

1.5.3 Phase 3: Developing an intervention and test it.

The third and final phase of the study aimed to develop and test an intervention to improve cervical cancer screening utilisation. The primary outcome was absolute numbers of women screened while the secondary outcomes were knowledge, attitude, and improvement in readiness of clinic to offer screening.

1.5.3.1 Design

An intervention research method was used. Intervention research involves development, implementation and testing of an intervention (McKee et al., 2017, Polit and Beck, 2017, Smith et al., 2015). Additionally, an intervention method requires a

PICO question which is a well worded question for evidence-based practice and it identifies the Population, Intervention, Comparison and Outcome of interest (Health and Excellence, 2015). The PICO question for this study was “What will be the outcome of a community based educational program on screening utilisation, knowledge, attitude and clinic readiness to offer cervical cancer screening services” Regarding types of interventions, Burns and Grove (2015) are of the opinion that all interventions fall into seven categories namely; strategy, technique, program, informational or training materials, environmental design variables, motivational system and a new modified policy. The researcher in this study designed a specific intervention accustomed to address barriers identified in Phase 2 of the study. The intervention included a community based educational program to equip women with knowledge of cervical cancer and need for screening. The chosen intervention was validated by the nurses, women, and men to ensure content and face validity. Before implementation, the researcher re-audited the clinic for readiness.

Population and sampling

For assessing screening utilisation and readiness to offer screening, one Keetmanshoop urban clinic was used for testing of the intervention. Participants for the intervention program were selected through convenience sampling as it allows the researcher to select readily available persons who volunteer and commit to participation in the program. Convenience sampling is a nonprobability sampling technique that a researcher uses to choose a sample of subjects from a population (Crossman, 2019, Elfil and Negida, 2017). To meet the age of self-consent in Namibia, all eligible participants were 18 years and older.

The population were women in Keetmanshoop urban. The MoHSS- Health Information System (MoHSS-HIS) captures the age group 15-49 years for women which was 4769 for Keetmanshoop urban (MoHSS-Health Information System, 2017). Therefore, exact population of 20-49 years was not known as there was no tool which captured the data for that specific age band.

1.5.3.2 The target population

The new Namibia Cervical Cancer Prevention guideline recommends initiating cervical cancer screening at the age 25 in HIV-negative women and 20 years in HIV-positive women until the age of 49. Consequently, at the time of intervention testing, the target

age group was defined as such. However, women above 50 years but never screened were also eligible for screening thus were also eligible to participate (MoHSS, 2018).

1.5.3.3 Data collection and instrument

The clinic Pap smear register was the main record used for data collection. The register had demographic data of patient, date of Pap smear and the results. The researcher collected data to assess the intervention's primary outcome at baseline, 2 and 4 months.

A self-developed questionnaire to assess knowledge, attitude, and practices of women (Appendix 6) was pre-tested on the first respondent using structured interview. A total of 105 women (n=105) participated in the educational program.

Improvement in clinic readiness to offer screening was assessed using the clinic audit tool adopted from Sibiyi (2012) at Phase 2 data collection and again before the intervention program was tested.

1.5.3.4 Data management and analyses

Quantitative descriptive and inferential analysis was used to assess outcome of intervention. The primary outcome was assessed statistically in terms of absolute numbers of women who participated in the educational session and got screened as recorded in the clinic Pap smear register and attendance slips (Appendix 18) at the clinic. Chi-square values were calculated to analyse relationship between the community based educational program and outcomes which were screening uptake, education, attitude, and clinic readiness to offer cervical cancer screening services. The clinic readiness was assessed using a clinic audit tool adopted from Sibiyi (2012). Readiness was expressed in terms of available resources as a percentage of all required resources. For all the intervention outcomes, comparisons were drawn between pre and post assessment outcome on the women's knowledge, attitudes, and practices.

1.6 ETHICAL CONSIDERATIONS

All fundamentals of ethical expectations in research were strictly adhered to in the study. Particular attention was given to observation of autonomy and respect of persons, beneficence, and confidentiality. The study had an ethical approval of the

Human Research Ethics Committee (HREC) of the University of Witwatersrand (Appendix 20 and 21) as well as the Biomedical Research Ethics Committee (BREC) and Research Management Committee (RMC) of Namibia. Before implementation of the intervention program, a separate clearance for the intervention was granted by the HREC of the University of Witwatersrand. The MoHSS Keetmanshoop district authorities granted permission to use PHC clinics as study sites on condition of an ethical approval of the Human Research Ethics Committee (HREC) of the University of Witwatersrand as well as the Biomedical Research Ethics Committee (BREC) and Research Management Committee (RMC) of Namibia (Appendix 12) which were available. Participants were given a written invitation (Appendix 7) to participate which informed eligible participants about who the researcher was, a PhD candidate. Participation was purely voluntary, there were no incentives and the participants were free to withdraw at any time during the data collection. All paper-based data gathered from the research were kept in a safe lockable cabinet. Similarly, electronic data was stored in a password locked computer whose access was restricted to the researcher only. All data will be deleted two years post the study publication or six years after data collection if the study is not published. The researcher pledges to present the study findings based on facts and no false information was included.

1.7 TIMING

This study commenced on 22 February 2018 with a brief literature review and protocol preparation. The Gant chart attached as Annexure 1 shows the intended various steps of the study and expected duration up to its completion which was planned for February 2020.

1.8 STRUCTURE OF THE THESIS

This thesis is composed of eight chapters. Each of the chapters begun with a brief introduction followed by the body and culminated into a chapter conclusion. Below are the chapters and their summative descriptions.

Chapter 1: Orientation of the study

The chapter aimed at providing a concise, yet comprehensive summary of the work covered in the thesis. It begun by briefly outlining the global epidemiology of cervical

cancer, followed by barriers to screening and strategies to improve screening. The chapter encompassed the study problem statement, purpose, objectives, significance of the study, research design and methods, and ethical considerations.

Chapter 2: Literature review

This chapter presented outcomes of a detailed literature search on cervical cancer, screening, and barriers to screening pre-cancers, treatment, and tertiary prevention of cervical cancer. Interventions to improve screening were summarized as they were well elaborated in the scoping review which was conducted.

Chapter 3: Research design and methods

This chapter detailed the design and methods followed to achieve the set objectives. These were described according to the study Phases 1 through to 3. It explained the conducting of the scoping review, the qualitative interviews, clinical audits and eventually the intervention research.

Chapter 4: The Scoping review

This chapter explained the steps trailed in conducting a scoping review. It described the review purpose and aims, scoping review process, the search strategy, and findings. In addition, the scoping review findings were also discussed in this chapter.

Chapter 5: The results of Phase 2 of the study

The fifth chapter presents the results of the in-depth interviews with women, men, and nurses. The findings are outlined in terms of themes and sub-themes that emerged from the interviews. In addition, the outcomes on the readiness of the clinics to offer cervical cancer screening were laid out.

Chapter 6: The results of phase 3 of the study

This chapter described the step taken leading to the implementation and pilot testing of the community based educational intervention. This comprised the preparation of Health Extension Workers through education and training, the stakeholders meeting and launch of the community based educational program and the pilot test. Both descriptive and Chi – square test was used to assess the outcomes and significance between the variables.

Chapter 7: Discussion of the research findings of Phases 2 and 3

The results from the three cohorts of in-depth interviews were triangulated together with the clinic audits. These were discussed and concluded. In addition, the community based educational intervention outcomes were discussed in terms of the available literature and conclusions were made.

Chapter 8: Justification, limitations, recommendations, and conclusion of study

This is the last chapter of the study in which conclusions and recommendations are drawn from the entire study findings.

1.8.1 CONCLUSION

This introductory chapter of the thesis provided a comprehensive insight to the study. It laid out the research problem and brief design, methods, ethical considerations. It led to the next chapter which is Chapter 2 on literature review.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

The second chapter of this dissertation focusses on the literature that was accessed, reviewed and used by the researcher in this study. Aveyard (2014) supported by Maggio et al. (2016) and Smith and Noble (2016) defines literature review as a comprehensive study and interpretation of information, which is associated with a particular topic. The key terms in this research were cervical cancer, screening, interventions, and Africa. The aim of this chapter is to acquaint the reader on the work that has already been done in the area of cervical cancer and its screening. The literature review focussed on the period 2008–2018. The layout of the review follows the main subtopics: cervical cancer (description of the cervix and cervical cancer, cause, risks, signs and symptoms and treatment), barriers (developed, developing world, patient centred, healthcare system centred) followed by interventions to improve screening and lastly the conceptual framework.

2.2 CERVICAL CANCER

The World Health Organisation defines cervical cancer (CC) as the biological process in which cells of the cervix grow without regulation, overwhelming normal cells, and function. Cervical cancer usually develops slowly, taking 10–20 years from early pre-cancer to invasive cancer, consequently cervical cancer is rare before the age of 30 (WHO, 2013, Ferlay et al., 2018, UNAIDS, 2020b, Arbyn et al., 2020).

2.2.1 Anatomy of the normal cervix

The cervix is the lower third of the uterus measuring approximately 3 cm in length, and 2.5 cm in diameter in a non-gravid uterus. Its lower third called the ectocervix lies within the vagina, and it is visible with a speculum while the upper two-thirds of the cervix (endocervix) lies above the vagina and is not visible. The ectocervix is lined with squamous epithelial cells whilst the endocervix have the columnar (glandular) cells. Where the squamous epithelium meets the columnar epithelium is the squamocolumnar junction (SCJ) and this changes with age. The area between the former SCJ and the current SCJ is called the transformation zone and it is the area where most pre-cancer develops (MoHSS, 2018, WHO, 2014, Reich et al., 2017, Schwarz et al., 2015)

2.2.2 Abnormalities of the cervix other than cervical cancer

Besides cervical cancer, there are other cervical abnormalities. Firstly, is the cervical ectopy which is a condition in which the ectocervix contains columnar cells and studies show that women with ectopy are more prone to sexually transmitted infections including HIV and HPV (Kleppa et al., 2015, Hwang et al., 2012, Coser et al., 2016). Secondly, are the cervical polyps which are growths on the ectocervix or endocervix, which vary in size, and often have the shape of a raindrop or grape. Polyps are usually non-threatening though may cause vaginal bleeding and discharge. Lastly are the Nabothian cysts which are mucus-filled lumps on the surface of the cervix. They look like yellowish balls beneath the surface of the cervix, pushing outward and they are usually harmless (MoHSS, 2018, Parham et al., 2014)

2.2.3 Epidemiology of Cervical cancer

The burden of cervical cancer varies across the globe, one of the major determinants being resources. By 2030, cervical cancer is expected to claim nearly half a million lives per year, with over 95% of deaths concentrated in low- and middle-income countries (PEPFAR, 2017). The burden is over ten times higher in developing countries in comparison to the developed world. The gap is primarily due to limited access to effective cervical cancer screening and treatment programs in limited resource countries (LaVigne et al., 2017, Ginsburg et al., 2017, Gossa and Fetters, 2020). Recent reports confirm that some low resource setting countries do not have a national cervical cancer screening program in place up to date (Toliman et al., 2018, Dykens et al., 2020, Ifediora, 2019). According to Nakisige et al. (2017) , by the year 2017, Uganda still needed a population based cervical cancer screening program to be put in place.

2.2.3.1 Cause of cervical cancer

Infection with oncogenic HPV types causes nearly all cervical cancers (Aranda et al., 2017, Ferlay et al., 2018) WHO 2020. Most sexually active adults have an HPV infection at one time especially at time of sexual debut. However, the HPV presence is often not accompanied with any signs or symptoms therefore infected women are usually unaware of the infection (Palefsky, 2009, WHO, 2014, WHO, 2020). A study

in Gauteng South Africa, using Pap smear and HPV tests showed that out of 1 445 women, the overall and high-risk HPV DNA prevalence were 74.6% and 54.3% respectively (Richter et al., 2013). Furthermore, this study showed that the distribution according to age was plateau shaped supporting the notion that HPV infection can naturally shade off years after contracting the virus.

2.2.3.2 Risks of cervical cancer

Literature stipulates several risk factors for cervical cancer. These include; sexual activity before age 20, multiple sexual partners, exposure to sexually transmitted infection (STI), mother or sister with cervical cancer, previous abnormal Papanicolaou (Pap) smear and smoking (MoHSS, 2018, Kashyap et al., 2019, Louie et al., 2009, WHO, 2020). Similarly, CDC (2013) records that risk factors for cervical cancer include: smoking, having more than three to four children, weakened immune system, long-term use of birth control pills, exposure to diethylstilbestrol before birth, high risk sexual behaviours, and co-infection with HIV (Oche et al., 2013, Benard et al., 2014)

According to the MoHSS (2017b) smoking prevalence in Namibian women stood at 11.7% whilst total fertility rate was at 3.6 and 34% of women aged 15-49 years used hormonal contraception. In addition, the median age at first sexual intercourse averaged 18 years and there is no HPV vaccination program for state patients (MoHSS, 2017b). Also, only 23.6% of eligible women were screened for cervical cancer according to the Namibia DHS (MoHSS, 2013). Furthermore, NAMPA (2016) reported that the then Head of department for obstetrics and gynaecology at the Windhoek Central Hospital, Dr. Shonag Mackenzie highlighted that the southern region of Namibia (which includes study site) has one of the highest incidences of cervical cancer in the country mainly due to lack of routine screening, smoking and lack of HPV vaccination.

Notably, immunosuppression has proved a significant risk factor which in the Namibian case is mainly due to HIV infection and seldom to chronic corticosteroid (MoHSS, 2018). Women living with HIV are five times more likely to develop cervical cancer in comparison to the negative population. In some cases, it is not uncommon that a woman can be diagnosed with HIV when she comes for cervical cancer screening (WHO, 2013, Assefa et al., 2019, Kashyap et al., 2019). With this background, the Bush Institute, together with its partners PEPFAR, UNAIDS, and Merck developed a

strategy to save lives of women in sub-Saharan African countries which has a high burden of HIV and cervical cancer of which Namibia is part (PEPFAR, 2017).

2.2.4 Prevention of cervical cancer

Cervical cancer prevention is at three levels namely primary, secondary, and tertiary.

2.2.4.1 Primary prevention

Since frequent or persistent HPV infections are the main cause of cervical cancer, the goal of primary prevention is to reduce acquisition of HPV infection (WHO, 2013). Primary prevention strategies include abstinence, HPV vaccine and safe sex.

a. Abstinence and delaying sexual onset

Okunade and Gynaecology (2019) supported by Shahbari et al. (2019) and Gorin et al. (2011) contend that engagement of boys and girls in safe-sex education tailored to age and culture, with the aim of reducing the risk of HPV transmission is an essential component of cervical cancer prevention. Moreover, they assert that such educational messages should include delay of sexual initiation, and reduction of high-risk sexual behaviours. According to Deng et al. (2018) and Tulay and Serakinci (2016), anatomically the cervix of a young girl is more prone to HPV infection as it has more one layered columnar cells than the multiple layers of squamous. Therefore, delaying sexual debut can be a protective measure. In Namibia, sexual onset in girls differ according to cultures and regions. The Demographic Health Survey of 2013 reported that, among women age 25-49, median age at first sexual intercourse ranges from as low as 17.0 years in Kavango region to a high of 20.3 years in Omusati region. In addition, median age at first sexual intercourse increases with increasing education and wealth. For example, the median age is more than three years lower among women with no education than among women with more than a secondary education (MoHSS, 2013, MoHSS, 2018).

b. Condom promotion or provision for those who are sexually active.

Protected sex using condoms can prevent acquisition of HPV to a certain extent. It should however be noted that safe sex practices do not guarantee complete protection as HPV can be transmitted via skin-skin contact of sexual organs (WHO, 2013). Notwithstanding, the female condom is not commonly used in all regions of

Namibia with under 1% of women acknowledging using it (MoHSS, 2013). Similarly, use of male condoms vary across different cultures with use being the least in Zambezi (5.3 %) and the most in Omusati (almost 33% of men).

c. Male circumcision, where relevant and appropriate

Although cervical cancer is exclusively a woman's disease, men can play an important role in prevention and treatment of the disease (Hoots et al., 2009). Firstly, since almost all cervical cancer is caused by HPV, men play a vital role in preventing acquisition and transmission of the virus. Namibia successfully rolled out the medical voluntary male circumcision (VMMC) across all its 14 regions of the country. Besides reducing risk of HIV by 60 %, VMMC also reduces the prevalence of penile HPV infections by about 35% (MoHSS, 2018). Additionally, it reduces the acquisition of new HPV infections and increases clearance of pre-existing HPV infection in HIV-negative men. Ultimately, VMMC reduces the incidence of HPV in female partners of circumcised men, which in turn is expected to reduce the risk of cervical cancer in female partners (Hoots et al., 2009, Wawer et al., 2011, Grund et al., 2017, Morris et al., 2019).

d. HPV vaccine

In the developed countries there is overwhelming evidence on the effectiveness of the HPV vaccine. For example, in the USA, rates of immunization as per the set guidelines vary from 4% to 79% among women aged 18–26 years (Gorin et al., 2011). Currently three (3) HPV vaccines are commercially available worldwide; Bivalent (HPV2) which protects against HPV 16 and 18, Quadrivalent (HPV4) that gives immunity against HPV 6, 11, 16, 18 and the Nano valent (HPV9) which covers for HPV 6, 11, 16, 18, 31, 33, 45, 52, and 58 (MoHSS, 2018, Mishra et al., 2015, Yang and Bracken, 2016).

In South Africa where HPV vaccination has since been introduced, Denny et al. (2017) contend that HPV population based vaccination against HPV, at least once, for adult women has the potential to significantly reduce cervical cancer incidence. By the year 2019, other developing countries had either recently introduced or intend to introduce the HPV vaccine to the public health sector as well.

In Namibia, the Bivalent vaccine is still predominantly available only in the private health facilities. The Ministry of Health and Social Services (2018) asserts that although there are various cervical cancer prevention methods available, HPV

vaccination remains the most effective and reliable primary prevention technique that may be beneficial in the country. Therefore, the MoHSS plans to introduce the HPV vaccine and reach all teenage girls in Namibia provided funding has been availed (MoHSS, 2018). However, when policy makers make decisions concerning the cervical cancer prevention, they face the challenge of having to consider factors such as affordability, acceptability, feasibility, and competing health priorities (Kim et al., 2013, Wigle et al., 2013, Sivaram et al., 2018).

2.2.4.2 Secondary Prevention

The most effective secondary prevention technique of cervical cancer is screening and treatment of pre-cancers especially in low resource settings where vaccination is still widely inaccessible to the general public (MoHSS, 2018, Aggarwal, 2014, WHO, 2014, Ogilvie et al., 2017, Denny, 2008). Screening is a public health intervention provided to an asymptomatic target population. It is not undertaken to diagnose a disease, but to identify individuals with increased probability of having either the disease itself or a precursor of the disease (WHO, 2013). In addition, a good screening test should be accurate, reproducible, inexpensive, relatively easy, acceptable, safe, and available. Currently, available screening methods include the cytology (Papanicolaou test), visual inspection with acetic acid (VIA) and the Human Papillomavirus (HPV) test. The frequency of screening varies across countries but WHO (2013) recommends that since cervical cancer develops slowly over about 10-20 years, cervical cancer screening should not start before 30 years of age unless the population has a known high risk.

a. Papanicolaou (Pap) smear

The Pap smear is a cytology-based screening where a sample of secretions is collected from the endocervix and the cells are examined under a microscope for abnormal cellular changes (Das et al., 2014, Bukhari et al., 2012, WHO, 2013). With a Pap smear, the provider takes specimens from the face of the cervix and the endocervix using a spatula or brush and transfers the specimen to a slide (Pap smear) or a preservative solution or a Liquid Base Culture (WHO, 2013).

The Pap smear as a screening test has proved to be effective in cervical cancer control. The dramatic decline in cervical cancer incidence and mortality experienced in countries that established successful national screening programs using the

cytology-based Papanicolaou smears over the past century demonstrates the effectiveness of the screening modality (Chrysostomou et al., 2018, Mitteldorf, 2016, WHO, 2014). Numerically, prevention of up to 91% of all invasive cervical cancers has been achieved in countries that effectively implemented population based Pap smear (Denny et al., 2015).

Unfortunately, despite the effectiveness of Pap smear, cytology screening in low- and middle-income countries is usually unsuccessful. This is due to the financial investments required not only in establishing but also to maintain necessary infrastructure, including laboratory and skilled human resources. These are either completely unavailable or inadequate in most of the settings (Denny et al., 2015, Gultekin et al., 2020, WHO, 2014).

In March 2018, the cost of the Pap smear at the private health facilities in Keetmanshoop for example was set at R905. Such cost is quite inhibitive to an average woman; hence the state is expected to be the main provider of the service, creating a bottleneck as only limited number of tests can be done at time. The parastatal, Namibia Institute of Pathology (NIP) is responsible for providing the cytology tests for the Pap smear carried out in the state facilities with a target of a results turnaround time of 6 working days unless there are abnormalities in the sample which warrant further analysis.

b. Visual Inspection with Acetic Acid

Visual inspection of the cervix after application of 5% acetic acid (VIA) is a screening technique for cervical cancer used widely in low- and middle-income countries. For even better VIA screening performance, digital images (D-VIA) after acid acetic application are taken (Catarino et al., 2015b, Denny et al., 2017).

In comparison to other treatment modalities such as cytology test, VIA is less costly and the results as well as treatment if needed can all be available in a single visit (MoHSS 2018). Contending on cost effectiveness of VIA, MoHSS argues that at the cost of a single Pap smear fifty (50) VIA can be one at the same cost. It is based on these advantages that Denny et al. (2017) are optimistic that strategies such as visual inspection with acetic acid and testing for oncogenic HPV types could make prevention of cervical cancer programmatically possible. Consequently, South African researchers following up on outcomes of screen and treat approaches through 36

months period proved that there was a sustained statistically significant decrease in the cumulative detection of CIN2+ in the HPV-and-treat arm compared with the control arm owing to screen and treat approaches.

Namibia is currently rolling out VIA with a special target for HIV positive women. The decision by Namibia to adopt and roll out VIA aims to meet the WHO recommendations of “screen and treat” (WHO, 2013).

c. HPV test

HPV testing is designed to detect DNA from oncogenic HPV types in vaginal and/or cervical samples. Although HPV is one of the most common STIs, the body usually manages to get rid of the virus within a period of two years. Therefore, (WHO, 2013) discourages HPV test in young women just post their sexual debut but to wait until the age of 30 years to start HPV DNA testing. However, in Namibia due to early sexual debut coupled with high HIV prevalence HPV DNA screening is initiated under thirty years (MoHSS, 2018).

The original HPV DNA testing typically required particularly expensive infrastructure but nowadays there is a new low-cost HPV test that can be processed on-site. This makes HPV testing a possible modality in resource-constrained settings like Namibia (Denny et al., 2017, MoHSS, 2018). By April 2020 HPV testing was not available in state facilities in Namibia. In October 2019, the Cancer Association of Namibia received 500 self-testing kits for a pilot study of the testing modality.

Self-collection of samples using vaginal swabs further gives an opportunity for HPV testing to be a method of choice (Bonilla-Osma et al., 2018, Canfell, 2019). Self-collection allows the woman to be screened without the need for a speculum or pelvic examination by trained personnel. HPV DNA testing is highly sensitive although specificity may be lower (Chibwesha and Cu-Uvin, 2011, Bansil et al., 2014).

2.2.4.3 Comparison of the three cervical cancer testing methods

According to Denny et al. (2015), there is overwhelming evidence that Pap smears could prevent over 90% of all invasive cervical cancers in countries where it was effectively implemented as population based screening method. However, the limitation is the associated costs and need for special skills such as cytologists. On

the other hand, Nakisige et al. (2017) contend that screening with VIA and HPV DNA testing could, for the first time, make national, large scale population based screening feasible in resource constrained settings such as Uganda. In addition, they state that timely treatment of all screened positives for HPV infection can prevent progression to invasive cervical cancer. Similarly, they contend that to date HPV testing combined with VIA could be the most effective intervention in closing the current cervical cancer prevention gap. Although VIA is low cost method, effective roll out and implementation will demand political support and an increase in both domestic and international investment to towards health (Nakisige et al., 2017, WHO, 2014). Figure 2.1 below outlines the specificity and sensitivity of the different screening procedures

Test	Sensitivity		Specificity	
	Average	Range	Average	Range
Pap Smear	60%	35%–84%	>90%	
VIA	77%	5%–94%	86%	74%–94%
HPV Testing	90%	85%–98%	85%	

Figure 2. 1 Summary of sensitivity and specificity of cervical cancer screening tests. (WHO 2006, ACCP.)

2.2.5 Screening and Treatment of Pre-cancers

The World Health Organisation recommends testing methods which promote immediate treatment of diagnosed pre-cancers. The objective of a screen-and-treat program is to reduce cervical cancer and related deaths to a minimal. All WHO recommended screen-and-treat strategies involve treatment with cryotherapy, or Large Loop Excision of the Transformation Zone (LLETZ) when the patient is not eligible for cryotherapy (WHO, 2013). In September 2019, WHO also approved use of thermocoagulation as a treatment method for pre-cancers (WHO, 2019).

2.2.5.1 Cryotherapy

Cryotherapy uses pressurized gas. It can either be carbon dioxide (CO₂) or nitrous oxide (N₂O) used to freeze and destroy (ablative) abnormal areas on the cervix. Pressurized CO₂ can freeze tissues up to 3 mm deep whilst N₂O can freeze up to 5 mm deep (MoHSS, 2018, Parham et al., 2014). Main advantages of cryotherapy include low cost with minimal infrastructure, high cure rate for small- and medium-sized lesions with minimal complications, does not require high skilled personnel such

as gynaecologist/oncologists and no need for electricity or anaesthesia (MoHSS, 2018, Mariategui et al., 2008). The disadvantages are few namely; cannot treat large lesions, or lesions that extend into the endocervical canal, Waggoner (2003) MoHSS 2018. Cryotherapy or alternatively thermocoagulation are used in Namibian state facilities alongside VIA as the screening method.

2.2.5.2 Large loop excision of the transformation zone (LLETZ)

LLETZ is the removal of abnormal areas from the cervix that is the lesion and the entire transformation zone. The method uses a loop made of thin wire powered by an electrosurgical unit followed by use of a ball electrode to complete the coagulation, (Schwarz et al., 2015, WHO, 2013, Organization, 2020). Besides being a treatment method, the specimen removed in LLETZ procedure can be sent to histopathology for confirmation of extent of the lesion. Although this is a simple procedure, for pain management, it can be performed under local anaesthesia and post procedure the woman should be observed for possible bleeding. For the trained provider to be prepared for possible complications such as haemorrhage, LLETZ is best performed at district hospitals. Post procedure information include possible side effects such as discharge, cramping and in addition patient should avoid sexual contact whilst healing in the first four weeks or alternatively use a condom (WHO, 2013, Munmany et al., 2017). In Namibia LLETZ is currently done at district hospital where there is a medical officer who has been trained. The study site Keetmanshoop offers LLETZ.

2.2.5.3 Thermocoagulation (Thermal ablation)

Thermocoagulation uses heat to destroy cervical tissue. During the procedure, the superficial epithelium sloughs off after treatment, and the underlying stroma and glandular crypts are destroyed by desiccation (WHO, 2019). Experts support both single-burn and multiple-burn techniques and with treatment durations ranging from 30 to 60 seconds (Maza et al., 2016). Regarding the effectiveness and cure rates of the method, Dolman et al. (2014) concluded that cure rates by thermocoagulation were estimated at 94%. Therefore, it is similar to other ablative therapies such as cryotherapy and that is safe and effective and could significantly enhance cervical cancer control in limited resource countries. Similarly, a study from Cameroon concluded that thermocoagulation was associated with minor side effects and feasible in the context of a cervical cancer screen-and-treat approach in sub-Saharan Africa

(Viviano et al., 2017). Namibia adopted use of thermocoagulation for treatment of pre-cancer in September 2019 and it is in the process of rolling it out in addition to cryotherapy. The adoption by Namibia comes after WHO approved thermocoagulation as a method of treatment (WHO, 2019).

2.2.5.4 Cold knife conization (CKC)

CKC treats pre-cancer by removing a cone-shaped area from the cervix, including portions of the ectocervix and endocervix. The size of the lesion and the likelihood of finding invasive cancer determine the size of tissue to be removed (WHO, 2014, Cooper and Menefee, 2019, Lopez et al., 2017). The excision provides treatment and in addition, the tissue removed is sent for histopathology to confirm diagnosis and ascertain that all pre-cancerous tissue was excised. Disadvantages of CKC include the need for specialized infrastructure, equipment, supplies and trained healthcare practitioners usually gynaecologists or surgeons. There is also risk of complications, particularly bleeding. Due to the above mentioned, CKC should be only considered where other treatment modalities such as cryotherapy or LEEP cannot be employed. CKC can be a method of choice in the presence of glandular pre-cancer or micro-invasive cancer lesions of the cervix. A meta-analysis comparing LLETZ and conization concluded that LLETZ is as effective as CKC with regard to recurrence rate, positive margin rate, residual disease rate, secondary haemorrhage, and cervical stenosis for the surgical treatment of CIN (Jiang et al., 2016). Post procedure complains in patients may include mild cramping for less than a week and a bloody vaginal discharge which changes into a yellow colour in the second week. Post-surgery messages should emphasise importance of avoiding sexual intercourse for the next 6 weeks or use a condom if intercourse cannot be avoided. This allows healing of the cervix. Currently the Namibia Cervical Cancer Control Program do not use CKC as a method of pre-cancer treatment (WHO, 2014, Cooper and Menefee, 2019, Lopez et al., 2017)

2.2.6 Tertiary prevention – Treatment of cervical cancer

Tertiary prevention involves early diagnosis of cervical cancer, so that life-saving treatment can be initiated (Aggarwal, 2014, MoHSS, 2018, Loomans-Kropp and Umar, 2019). Most cervical cancers are both preventable and treatable when identified early.

Resources are needed in order to offer life-saving treatment to women with early stage cancer (WHO, 2013).

2.2.6.1 Diagnostic tests for confirmation of Pre- cancer and Cancer

Before treatment, confirmation of a cancer diagnosis is usually done using one of the three commonly used diagnostic tests for cervical pre-cancer and cancer namely colposcopy, biopsy and endocervical curettage (ECC). These diagnostic procedures are usually performed by medical officers at out-patients department of district hospitals or referral hospitals (WHO, 2013).

a. Colposcopy

The provider uses an instrument called colposcope which has a powerful medical light to examine the cervix, vagina, and vulva. These areas will be magnified allowing the provider to visualise specific patterns in the epithelial layer and the blood vessels. Because the colposcope is expensive and specialized, the procedure is used secondary to abnormal results not as the primary investigation. Therefore, colposcopy is used on patients with positive screening results, to verify the presence, extent and type of pre-cancer or cancer, to determine biopsies of any areas that appear abnormal, and to help decide most suitable treatment e.g. cryotherapy or LLETZ (WHO, 2013). The disadvantages of colposcopy include the expensive instrument, need for a primary test and demand for trained health care provider (WHO, 2014). Currently Namibia has one colposcopy unit at Windhoek Central Hospital, three (3) in the North West regions, and one in the north east regions. The south of Namibia, where Keetmanshoop the study site is situated, does not have a colposcopy unit, resulting in patients being referred to Windhoek for treatment.

b. Biopsy

The WHO (2014) guideline supported by Wentzensen et al. (2015) and (Petry et al., 2018) define biopsy as the removal of small samples of abnormal tissue for microscopic examination to achieve a diagnosis. The abnormal tissue can be from VIA-positive areas or from areas that appear suspicious for cancer. Typically, a biopsy is taken from each abnormal area, although random biopsies may be useful under certain circumstances. Biopsy results can either be normal, cervical intraepithelial neoplasia (CIN 1, 2 or 3), or invasive carcinoma (WHO, 2014, Sideri et al., 2015) The disadvantages of biopsy as a method of confirming diagnosis is the need for adequate

transportation system for samples, demand for skilled laboratory technicians to process and interpret the results and systems that ensure ongoing quality control and quality assurance program to maintain a high level of accuracy. In addition, unlike colposcopy where diagnosis can be made during visualisation, with biopsy there is need for patient to return for the results and the recommended treatment regime (WHO, 2014). At the study site, cervical biopsies are done by medical officers and the specimens are sent by the NIP for histopathology in Windhoek which is 500km away.

c. Endocervical curettage (ECC)

This is described as a simple test where the provider uses a thin instrument or spatula to scrap cells from the endocervical canal. The scrapped tissue is placed in a container with a fixative solution and sent to a laboratory for examination (WHO, 2014, Liu et al., 2017) Circumstances in which ECC may be recommended include: when lesion is suspected to be hidden in the canal, when provider suspects a lesion but he/she cannot visualise the SCJ , when cytology results reports a glandular lesion and these are usually inside the canal and lastly when invasive carcinoma is suspected but the transformation zone was not wholly visualised. Some clinicians opt for an endocervical cytobrush specimen as an equivalent approach instead of ECC. Similarly, to biopsies, ECC tissue should be sent in for histopathology and a follow up date is given to the patient for results and management (WHO, 2014).

2.2.6.2 Treatment Options for confirmed cervical cancer

a. Surgical management

Hysterectomies are used as a treatment option for cervical cancer depending on the stage at diagnosis, the clinician decides. One requirement for treatment of early stage cervical cancer is access to surgeons (gynaecologic oncologists) who have the appropriate training and skills to perform radical hysterectomies and lymph-node dissections (Wu et al., 2017, MoHSS, 2018, Cibula et al., 2020, IAEA, 2012). For Keetmanshoop (study site) women with confirmed invasive carcinoma who need relief through surgical intervention are referred to Windhoek Central hospital.

b. Radiotherapy

Timely radiotherapy can cure early stage cervical cancer. In addition, radiotherapy is also used for palliation and treatment of bleeding and other symptoms of advanced-stage cervical cancer (IAEA, 2012, MoHSS, 2018, Yang et al., 2019, Shi et al., 2018).

Namibia has one radiotherapy unit which is situated in Windhoek where all patients in need of radiotherapy are referred.

c. Chemotherapy

Although it is not always part of the standard treatment, chemotherapy plays an occasional role in cervical cancer treatment as well (Tsuda et al., 2016, Board, 2019, MoHSS, 2018).

2.2.7 Signs / Symptoms

It is paramount that women and healthcare providers know that cervical cancer often shows no symptoms until it is more advanced. In addition, when symptoms do occur, they are usually non-specific (MoHSS, 2018). These include; increased vaginal discharge, vaginal odour, bleeding after intercourse, and discomfort in back, leg, pelvis, abdomen and swelling in one or both legs (IAEA, 2012, WHO, 2020).

2.3 BARRIERS TO SCREENING

Barriers to cervical cancer screening may vary according different factors including the socio-economic features of a population.

2.3.1 Developed nations

Although cervical cancer has significantly reduced over the years in developed countries, there remain certain groups where screening is still low. In the US for example, Hispanic women have a higher incidence of, and mortality from, cervical cancer than non-Hispanic white women (Duggan et al., 2012).

In England, a survey concluded that the most endorsed barriers were embarrassment, intending to go but not, fear of pain and worry about possible cancer diagnosis outcome. Other notable contributing barriers were difficulty in scheduling an appointment, not being sexually active at the moment and not trusting the test Waller et al. (2009).

Similarly, in Canada, (Schoueri-Mychasiw and McDonald, 2013) reports that missing cervical cancer screening was associated with having low education and income, not having a regular doctor, being of Asian (Chinese, South Asian, other Asian) cultural

background, less than excellent health, and being a recent immigrant. In addition, not having a time-appropriate Pap smear was associated with being 40-69 years old and single. Still in Canada, Amankwah et al. (2009) highlight that women cited believing Pap smear was not necessary and simply not getting around to it as reasons for not screening. Disparities also still exist in the developed world therefore there is a need to develop targeted cancer screening programs.

2.3.2 Developing nations including Africa

Screening rates in Africa are far lower than those of developed countries. For example in Kenya cervical screening coverage stood at only 3.2% in 2014 (Morema et al., 2014). It is based on this skewed cervical cancer distribution that Arnolu (2008) argues that indeed within the African region cervical cancer is a public health concern which must be accorded the same priority as HIV, Malaria, Tuberculosis and childhood immunisations.

Lack of knowledge in women is a documented barrier. From Malaysia, Wong et al. (2009) report that in their study, none of the respondents had ever heard of the human papillomavirus and therefore did not know that HPV is the cause of cervical cancer. Similarly, in Ghana a study among college students, the pap screening rate was 12.0% and generally women did not know of local screening initiatives. In addition, only 7.9% were aware of the link between HPV and cervical cancer. Common barriers were lack of knowledge and worrying about what others may think. In terms of the perceptions, women perceived there were benefits of screening, yet only about 50% perceived themselves to be at risk of developing cervical cancer. Other barriers included lack of belief that cervical screening diagnoses cancer, belief that Pap smear is painful and belief that the test will take away virginity (Abotchie and Shokar, 2009).

On the contrary, in Malaysia Al-Naggar et al. (2010) concluded that although knowledge about cervical cancer screening was adequate among university students, they had very poor practice of the Pap smear test and the study recommended introduction of reproductive health subjects for all university students. In this study among university students, the most common barriers of cervical cancer screening were the Pap smear test will make them worry (95.8%) and the least common barrier mentioned was lack of encouragement by partner.

2.3.2.1 Sub-Saharan Africa

Barriers in in Sub- Saharan Africa are similar to those of other resource limited settings. From South Africa, a study reported that, lack of consumer (patient) knowledge and empowerment leads to a low degree of health-seeking behaviour in this case cervical cancer screening (Botha and Richter, 2015).

a. Namibia - Barriers to screening

Barriers to cervical cancer screening in Namibia include inadequate knowledge by women and gaps in the healthcare delivery system. In line with this, (Zengwe, 2016) proposes a community education program on cervical cancer and recommends the Omaheke Health Directorate probe into operational concerns in order to facilitate improved access to cervical cancer screening. A recent study in northern Namibia reported that barriers to screening included: fear of cervical cancer diagnosis, fear of pain from the procedure, lack of signs and symptoms of the disease and low perceived risk of the disease (Kakehongo, 2018). The study concluded that these identified barriers could serve as targets for cervical cancer screening health education interventions by healthcare practitioners. Consequently, they suggested need to develop targeted interventions which will promote utilisation of cervical cancer screening inclusive of young women (Kakehongo, 2018, MoHSS, 2018).

2.3.3 Patient oriented barriers

A systematic review by Bukowska-Durawa and Luszczynska (2014) reported that 67.9% of barriers to screening mentioned in articles dealt with personal characteristics of the woman.

2.3.3.1 Psychological barriers

Psychological barriers to cervical cancer screening include, misconceptions about screening, the lack of spousal support for screening, cultural taboos regarding the gender of healthcare practitioners, and the stigmatization of women with cervical cancer. Similarly, a study among Vietnamese American women reports that, patient psychology is a determinant in screening uptake as psychological factors, which can enhance screening uptake, include believing self to be at risk of getting cervical cancer, believing that cervical cancer changes life and believing a Pap smear is

important for staying healthy. However, if women do not understand what is done during a Pap smear, are scared of being diagnosed with cervical cancer, believe taking a Pap smear is embarrassing or perceive there is no need for a Pap smear when feeling well, such women are likely not to screen (Ma et al., 2013, William et al., 2013).

A 2015 systematic review by Chidyaonga-Maseko et al. (2015) concluded that individual barriers include lack of awareness and knowledge about risk factors and prevention of cervical cancer. In addition, cultural and religious beliefs of the women also determine the women's willingness to utilize the screening services. Furthermore, within some communities there is stigma attached to discussing reproductive health issues and this limits the young women's awareness of cervical cancer and its prevention. Other factors linked to psychological state of the woman were age, marital status, difference, and social economic status.

Inadequate knowledge in women is re-iterated from Malawi where Munthali et al. (2015) supported by Maree and Kampinda-Banda (2018) concluded that the lack of awareness about the disease among community members, long distances to health facilities, the lack of involvement of husbands and prevailing misperceptions about the disease were all significant barriers.

2.3.3.2 The information gap in women

A South African study among University students concluded that even educated women in South Africa lack complete information on cervical cancer Hoque et al. (2014). Women believe in myths and misconceptions, for instance in Nigeria, participants believed that wizardry, multiple sexual partners and inserting herbs into the vagina were causes of cervical cancer and only one participant knew about the human papillomavirus (Modibbo et al., 2016). However, knowledge about cervical cancer is not the same across Africa. For instance, Mwaka et al. (2016) in their study from Uganda reported that most participants had heard about cervical cancer. Known risk factors included multiple sexual partners, human papillomavirus infection, and early onset of sexual activity. Mukama et al. (2017)), in another study conducted in Uganda, concluded that although general knowledge about cervical cancer prevention was relatively high among women, and attitudes mostly encouraging, specific knowledge about screening was low. In addition, there were also undesirable

perceptions and beliefs regarding cervical cancer among respondents therefore the need to bridge identified knowledge gaps.

Similarly, a Nigerian study reports that cervical cancer knowledge in women significantly varied with the level of educational attainment leading to the conclusion that the most important factors hindering women from the use of available cervical cancer screening services were lack of knowledge and the feeling that they had no medical problems. The study recommends that because there is very poor knowledge and practice of cervical cancer screening among Nigerian women, effective female education and free mass screening are necessary for any successful cervical cancer program (Nwankwo et al., 2011).

A Kenyan study also supports that knowledge, perception of higher susceptibility and attending child welfare clinic were key determinants of self-reported cervical cancer screening uptake. Therefore the study advocates that increasing knowledge, enhancing health education and providing free services may increase uptake among women (Morema et al., 2014).

Personal experience of meeting someone with cervical cancer was reported as a motivating factor in women to test (Moucheraud et al., 2020, Ncube et al., 2015). Ncube et al. (2015) report that significant predictors of uptake of screening were, discussing cancer with a healthcare practitioner, perception of consequences of not having a Pap smear, and knowing a person with cervical cancer. In addition, women who did not know where to go for a Pap smear were 85% less likely to have been screened. Similarly, a Ugandan study notes that, knowing where screening services were offered, and knowing someone who had ever been screened were predictors of screening (Ndejjo et al., 2016).

Inadequate knowledge about cervical cancer has not only been documented in women but in their male counterparts as well (Tum et al., 2013, Rwamugira et al., 2019). A study in Ghana using focus groups with men highlights that several of the participants indicated that they would be willing to provide spousal support for cervical cancer screening provided they were well informed about the disease and its screening. However the participants said that they knew very little about the disease (Williams and Amoateng, 2012).

2.3.3.3 Religious and cultural barriers

Religion and culture have been found to be a determinant, especially on discussions about cervical cancer including its screening. With this background, breaking cultural and religious barriers have been recommended especially in communicating cervical cancer messages. Indirect communication channels such as culture and religious sensitive videos could be employed as communication channels (Love et al., 2009, Islam et al., 2017, Modibbo et al., 2016).

Modibbo et al. (2016) also report that, barriers to cervical cancer screening vary by religious affiliation. The participants in their study mentioned religious and cultural obligations of modesty and need for spousal approval as barriers to uptake of screening. Similar findings are documented from Malaysia where Malay women were likely to report embarrassment as the reason for not being screened and rural women are less likely than urban women to have been screened due to religion and culture influence (Dunn and Tan, 2010).

Even in the developed world, Muslim women often encounter cultural and religious barriers regarding cervical cancer screening. There is always need to be sensitive to their cultural and religious values, modesty, in particular. Moreover, lack of sensitivity to modesty is a barrier for Muslim women to obtain cervical cancer screening and prevention (Guimond and Salman, 2013). Also, in Australia, cultural and religious beliefs were mentioned as barriers to screening alongside embarrassment, fear, concern about the gender of the service provider and lack of privacy. In this particular Australian study, the results did not show any major differences between refugee and non-refugee women (Anaman-Torgbor et al., 2017).

2.3.3.4 Patient social-economic characteristics

A Namibian study investigated the influence of knowledge and information, healthcare access and different socio-economic variables on women's decision to screen for cervical cancer. Findings showed that women who had access to information through education and contact with a healthcare practitioner were more likely to undertake screening compared to women without medical aid and those with no contact with a health person (Kangmennaang et al., 2015). In Zimbabwe, females who were financially independent were 6.61% more likely to access cervical screening compared with those who were dependent on their husbands (Mupepi et al., 2011).

In their systematic review on barriers to screening, Bukowska-Durawa and Luszczyńska (2014) highlight that 22.6% of barriers recorded in articles were social factors. Social aspects such as support by spouses also influences the woman's screening behaviour. In Malawi a study reports that the lack of involvement of husbands, and prevailing misperceptions about the disease affected the uptake of these services (Munthali et al., 2015).

2.3.4 Healthcare delivery system-oriented barriers

In low resource settings, gaps within the healthcare delivery system play a role in low screening rates among women. These gaps include lack of infrastructure, trained personnel, lack of equipment required for screening, diagnosis, and treatment, limited health budgets and competing healthcare priorities (Denny et al., 2006, LaVigne et al., 2017, Maseko et al., 2015, Ntekim, 2012, Finocchiaro-Kessler et al., 2016).

A Malawian study which interviewed cervical cancer screening managers concluded that the delivery of cervical cancer screening and early treatment services was compromised because of factors such as gross shortage of staff, lack of equipment and supplies, the lack of supportive supervision, and the use of male service providers. The above barriers coupled with long distances to health facilities were contributing factors to non-screening in women (Munthali et al., 2015).

Similar findings are echoed by Bukowska-Durawa and Luszczyńska (2014) where 9.5% of barriers were related to facilities/environment, 35.9% were linked to negative emotions related to the screening procedures and result collection and also importantly 25.7% of barriers referred to prior contacts with healthcare practitioners.

Elsewhere, healthcare system oriented barriers were reported in a Nigerian study which reports that gender of healthcare practitioners, fear of disclosure of results, fear of nosocomial infections, lack of awareness and discrimination at hospitals were some of the barriers mentioned by participants (Modibbo et al., 2016).

In Namibia, in 2011, MoHSS conducted an extensive national assessment of services for screening reproductive-system cancers where gaps in the system were documented. Sites are required to meet certain minimum standards with respect to infrastructure, space, medical equipment, and furniture; human resources; general

and medical supplies; and technical oversight and support for reproductive cancer screening. Namibia rollout of cervical cancer “screen and treat” approach is built on the information gained from that 2011 assessment (MoHSS, 2018). The clinic audits which were done in this research, will present the findings on adequacy of clinics in rendering screening services.

2.3.4.1 Healthcare practitioner-oriented barriers

As proponents of the healthcare system, healthcare practitioners also have influence of screening practices of women. In their study to identify determinants of screening, Osingada et al. (2015) found that the significant determinants of uptake of screening were: concern about the gender of the healthcare professional who perform the test, encouragement by healthcare practitioner and perceived quality of the screening procedure. Similarly, Ndejjo et al. (2016) documents that the independent predictors of cervical cancer screening included being recommended by a healthcare practitioner.

Healthcare practitioners’ knowledge about cervical cancer may also influence their role in women’s screening. A South African study following pathways of women diagnosed with cervical cancer concluded that women did seek treatment, often more than once, and the women themselves were not solely responsible for presenting late (Van Schalkwyk et al., 2008). The authors concluded that lack of knowledge and awareness among healthcare practitioners resulted in a low suspicion of cancer and misdiagnosis. The study therefore recommended that a national cervical cancer strategy, including health education and re-training of healthcare practitioners, should be made a priority (Van Schalkwyk et al., 2008). Similarly, in Namibia, it is not uncommon for a woman to present multiple times to a healthcare practitioner with non-specific cervical cancer like complaints before someone considers screening. Another study from northern Namibia reported that, nurses had poor knowledge on the causes of cervical cancer as a disease contributing to low screening uptake (Shayo, 2018). This delay in diagnosis can be tragic as it states the difference between curable disease and death (MoHSS, 2018). Furthermore, the Namibia cervical cancer guideline states that it is important to educate primary healthcare practitioners about the signs and symptoms of cervical cancer. Training is expected to help the healthcare practitioner so that if a woman

presents with possible symptoms, the provider should be suspicious and performs a pelvic examination (MoHSS, 2018).

2.4 INTERVENTIONS TO IMPROVE CERVICAL SCREENING UTILISATION

Various interventions to increase screening uptake have been attempted in different parts of the world. However, the majority of the studies are from developed countries consequently their relevance to resource limited settings is rather unclear (Everett et al., 2011). A 2018 systematic review which looked into thirty seven articles revealed that about 75% of the articles covered behaviour change interventions whilst the remainder were based on health education methods (Naz et al., 2018).

Kawonga and Fonn (2008), based on South African experience, argue that technological interventions and innovations alone are not sufficient to improve cervical screening program. Additionally, they note that task-shifting is inadequate unless other human resource challenges such as include training, increasing demands on personnel, attrition, and skills mix are met. Such should be concurrently addressed within a comprehensive workforce development strategy to make the healthcare delivery system responsive.

By the year 2015, researchers were of the opinion that the incidence of cervical cancer had been rising in sub-Saharan Africa, and health authorities within the region reacted by scaling up the availability of cheap or no-cost screening services, mass health education among other interventions. However, the efforts have not yet yielded the expected increase in uptake of screening services (Osingada et al., 2015).

Given the various documented approaches to increase screening uptake, it can be argued that there is no universal approach. However, strategies should accommodate the many factors that can influence uptake and should incorporate the need to promote informed choice. Therefore, further research is needed to assess newer approaches to promoting uptake, such as IT-based programs, and to identify strategies that are balanced, self-sustaining, and cost-effective (Weller et al., 2009).

Regarding developing regions such as Africa, Everett et al. (2011) contend that the majority of the studies are from developed countries and so the relevance to developing countries is unclear. Even in the presence of the intervention research, data is often inadequate to make conclusions. In another systematic review, the authors concluded that for most of the interventions considered, there was insufficient

evidence to support or refute their effectiveness of the intervention (Brouwers et al., 2011).

One aspect which should be considered when deciding on interventions is the cost effectiveness of the strategy (Goldhaber-Fiebert et al., 2009). Most interventions do not record the cost involved in their interventions. In South Africa, researchers determined the relationship between investment in community healthcare practitioners (CHW) home visits and increased attendance at cervical cancer screening appointments. The study concluded that there was significant increase in attendance to screening appointments. However, the increase in uptake came at an extra cost of R194 018 with an average per woman cost of R14–R47 (Goldhaber-Fiebert et al., 2009).

Because human beings are often affiliated to cultures and religions, when structuring interventions, the cultural and religious sensitivity of interventions should be considered. Modibbo et al. (2016) are of the opinion that interventions to increase cervical cancer awareness and screening uptake in multicultural and multireligious communities need to take into consideration the varying cultural and religious beliefs of the inhabitants. In particular, interventions with ethnically diverse black women would benefit from recognizing cultural barriers and misconceptions that vary by ethnic group (Brown et al., 2011). Maree and Wright (2011) concluded that presenting information on cervical cancer in a non-stigmatizing manner based on the theme of self-protection promoted cervical screening. However, Holt et al. (2013) from South Africa records that although adding spiritual/religious themes to the intervention was appealing to the audience, it did not in itself increase intervention efficacy. In addition, educational messages should not be discriminatory.

Interventions for particular age groups such as young women under the age of 35 years may need to be tailored to the group needs and some authors argue that cervical screening programs need to look beyond the use of invitation/reminders letters in this group of women (Musa et al., 2017, Albrow et al., 2014). There is need to develop interventions which attempt to overcome as many barriers to uptake as possible. Other studies weighing outcomes of interventions have concluded that client reminders, reduction of structural barriers, and provision of provider assessment and feedback

are likely to increase screening (Brouwers et al., 2011, Camilloni et al., 2013, Ryan et al., 2019).

There seem to be no one single approach to increasing uptake therefore multipronged approaches are needed to address barriers to screening (Ncube et al., 2015). The success of no intervention is guaranteed and therefore a scoping review asking the following review question will follow; which interventions have been employed to increase cervical cancer screening utilisation in Africa for the period 2008–2018 and what were the outcomes?

2.5 CONCEPTUAL FRAMEWORK

The Health Belief Model (HBM) is the most popular used framework for cervical cancer screening interventions (Naz et al., 2018, Tavafian, 2012, Miri et al., 2018). This could be due to its success as a framework. Ersin and Bahar (2017) employed the HBM in their study to improve screening uptake and they concluded that positive changes observed in the breast and cervical cancer early detection behaviours of the women as a result of the interventions shows the efficiency of the nursing interventions based on the Health Belief Model and the Health Promotion Model. A modified HBM was a useful model for examining cervical cancer screening in this sample of Hispanic women and the authors argue that the HBM can be used as a framework to design culturally appropriate cervical cancer screening interventions. Although the HBM is a USA model, it has been successfully employed in different parts of the world outside the USA (Miri et al., 2018, Aldohaian et al., 2019, Julinawati et al., 2013). In Africa, the HBM have been used as the conceptual framework of some studies (Chigova, 2017, Hoque et al., 2014)

The HBM model was developed in 1974 by Becker and colleagues (Smeltzer et al., 2010, Jones et al., 2015, Rosenstock, 1974, Polit and Beck, 2017). The four variables of the HBM are as follows:

Demographic and disease factors: Demographic profiles include patient characteristics such as gender, age, level of education, employment status. Severity of disease and duration of illness in this study focuses on cervical cancer disease and the screening procedure itself.

Barriers: In this research these are conditions which make it difficult or impossible to access the health aspect which is cervical screening.

Resources: These are conditions enhancing the health behaviour in this study uptake of cervical screening.

Client's perceptions. These consists of how the person views his or her susceptibility, self-efficacy, and perceived severity of the illness in this study cervical cancer. Perceived susceptibility to cervical cancer. Client perceptions maybe central in their decision making to screen (Polit and Beck, 2017, Jones et al., 2015, Smeltzer et al., 2010).

For example, an Alabama study reports that about 36% of the participants did not perceive themselves as being susceptible to cervical cancer. Moreover, perceiving that they may have been exposed to an STI in the past, may be at risk of HPV currently, having had a Pap smear within the last year, and having a relative with cancer were significantly associated with perceived susceptibility to cervical cancer (Garcés-Palacio and Scarinci, 2012).

2.6 CONCLUSION

This second chapter of the thesis presented the literature search and findings on different aspects of cervical cancer. The literature review focussed on cervical cancer cause, risks, signs and symptoms and treatment. In addition, barriers to screening were described and an overview on interventions to improve screening utilisation. A detailed presentation of interventions to improve screening will be laid out in Chapter 4 of the study. Lastly, the Health Belief Model which is the study framework was described with reasons why it was chosen. The next chapter will outline the design and methods of the study.

CHAPTER 3: DESIGN AND METHODS

3.1 INTRODUCTION

This chapter of the thesis presents in detail the study design and methods used to answer the research questions and attain set objectives. A description of sampling, data collection and analysis methods were given including relevant ethical considerations. The chapter concludes by explaining how internal and external validity and trustworthiness were enhanced in this study.

3.2 RESEARCH DESIGN

A research design is defined as a framework, or the set of methods and procedures used to collect and analyse data on variables specified in a research problem. Therefore, the research design is intended to provide an appropriate framework for a study through which the evidence obtained enables the researcher to effectively address the research problem as unambiguously as possible (Ranganathan and Aggarwal, 2018, Sileyew, 2019, Kirshenblatt-Gimblett, 2006).

As such, a sound design should be able to identify the research problem clearly, review previously published literature associated with the problem area, clearly and explicitly specify hypotheses, effectively describe the data which will be necessary for an adequate test of the hypotheses and explain how such data will be obtained. (Ranganathan and Aggarwal, 2018, Sileyew, 2019) Moreover, the design should describe the methods of analysis which will be applied to the data in determining whether the hypotheses are true or false (Kirshenblatt-Gimblett, 2006).

In order to satisfy the objectives of the study, a sequential multi-method approach was used, and the study consisted of three phases. Multi-method is when two or more research methods, each conducted rigorously and complete, then results are then triangulated to form a comprehensive whole as illustrated in this study (Teddlie and Tashakkori, 2010, Kumar, 2019). The use of more than one approach allows researchers to achieve objectives by combining strengths of different paradigms. Multimethod design also allows researchers to investigate performance in terms of empirical data, to compare what people record, and what people say occurs, and observations of what actually happens in reality.

The primary way in which the researcher thinks about the research topic is called the theoretical drive or dominance or priority decision (Morgan, 1998, Morse, 2016, Teddlie and Tashakkori, 2010). The theoretical drive of this research is qualitative supplemented by quantitative data. Consequently, this was Qual → quan study. Additionally, the qualitative studies were preceded by a scoping review henceforth a sequential multi-method design.

The strength of multi-methods is that it allows for triangulation of results. Although for many researchers, triangulation is restricted to the use of multiple data-gathering techniques, triangulation can transpire through multiple theories, multiple researchers or multiple methodologies (Lune and Berg, 2016). This was the most appropriate method as this study aimed to understand interventions that have been employed in Africa to improve screening, explore the existing barriers to screening, and further structure an intervention as well as test it. In addition, the current study had multiple research objectives, that demand the utilisation of a multi-method design (Lune and Berg, 2016). Indeed, sequential multi-method was the best fit as the three phases of this study were complete in themselves yet interrelated and culminated in confirming whether an intervention can increase cervical cancer screening utilisation in Keetmanshoop. Phase 1 answered the first research question and a scoping review was conducted. Phase 2 responded to the second research question using qualitative description and structured observation using a checklist. Finally, the third phase was designed to answer the last research question by designing and testing an intervention to improve screening utilisation.

As Teddlie and Tashakkori (2010) stated, the goal of social science is to understand the complexity of human behaviour and experience. They contend that designs which incorporate more than one method provide researchers an ability to holistically and comprehend the complete human behaviour. However, researchers are often limited by designs to totally answer research questions pertaining to human behaviour. With mixed methods, some researchers maintain that supplementary designs other than a core design, are often not investigated thoroughly. However, multiple methods pose their own challenges. More data mean the need for more work, it demands diverse and skilful researchers, may involve two or more study populations and sometimes data may not agree and need a concrete plan to resolve discrepancies. Regardless of these possible disadvantages, multiple methods remain indispensable when studies

need to attain objectives, investigate complex situations, get rich data by means of triangulation and collecting additional evidence (Kumar, 2019). The use of multi-method research allows for the cross-validation of data obtained via multiple approaches, with the potential to increase the robustness of research results.

3.3 RESEARCH METHODOLOGY

Sileyew (2019) supported by Grove and Gray (2018) and Maltby et al. (2014) describes the research methodology as the path through which researchers need to conduct their research. It demonstrates how researchers formulate their problem and objectives and present their results from the data obtained during the study period.

3.3.1 Phase 1: Scoping review to identify interventions used before to increase cervical cancer screening utilisation in Africa.

A scoping review is a tool to determine the scope or coverage of a body of literature on a given topic and gives a clear indication of the volume of literature and studies available on the subject as well as providing a broad overview on the topic. Scoping reviews are conducted with the goal to gain information, summarize and disseminate research findings, note research gaps, and make recommendations (Munn et al., 2018, Peters et al., 2015). They also have the advantages of clarifying key concepts or definitions in the literature and examining how research is conducted on a certain topic as a precursor to a systematic review.

Some scholars have noted that the shortcoming of scoping reviews is that they do not aim to produce a critically appraised and synthesised result or answer to a particular question as systematic reviews would, but rather aim to provide an overview or map of the evidence (Pham et al., 2014, Peters et al., 2015). Indeed, systematic reviews attempt to collate all empirical evidence regarding a topic, which was not the goal of this research. The aim was simply to take 'reconnaissance' as (Peters et al., 2015) that is map data on interventions used in Africa to increase cervical cancer screening utilisation. As a result, a scoping review was appropriate in this research where the study aimed to present an overview of interventions that were employed in Africa to improve cervical cancer screening uptake.

The scoping review was guided by the Joanna Briggs methods. The Joanna Briggs Institute 2015 described the scoping review method in four conservative steps; identification of records in databases and other sources, screening for duplicates and their removal, eligibility of content to the subject matter and lastly a record of articles to be included (Munn et al., 2018, Peters et al., 2015). The data were entered in a data extraction sheet (Appendix 1) adopted from the Joanna Briggs institute.

Title: Interventions used to improve cervical cancer screening uptake in Africa.

Objective/s: Identify interventions used to improve cervical cancer screening uptake in Africa.

Question: Which interventions have been used before to improve cervical cancer screening uptake in Africa?

Inclusion/Exclusion criteria: The Population was women; the Concept was intervention for increasing cervical cancer screening uptake whilst the Context was Africa and lastly the source of information was open. Data from the scoping review were presented according to the four (4) steps of Joanna Briggs scoping review.

Search strategy: The scoping review focussed on the period 2008-2018. A ten-year period is generally considered broad enough. The databases searched were PubMed, Scopus, Sabinet, WHO, Web of science, CINAHL and Google Scholar. The services of a Wits Faculty of Health Sciences library research librarian were engaged in identification of key terms. The key words were interventions and/or programs + cervical cancer screening + utilisation + Africa. Additional keywords included in the search were uptake, utilisation, improve and increase. Only studies in English were eligible because both the researcher and supervisor are conversant with the language. The researchers would have contacted authors of primary sources if need arose but there was no need identified.

Eligibility criteria: Researchers abided by the inclusion criteria. Studies were selected through examination of title, abstract and full text.

Data extraction: Data were summarized and charted in a data extraction tool adopted from the Joanna Briggs Institute (Appendix 1).

Quality assessment: Two reviewers (the student and the supervisor of this study) agreed on inclusion and exclusion criteria of the review. In case of disagreements between the two, a third reviewer would have been engaged. However, in this case it was not necessary to engage a third reviewer.

Search findings presentation: Data were presented in applicable categories for example type of intervention used to increase uptake. Then there was a discussion of results, strengths, limitations and finally a conclusion.

The initial search revealed 4049 manuscripts of which 11 were included in the review. Figure 3.1 summarizes the process.

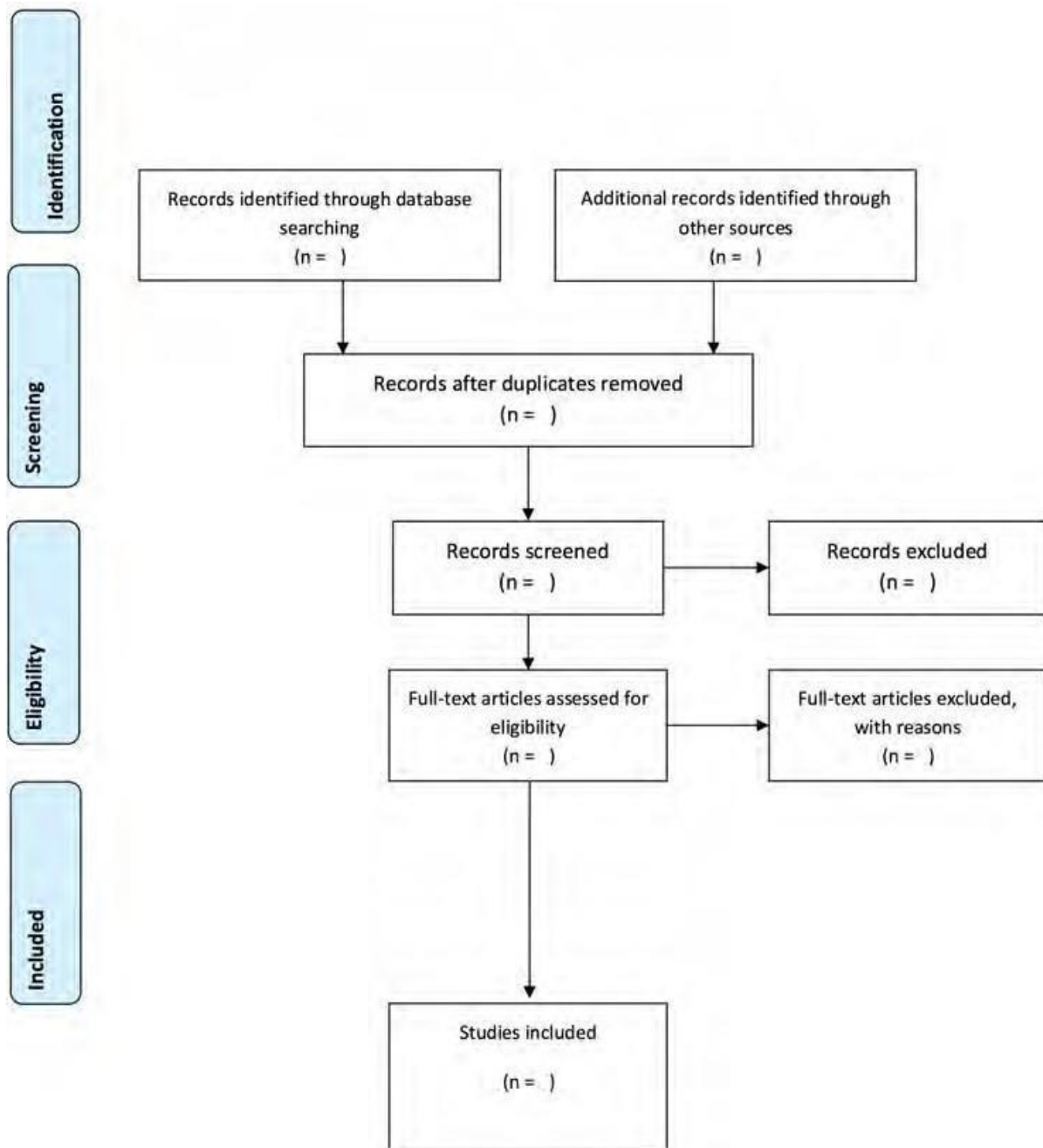


Figure 3. 1 Scoping review using the Joanna Briggs Model 2015

3.3.2 Phase 2: Identifying barriers to cervical cancer screening.

3.3.2.1 Barriers to cervical cancer screening according to women

a. Design

A qualitative descriptive design was used. This was a method of choice in this study as straight descriptions of phenomena were desired (Sandelowski and health, 2010).

Similarly, it has been argued that by comparison, qualitative descriptive studies tend to draw from naturalistic inquiry, which purports a commitment to studying something in its natural state to the extent that is possible within the context of the research arena. Thus, there is no prior selection of study variables, no manipulation of variables, and no pre-commitment to any one theoretical view. Furthermore, qualitative descriptive studies allow researchers to identify reasons people have for using or not using a service or procedure, in this case cervical cancer screening services (Sandelowski, 2000, Magilvy and Thomas, 2009).

Descriptive design can be limited for example, the research question, sample size, data generation, analysis methods and interpretation to allow a clear description of a specific phenomenon from the perspective of the experiencing participant. However, qualitative design provides a wonderful experience for clinicians such as clinical nurse specialists and most importantly can stimulate inter-professional dialogue and research. The aim of identifying barriers to cervical cancer screening via qualitative interviews was ultimately to engage in discussion with fundamental stakeholders and structure an intervention to improve screening uptake. Therefore, where findings were meant to trigger discussion, a descriptive design was found appropriate (Magilvy and Thomas, 2009, Sandelowski and health, 2010). To delimit the design in qualitative research the sample size for this study was set on the extreme high end of usual sample size for (Vasileiou et al., 2018).

b. Population, sampling, and recruitment

The population consisted of all women 18 years and older living in Keetmanshoop Health District. The target population was all the women who had never been screened for cervical cancer living in Keetmanshoop; 18 years is the legal age persons can consent on their own (Namibia 1992).

Purposive sampling was used to select the participants. Purposeful sampling, a method widely used in qualitative research was used in the selection of participants (Palinkas et al., 2015, Sandelowski and health, 2010, Crossman, 2019, Elfil and Negida, 2017). Purposive sampling is a nonprobability sampling technique, and randomization is not significant in sample selection from the population under study. Rather, the researcher decides which elements to include in the sought-out participants. Hence, nonprobability sampling is a sampling technique where the

samples are gathered in a process that does not give all the participants or units in the population equal chances of being included. Nonprobability sampling is crucial when the population is not well defined. For example, in this study the percentage of women who have never been screened for cervical cancer was unknown. In addition, nonprobability sampling is applicable when researchers do not require to draw inferences from the sample to the population. Besides, nonprobability sampling is cheaper than probability sampling and can often be implemented more quickly (Battaglia, 2008).

Regarding the use of sampling in a qualitative descriptive design, any purposeful sampling technique may be employed. However, according to (Sandelowski and health, 2010) and, purposive sampling is the preferred sampling method for qualitative descriptive work, as the goal is to obtain cases deemed rich in information or a sample of experts for the purpose of saturating the data (Lambert and Lambert, 2012, Martínez-Mesa et al., 2016, Polit and Beck, 2017). In addition, Sandelowski (2000) contends that purposeful choosing of participants allows researchers to explore both the common and unique manifestations of a target phenomenon across a broad range of phenomenally and/or demographically varied cases.

Lambert and Lambert (2012) supported by (Moser and Korstjens, 2018) are of the opinion that a typical sample size for a qualitative descriptive study can range from three to about 20 participants. Although the final sample size was determined by data saturation, the researcher had proposed to have 20 women and 19 women were interviewed. Data saturation is when themes and categories in the data become repetitive and redundant and further data collection no longer gives any new information (Moser and Korstjens, 2018, Polit and Beck, 2017). Participants were recruited from among the various social and religious groups within Keetmanshoop. Recruitment of participants was based on participants providing verbal and written consent.

c. Data gathering and instrument

Data collection for qualitative descriptive studies focuses on discovering the nature of the specific events under study. Thus, data collection involves minimal to moderate, structured, open-ended, individual or focus group interviews. However, data collection also may include observations, and examination of records, reports, photographs, and documents (Lambert and Lambert, 2012).

In this study, in-depth interviews were conducted directed by an interview guide (Appendix 2). This method allowed the researcher to ask broad questions and participants to freely tell their story in a naturalistic environment. In the same manner, (Ritchie et al., 2013) deliberate that in-depth interviews are a powerful method for generating description of people's worlds and therefore are a core qualitative research method. However, in reality knowledge does not pre-exist but is rather created and negotiated in the interview with both interviewer and interviewee participating and interpreting. Additionally, in-depth interview was a method chosen in this study as it afforded the participant room to elaborate on what was important to them rather than only responding to the researcher's pre-conceived notions (Kvale and Brinkmann, 2009, Polit and Beck, 2017).

(Ritchie et al., 2013) also noted that interviews typically follow six stages namely: arrival and introductions, introducing the research, starting the interview questions, during and after the interview is completed. Similarly, the interviews in this study followed these steps. As part of preparation, an assessment of the cultural dimensions as well as power dimensions is necessary prior to an interview. In the current study, to avoid crossing cultural boundaries and potentially offending participants, the researcher had basic information of the different cultures of participants as advised by (Nimmon and Stenfors-Hayes, 2016, Rubin and Rubin, 2011).

Section A of the interview schedule gathered demographic data of participants. This study collected age, ethnicity, religion, marital status, level of education, number of pregnancies, history of STI and current employment. Demographical data are fundamental as poor collection and reporting of participant characteristics impacts accurate replication of research findings, appropriate generalization of research findings, and comparison of factors and outcomes across studies (Hammer, 2011). These demographics were considered paramount for this research as the literature review showed that they were potentially associated with woman's cervical cancer screening practices and risk of cervical cancer.

Section B of the interview schedule focussed on barriers to screening and possible strategies to improve screening. The conversation was guided by the following four questions: please tell me what you know about cervical cancer?, may you tell me what you know about the test for cervical cancer?, I understand, you have never been tested

for cervical cancer, please tell me what prevented you from being tested for cervical cancer? and what do you think could have helped you or can help you to be tested?. These guiding questions together with probes allowed the researcher to attain breadth and depth of key features of the experiences under study as advocated by Berg and Lune (2012). Probing questions are responsive, follow up questions which elicit more information such as “how” and “in what way”. Probes and prompting questions are useful in facilitating an in-depth discussion (Creswell and Creswell, 2017, Burns and Grove, 2015).

The interview schedule was pre-tested on one woman, the first participant. The pre-test showed the construct to be both valid and reliable while giving the opportunity to insert refinements to the research tool. In other words, a pre-test is designed to assist the research in determining if there are flaws, limitations, or other weaknesses within the interview design and allow necessary revisions prior to the implementation of the research. In addition, the pre-test also assisted the researchers with the refinement of research questions (Dikko, 2016, Turner III, 2010). The pre-test in this research was informal, and it provided evidence that the interview schedule could efficiently derive relevant data from participants.

Interviews were done at a place the woman and the interviewer found appropriate for both and without distractions. Therefore, the venues for the interviews was chosen strategically to meet the requirements. Of the 18 participants, 13 were interviewed at their homes whilst 5 were at their workplaces during the lunch hour. Commenting on venue for interviews, McGrath et al. (2019) recommend that these factors should be considered as it may affect the data collection.

Data were audio recorded using a voice recorder which was password protected. Field notes were taken additionally as the interviews progressed. In-fact Montgomery and Bailey (2007) supported by Tessier (2012) and Birt et al. (2016) argue that researchers need to understand the complementary function of field notes and electronic recording for their research data to evolve to a higher interpretive level. Field notes are important because ideas and memories from interviews will most likely be lost further down in the research process. While field notes are simple, quick, and inexpensive, this method has several disadvantages, including that field notes cannot be replayed or

relied. This leads to a loss of valuable information hence the need to use them as adjunct to audio recordings (Tessier, 2012, Creswell and Creswell, 2017).

After transcribing the interviews, the transcripts were handed to the participants for input. Member checking, also known as participant or respondent validation, is a technique for exploring the credibility of results. Data or results are returned to participants to check for accuracy and resonance with their experiences (Birt et al., 2016). Although literature generally supports member checks in ensuring credibility, (Thomas, 2017) Thomas (2017) argues that member checks are unlikely to be relevant to research focussed on theory development and generalisation. For such types of research, there was little evidence that member checks improved research findings. In this study, it was found helpful to come to agreement with participants on the transcribed data (Creswell and Creswell, 2017, Montgomery and Bailey, 2007).

d. Data management and analysis

The participant demographic information was entered onto an Excel spread sheet. The voice recordings were transcribed word for word. Verbatim transcription of interview data has become a common data management strategy in nursing research and is widely considered to be integral to the analysis and interpretation of verbal data as transcription is a crucial step, the inappropriate or inadequate preparation of transcripts from audio or digital recordings can delay or negatively affect the analysis process (Halcomb and Davidson, 2006, Wu et al., 2017, McLellan et al., 2003).

Qualitative content analysis was used to analyse the data due to its appropriateness in nursing and medical research (Forman and Damschroder, 2007, Sandelowski and health, 2010). Qualitative content analysis is a dynamic form of analysis of verbal and visual data that is oriented toward summarizing the informational contents of the specific data. Qualitative content analysis is data-derived, meaning that codes are systematically applied, but they are generated from the data itself as the study progresses.

Some researchers have further differentiated qualitative analysis into three distinct approaches: conventional, directed, or summative. In conventional qualitative analysis, coding categories are derived directly from the text data whilst with the directed approach, analysis already takes off with a theory which guides initial coding. Lastly, summative content analysis involves counting and comparisons, usually of

keywords or content, followed by the interpretation of the underlying context (Hsieh and Shannon, 2005, Sandelowski and health, 2010). According to these descriptions, this study's content analysis was conventional as the codes derived from the manuscripts data.

Data collection and analysis of qualitative studies usually happen simultaneously allowing researchers to modify their data management to accommodate new data and perspectives. To ensure trustworthiness, (Elo et al., 2014) recommends that content analysis should be reported in a valid and understandable manner, as such is even more paramount to reviewers of scientific papers.

In this study, tables were used to present the participants' demographic data. The data were analysed using the qualitative content analysis described in (Elo et al., 2014) as follows:

Preparation phase

1. Selecting the unit of analysis. In this study the full 19 interview transcripts were analysed and both the verbal and non-verbal data were recorded.
2. Make sense of the data by reading through the material several times. The researcher endeavoured to understand: Who is telling? Where is this happening? When did it happen? What is happening? And why it is happening?

Organising phase

3. Open coding: Notes and headings were written in the text while reading it. The written in-text material was and re-read, and headings were jotted down in the margins.
4. Coding sheets: The headings were then collected from the margins on to coding sheets
5. Grouping: The headings were grouped into higher order headings which led to generation of subcategories (sub-themes).
6. Categorization and abstraction. Subcategories with similar events and incidents were grouped together as categories and the categories were grouped into main categories. The researcher decided, through interpretation, which concepts to put in the same category.

Reporting phase

7. A report was compiled in a narrative passage to give a general description of the research findings using the generated main categories (themes).

3.3.2.2 Barriers to cervical cancer screening according to men

a. Design

Qualitative descriptive design was used as explained above in 3.2.1.1

b. Population, sampling, and recruitment

The population consisted of all men aged 18 years and older living in Keetmanshoop. Eighteen years was selected to meet the minimum age for legal consent according to the constitution (Namibia 1990). Similar to the women, purposive sampling was used to reach a heterogeneous sample with regard to characteristics such as socio-economic demographics and educational status.

Recruitment was via face to face invitations to men in the community. Men were approached at church meetings, clinics, and parks. Verbal invitations were given to those willing to participate followed by reading and signing the consent form if they were satisfied. The proposed sample size was 20, however data saturation was reached at 17 therefore it was the final sample size.

c. Data gathering and instrument

An interview guide (Appendix 3) with similar questions to those of the women's group asking about cervical cancer, barriers, and possible strategies to improve screening were used to guide the in-depth interviews. However, the instrument for men had an additional question which asked them about their presumed role in promoting screening in women. The interview schedule was pre-tested on the first participant. The initial guide and terms such as screening and this was changed to testing which was easier to understand. Minor editions were made to make the schedule well understood. Participants had an opportunity to choose venues best suitable for them for the interviews. Ten participants were interviewed at their various workplaces around Keetmanshoop urban and seven (7) in their homes. Interviews were either conducted during lunch hour or after hours and weekends. On average each interview lasted about 25 minutes.

d. Data management and analyses

Similar to the women's data, data were managed and analysed following as described in 3.2.1.4 above.

3.3.2.3 Barriers to cervical cancer screening according to the nurses

a. Design

A qualitative descriptive design was used

B. Population, sampling, and recruitment.

The population included all enrolled and registered nurses working in the Primary Health Care division of Keetmanshoop Health District. There were 35 nurses in clinical practice and five (5) managers to make a total of 40 nurses. The inclusion criteria required being an Enrolled or Registered nurse working at a PHC clinic in Keetmanshoop for a minimum period of three (3) months.

Purposive sampling was used to select information rich participants. The participants were approached face-to face at the respective PHC clinics they were working at. Those who agreed to participate read the information sheet and signed the consent form. They booked an appropriate time for the interviews to be done. Although the sample size was proposed at 20, data saturated at 19 participants whereupon the recruitment and interviews were closed.

a. Data gathering and instrument

An interview schedule (Appendix 4) with same questions as the women and men cohorts which asked about cervical cancer, barriers to screening and possible interventions to improve screening were used. However, for the nurses there was an additional question on perceived competency of conducting the screening procedure. The questionnaire was pretested on the first participant and no changes were implemented. In-depth interviews were conducted which lasted approximately 30 minutes. Eighteen (18) of the 19 interviews were conducted at the clinics in a room without distractions and one was away at the participant's home.

b. Data management and analyses

Similar to the men and women, data were managed and analysed as described in 3.2.1.4 above.

3.3.2.4 Barriers according to the Health system

a. Design

A quantitative cross-sectional design was used to investigate barriers to cervical cancer screening related to the health care delivery system.

Quantitative research aims to answer a specific research question; it is tangible and countable in nature and the designs are predetermined and structured, remaining consistent throughout the study hence making them potentially reproducible (Macnamara, 2005). A cross sectional study is a type of an observational study where the investigator measures the outcome and the exposures in the study participants at the same time over a short period (Macnamara, 2005, Setia, 2016, Polit and Beck, 2017).

b. Unit of analysis, Sampling and Recruitment

The unit of analysis, the entity that the researcher considered to be the main focus of the study, was all clinics within Keetmanshoop Health District which were eight in total (DeCarlo, 2018). However, due to the vastness of the district, the clinics outside the CBD were very remote which made it difficult to include them in the study. Therefore, the study focussed on Keetmanshoop urban.

The units of analysis were all the three urban health facilities offering cervical cancer screening within Keetmanshoop. These three clinics participated in the clinical audit and structured observation. The socio-economic demographics of the patients catered for differed, thereby giving heterogeneity in the sample of the clinics. Whilst one facility is in the central business district and often serves middle to high income earners who prefer the state to private facilities, the other was in the high-density suburbs serving the majority of low-income earners and the unemployed. Lastly, the third facility is situated inside the district hospital providing service to people of all socio-economic statuses. The unit of observation was the various requirements for a cervical cancer screening service. A unit of observation is the item (or items) that the researcher actually observes, measures, or collects data from in the course of trying to learn

something about the unit of analysis; in this study the PHC clinics offering cervical cancer screening.

c. Data gathering and instrument

Structured observation was used to collect the data. Observation as a data collection method is a mode of inquiry to systematically collect information about a setting. This method aims at gathering first-hand information in a naturally occurring state with the aim to find what is happening (Burns and Grove, 2015, Fry et al., 2017).

A checklist was used as data gathering instrument. This method was chosen as it allowed the researcher to have a category system on the left and tally frequency or availability on the right. The checklist was a clinic readiness tool which was adopted with permission from Sibiyi (2012) and is attached as Appendix 5. A clinical audit using the tool was conducted in each of the three urban PHC clinics. The audit assessed the availability of resources for conducting cervical cancer screening. The researcher conducted the audit, physically verifying the availability of the required resources for screening. Data were recorded on the audit tool and relevant notes were made.

d. Data management and analyses

Descriptive data analysis was employed. Data were entered onto an excel spreadsheet and percentages and graphic presentations made to demonstrate the availability of the required resources and ultimately readiness of each clinic.

3.3.2.5 Trustworthiness for qualitative research

Shenton (2004) explains how researchers can meet Guba's four criteria for enhancing trustworthiness namely, credibility, dependability, confirmability, and transferability.

a. Credibility

Credibility is the confidence that can be placed in the truth of the research findings. It establishes whether the research findings represent plausible information drawn from the participants' original data and is a correct interpretation of the participants' original views. To meet credibility requirements, the study adopted appropriate, well recognised research methods. In addition, qualitative descriptive methods were

precisely adhered to. The research proposal and the research itself was under constant review by academic peers including the supervisor. Moreover, the PhD assessors committee of the Faculty of Health Sciences, Wits University, reviewed the research proposal for scientific soundness and gave input. Corrections were made to the proposal, which is the blueprint to this research. Such scholarly guidance exposes researchers to critically assess their research questions and promotes credibility of qualitative findings. Furthermore, a comprehensive overview of cervical cancer and its screening were provided in the literature review and such thick description of the phenomenon under study enhances credibility. Similarly, previous research was examined to discuss the study's findings (Anney, 2014, Sandelowski, 2000, Korstjens and Moser, 2018).

The researcher practiced as a registered nurse in the PHC clinics of Keetmanshoop for five years and is well oriented with the inhabitants' cultures and that of the organisations. This is termed prolonged engagement in field or research site and it is a fundamental need for qualitative researchers to fathom the participant experiences. Understanding the organisational and societal cultures is mandatory for the correct interpretation of participants' interview information. As Cutcliffe and McKenna (1999) commend, when a researcher fully comprehends the participant's experiences it reduces risk of the researcher constructing their own reality and not interpreting the participants' reality. Consequently, the researcher's final interpretation will be more representative of the participants' reality. To promote honesty in informants, participation was purely voluntary, anonymous and with the right to withdraw at any time guaranteed throughout the data collection process.

Triangulation is also considered a powerful tool in ensuring the credibility of findings. Therefore, it is recommended that qualitative research should include one or two triangulation techniques. Triangulation is the use of multiple and different methods, investigators, sources, and theories to obtain corroborating evidence. The current study used data source triangulation where there were three groups of informants: women, men and nurses who were asked the same questions with only one additional question for the nurses and men. All three informant groups elaborated on what they knew about cervical cancer and its screening, what they believed to be barriers to screening and what they could propose as strategies to improve screening uptake. Site triangulation was achieved as three urban clinics were used for data collection.

The three clinics serve different catchment areas with people from different socio-economic status. Thirdly, methodological triangulation was achieved as the researcher used different research methods to gain the same information. Whilst qualitative interviews with the three cohorts explored barriers, a quantitative clinic audit was conducted to assess clinic readiness to offer cervical cancer screening and document barriers noted from the audit (Forbes, 2009, Anney, 2014, Onwuegbuzie and Leech, 2007) .

Member checks were used as all transcripts were handed to the respective participants to verify whether the recorded data were a true representation of the interviews conducted and whether the themes derived were a true reflection of participants' views. As Anney (2014) contends, researchers are obliged to include the voices of respondents in the analysis and interpretation of the data to eliminate researcher bias when analysing and interpreting the results. Since the researcher and respondents use different perspectives when checking the data, member checks strengthens the data and ensure credibility (Korstjens and Moser, 2018). After all the data had been coded, and themes derived, the researcher revisited the data to ensure all codes were accounted for. There were a few instances especially in the men's cohort where data emerging from the inquiry contradicted the researcher's expectations and these discrepancies were recorded in the findings, One difference from researchers expectation the fact that men were concerned about the gender of the healthcare practitioner conducting the screening procedure . Reporting negative cases improves the credibility of the study because the researcher accounts for the contradiction (Anney, 2014, Korstjens and Moser, 2018).

b. Transferability

Transferability refers to the degree to which the results of qualitative research can be transferred to other contexts or settings with other respondents. Firstly, a thick description of subject matter was a requirement for transferability, and it was presented as such (Korstjens and Moser, 2018). Secondly, to enhance transferability, contextual information about this study site was well elaborated under subtopic "study site" subsection 1.4. Limitations of the study are also stated. In addition, the inclusion criteria, sample size and data collection methods were all clearly stated.

c. Confirmability

Confirmability refers to the degree to which the findings of the study could be confirmed by other researchers. Confirmability is about establishing whether data and interpretations of the findings are not mere creations of the researcher's imagination, but truly derived from the data (Korstjens and Moser, 2018). Confirmability was promoted by presenting the emerged main themes to the participants who verified whether the themes were a true reflection of what they meant. Triangulation was employed to reduce the effect of investigator bias as described above. The researcher admitted her beliefs and assumptions. One of the bias could have potentially arisen from the fact that the researcher had practiced in the PHC clinics before. Although random sampling has its advantages, the researcher personally believed that purposive sampling of information rich participants would bring the most valuable information. Lastly, the use of diagrams to demonstrate the "audit trail" of decisions made during the study were illustrated in a step by step format and summarized in a diagram as depicted in Chapter 6 which illustrates implementation of the community based educational program.

Dependability

Dependability is defined as the stability of findings over time. Dependability involves participants' evaluation of the findings, the interpretation and recommendations of the study to ensure that all these aspects are supported by the data received from the participants (Teddlie and Tashakkori, 2010). Besides participants input, a clear methodology as outlined above, an audit trail and use of overlapping methods all supported the dependability of these research outcomes.

3.3.3 Phase 3: Testing of the community based educational program

3.3.3.1 Design

An intervention design was used which consisted of a community based educational program to increase screening utilisation. Intervention research involves the development, implementation and testing of an intervention in this case a community based educational program. It serves as a theoretically based, integrated and sequential approach to clinical knowledge generation. Intervention research has

significantly increased over the years as health care practitioners aim to assess outcomes of strategies in an effort to improve the health outcomes of patient or communities(Forbes, 2009, Polit and Beck, 2017).

Regarding types of interventions, Burns and Grove (2015) are of the opinion that all interventions fall into seven main categories namely, strategy, technique, program, informational or training materials, environmental design variables, motivational system and a new modified policy. Based on this study's Phase 2 findings on barriers to screening, the researcher designed a specific intervention accustomed to address the identified barriers. The intervention had an educational arm to equip recipients with knowledge of cervical cancer and need for screening, while the advocacy part to addressed identified gaps of for the health care delivery system. The chosen intervention was validated by the nurses, women, and men to ensure content and face validity. Before implementation, the researcher re-audited the clinics for readiness to offer screening.

An intervention design requires a PICO question which is a well worded question for evidence-based practice that identifies the population, intervention, comparison, and outcome of interest. Determining the question is one of the crucial steps as it largely establishes the conduct of the research (Stern et al., 2014). The PICO question for this study was, "What will be the outcome of a community based educational program on screening utilisation, knowledge, attitude and clinic readiness to offer cervical cancer screening services?" Comparison was pre-intervention and at the end of intervention and lastly the outcome was improvement in knowledge, attitude, and cervical cancer screening uptake.

3.3.3.2 Intervention hypothesis

Considering the proposed outcomes of the intervention, the following hypotheses were formulated.

1. The educational program will improve the participants' knowledge therefore the post-test knowledge and attitude scores will be higher than their pre-test scores.
2. The clinic's readiness to offer cervical cancer screening will improve before commencement of the intervention.
3. The community based educational program will improve cervical cancer screening utilisation.

3.3.3.3 The implementation of the community based educational program.

Step 1: Phase two findings stakeholders meeting launch of the community based educational program

Before the community based educational program commenced, a stakeholders' meeting was held to share the phase two findings and the proposed intervention. The various stakeholders were invited by an invitation letter attached as Appendix 19 The intervention was explained considering the barriers and proposed strategies to improve screening utilisation according to qualitative interviews with women, nurses, and men. The findings from the three urban PHC clinic audits were also shared. The stakeholders were invited in writing and the invitation letter is attached as Appendix 11.

Data collection

A dated attendance register was circulated for all attendees to enter their details. The attendance register is attached here as Appendix 12. The researcher documented all relevant inputs from the stakeholders meeting.

Step 2: Promoting clinic readiness

From the data available, the researcher aimed to positively influence readiness of the clinics before commencement on the educational program. This was to make certain that women who would respond to the educational program and opt to screen would not be turned back without receiving screening because of gaps in the health care delivery system.

The objectives of step 2 were:

1. To liaise with the Central Sterile Services Department (CSSD) and Namibia Institute of pathology (NIP) making sure all the three (3) clinics are well stocked with right sized speculums and consumables from the laboratory. The findings from the clinic readiness guided the researcher on needs of the three (3) urban PHC clinics.
2. To provide in-service training and support to nurses as well as ensure that there was at least one competent nurse to conduct the screening procedure per clinic every day.

3. To negotiate for screening services to be increased from once a week on Fridays to at least twice a week (Tuesdays and Fridays). Tuesdays and Fridays also allowed turnaround time of speculums from CSSD.

Data collection and instrument

Improvement in clinic readiness to offer screening was assessed using the same clinic audit tool adopted from Sibiya (2012) at phase two data collection and again before the intervention program was tested. The clinic audit tool is attached as Appendix 5. Readiness was monitored at data collection of barriers to screening utilisation, then at pre-intervention that was during the week the community based educational program was starting. The material for in-service training was adapted with from the Namibia Cervical Cancer Control program and the (WHO, 2013) cervical cancer guideline.

Step 3: The community based educational program

Based on data from the scoping review on methods that have previously been used to improve cervical cancer screening in Africa, the data from Phase 2 of the study on the barriers to screening utilisation, a community based educational program was structured with the input of stakeholders. A feedback meeting was held to inform stakeholders on the Phase 2 findings and the planned community based educational program (see the gallery for the photographs of the launch of the community based educational program). The input of stakeholders and expects were considered in light of the scoping review outcomes and the findings of the qualitative interviews to eventually come to the conclusion of a community based educational program as an intervention method to improve screening utilisation. . As Temmerman et al. (2015) argues, based on the existing evidence and reviews conducted on improving women's health, several priority interventions are suggested including providing health information and comprehensive sexual education should form part of the such an educational programme. Indeed, based on knowledge gap identified in Phase 2 of the study, comprehensive sexual education is a key intervention for promotion and protection of women's health. Education may potentially assist women to harness skills for informed decision making, critical thinking, communication, and negotiation of interpersonal relationships.

3.4 LEARNING THEORY

There are many theories that explain how adults learn and each has its own merits. This educational program is directed by the Adult learning theory by Knowles (2002). The American educator Malcolm Shepherd Knowles regarded as the 'founding father of adult learning' worked extensively on Andragogy and identified four principles that differentiates andragogy and pedagogy. Based on these four principles, Knowles Educational Theory was best suited as a guide for health education to women before other theorists such as Rodgers and Maslow (Kapur, 2015, Taylor and Hamdy, 2013, Merriam and education, 2001, Owen, 2002, Oche et al., 2013).

The educational program developed for this study, considered the four principles that educators should reckon when teaching adults. Firstly, since adults are self-directed, Phase 2 of this study interviewed women, nurses, and men on what should be the content of the educational sessions. Therefore, although the teaching materials were adapted with permission from the Namibia cervical cancer program, it was edited to meet the community's educational needs. Secondly, as adults have extended experience to draw from, their learning should focus on adding to what they have already learnt in the past. In this study, women's existing knowledge was assessed with a pre-test before the educational session. This allowed myths, incorrect information, and gaps to be identified and addressed during the sessions. Thirdly, because adults prefer practical learning, the teaching content largely dwelt on issues related to the women's personal life, that is, their reproductive health. Lastly, according to Knowles (2002) Learning Theory, the educational sessions were centred on solving problems (Owen, 2002). In this study, the problem was low screening uptake with many eligible women remaining unscreened, hence at high risk of developing undiagnosed cervical cancer.

3.5 STUDY DESIGN

As already mentioned, an intervention design was used for this phase of the study. The outcomes were assessed by means of a one group pre-test post-test method. A one-group pre-test–post-test design is a type of research design that is most utilized by behavioural researchers to determine the effect of a treatment or intervention on a given sample (Allen, 2017). In other words, a treatment is implemented (or an independent variable is manipulated) and then a dependent variable is measured after

the treatment is implemented. The design is characterised by two characteristics, a single set of participants who receive the same intervention and are assessed before and after. Price et al. (2017) have described how this design is the weakest type of quasi-experimental design. Its major limitation being the lack of a control or comparison group. Other weaknesses include maturation, testing, and the fact that instrumentation is a threat to internal validity and regression to mean. However, regardless of these limitations of the one group design, there are instances where it is unethical to have a control group. Control group would have brought an ethical dilemma of withholding health education on cervical cancer from a control group. Secondly, this was a pilot study to be followed up with a supporting study to document outcomes of an educational program on screening uptake. Any possible confounding factors were recorded in the findings which are in Chapter 6 of the dissertation. These variables with possible influence included the transition of screening method from Pap smear to VIA and clinic readiness improvement due to PEPFAR funding which happened during course of the study, A confounding variable is an extraneous variable that does indeed influence the dependent variable (Knapp, 2016, Michalski et al., 2003).

a. Population and sampling

The population were all women in Keetmanshoop urban. The term woman meant an adult female aged 18 years or older as per the Namibian law (Housing, 2002). The approximate number of women in Keetmanshoop was unknown. However, what the Health Information System (HIS) captured and provided, was the number of women of child bearing age (15-49 years) which was 8832 for the whole Keetmanshoop district of which 4769 women were for Keetmanshoop urban alone (MoHSS, 2017a).

b. The target population

The Namibia Cervical Cancer guideline recommends initiating cervical cancer screening at the age 25 in HIV-negative women and 20 years in HIV-positive until the age of 49. Screening is not required above the age of 50 years if the previous result was negative. However, the current Health Information System (HIS) of the MoHSS, was not able to provide for such as it does not capture such age ranges. The target group was then women within the specified age group eligible for screening as per national guidelines which was HIV positive women aged 20-49 and HIV negative aged 25-49 years (MoHSS, 2018).

c. Sampling

Convenience sampling was used as it allowed the researcher to select readily available persons who volunteer and commit to participation in the program. Participants aged 20-49 were approached for recruitment to the community based educational sessions (Etikan et al., 2016, Martínez-Mesa et al., 2016, Polit and Beck, 2017).

Inclusion criteria

Women between 20 and 49 years were included in this phase of the study. Additionally, the woman should have given verbal and written consent to participate and be willing to answer the pre- and post- test questionnaires.

Recruitment

Health extension workers (HEWs) assisted the researcher with the recruitment of women to the educational program. HEWs are lay community-based health workers whose mandate is to provide a linkage between the health facilities and the community through health education and basic assessments and referrals. In this intervention, the HEWS attended a two-day education and training on cervical cancer and screening services. The education and training was aimed at preparing the HEWs to be able to effectively invite women to the community based educational program through information sharing. The HEW together with researcher verbally invited women for the educational sessions for each geographical area on specific days. In addition, a radio advert by the researcher was utilised to invite the community to attend these sessions (see gallery researcher at the local radio station). Those who reported for the sessions were invited to participate in the study and were provided with a written invitation (Appendix 6) and consent form (Appendix 7) to sign should they be willing to participate. In addition, a pre-tested questionnaire was handed to the participants which they completed before commencement of the educational session. After the educational session, the post-test questionnaires were completed.

d. The Participants of the community based educational program

The participants were women from Keetmanshoop urban community who responded to an invitation to attend educational sessions on cervical cancer. The women

attended these sessions at a venue which was closest or most convenient for them. The educational program was offered until the sample size had been achieved, a minimum of 100 participants. The total number of women who attended the community based educational sessions was 105 (n=105). Nine (9) sessions were carried out at the various designated venues included church buildings, workplaces as well as community and Government halls in the residential areas.

3.6 CONDUCTING THE EDUCATIONAL SESSIONS

The pre-test and post-test questionnaires were tested on group of three (3) women initially to ensure that they were easily understood and could be precisely answered. Medical terms such as screening was changed to testing. A pre- test is done for a research instrument such as a questionnaire or interview schedule (Van Teijlingen and Hundley, 2010). Developing and testing adequacy of research instruments has many fold benefits which includes assessing the likely success of proposed recruitment approaches and training the researcher in as many elements of the research process as possible (Van Teijlingen and Hundley, 2010, Hilton, 2017, Willis, 2016).

3.6.1 Objectives and delivery of the educational sessions

The objectives of the educational session were to improve screening uptake as the primary outcome, and the three secondary outcomes namely, knowledge, attitude, and clinic readiness to offer cervical cancer screening services.

Nine group sessions of varying size were conducted across Keetmanshoop urban - smallest group was five women and the largest group was 19. A total of 105 (n=105) women attended the educational sessions. Each session took about an hour to an hour and a half.

3.6.2 Teaching method

Lectures and discussion methods were used to deliver the messages. PowerPoint slides and visual materials were in English, however, the researcher assisted by the HEWs explained the content in other local languages to enhance understanding. In addition, demonstrations were a key part of the educational intervention. The slides were adapted from the Namibia Cervical Cancer Screening Program. The slides were edited to suit gaps identified during Phase 2 of this study. Visual aids were maximally

used to enhance understanding. Each woman who attended the educational session was provided with a slip (Appendix 8) that showed she attended an educational session. The women who decided to go for screening left the slip at the clinic as evidence that they attended an educational session and came for screening.

3.6.3 The message content of the educational sessions

Every health education session should carry a message. A message is a piece of information, a set of ideas, or a course of action that you want to convey to individuals, or to the whole community (Aldinger et al., 2008). In compliance with the knowledge gap discovered when investigating barriers to screening, and from recommendations of the participants and stakeholders, the teaching content addressed the following: cervical cancer as disease, its causes and signs and symptoms, prevention, treatment and prognosis, the importance of screening and the screening procedure. In addition, participants were informed of the days when the test is done and that it was offered free of charge in government institutions.

3.6.4 Assessment of outcomes

All participants answered the questionnaire, which assessed knowledge, attitudes, and practices with regard to cervical cancer and its screening at the beginning and end of the sessions. The pre-test and post- test scores were compared using an excel table to show differences.

3.6.5 Data collection instrument

A self-developed questionnaire to assess knowledge, attitude, and practices of women (Appendix 9), based on literature and the expert opinion of the supervisor who has published widely in the field of cervical cancer, was compiled by the researcher. The questionnaire was pre-tested on three women and the terminology which the women found difficult to understand, was changed to everyday language. The questionnaire consisted of four (4) sections. Section 1 investigated demographic and gynaecological data, section two (2) focused on knowledge about cervical cancer and screening, section three (3) assessed attitudes towards screening and lastly section four covered screening practices.

The clinic's cervical cancer screening test registers were used for data collection. The register documented the demographic data of patient, date of screening test and the results of the screening test. The researcher collected data to assess the intervention's primary outcome at baseline, when 50% of required sample of women attended the educational sessions and when 100% of required sample had participated in the educational sessions.

3.7 DATA MANAGEMENT AND ANALYSIS.

3.7.1 Primary outcome: Assessing screening uptake

To know the number of women who had been screened after attending the community based educational program, the women left their attendance slip (Appendix 18) from the community based educational session. The researcher then collected the attendance slips and noted in the diary that the woman had been screened. The primary outcome was assessed statistically in terms of absolute numbers of women screened as recorded in the clinic screening register and the attendance slips. However, quantitative descriptive analysis (QDA) alone cannot give information on associations (Conner, 2017). Henceforth Chi-square was used to report the relationship between the educational intervention and screening uptake.

3.7.2 Secondary outcome: Assessing Knowledge and attitude outcome

Quantitative descriptive analysis (QDA) was used to assess this secondary outcome. QDA allows researchers to summarize, describe, and present data in ways that make them easier to understand. The objective of descriptive research is to provide an accurate portrayal of the characteristics of individuals, situations, or groups and the frequency with which certain phenomena occur using statistics to describe and summarise the characteristics. As Allen (2017) noted within pre- test–post -test research designs, the effect of a treatment is determined by calculating the difference between the first and consecutive assessments of the dependent variable. Women's knowledge and attitudes were described using percentages and statistical diagrams (Ingham-Broomfield, 2014, Conner, 2017).

3.7.3 Secondary Outcome: Assessing clinic readiness

Lastly, the clinic readiness was assessed by means of the checklist and expressed in terms of available resources as a percentage of the required resources. Comparisons were drawn between the data collected before and during the intervention using a table to illustrate the differences if any.

3.8 INTERNAL AND EXTERNAL VALIDITY OF THE STUDY

Creswell and Creswell (2017) as supported by Heale and Twycross (2015) and Korb (2016) described validity as the researcher's ability to ensure that her findings are accurate from the perspective of the participant(s) and the researcher and/or the readers of the final account. It involves the design of research to provide credible conclusions and provide evidence that can support the interpretation of this evidence. In other words, it is the extent to which the measurement instrument measures what it is intended to measure. The two dimensions of validity are internal and external. Internal validity is the extent to which the experiment is free from errors and any difference in measurement is solely due to the independent variables. Internal validity allows researcher to answer the research question convincingly. External validity is the extent to which the research results can be inferred to the world at large, including other contexts different from those of this specific study. There are four (4) aspects of validity; face, content, construct and criterion validity, which were maintained in this research (Bless et al., 2013, Joubert et al., 2015, Polit and Beck, 2017).

3.8.1 Face validity

Face validity refers to whether the instruments appear to be measuring the target construct. The women's educational session pre-test and post- test questionnaire was critiqued by two nurses, one National Program Officer and one woman, as well as one man. These various cadres all assessed the questionnaire and gave their constructive criticism (Heale and Twycross, 2015, Polit and Beck, 2017).

Content validity was ensured by a thorough literature review, qualitative interviews, and review of the instrument by the above-mentioned health care providers and community members.

3.8.2 Content validity

This examines the extent to which measurement includes all the major elements relevant to the construct being measured (Heale and Twycross, 2015, Korb, 2016, Polit and Beck, 2017, Burns and Grove, 2015). It can be described as the degree to which an instrument has appropriate sample items for the construct being measured and adequately covers the construct domain. In this study, content validity was ensured by a thorough literature review, qualitative interviews, and review of the instrument by five expert healthcare practitioners. The instrument was reviewed against the Namibia Cervical Cancer Prevention Guidelines (MoHSS, 2018). The intervention and effect relationships involved in the study focussed on the outcome of an educational program on screening uptake, knowledge, attitudes, and improvement in clinic readiness to offer cervical cancer screening.

3.8.3 Construct validity

According to (Burns and Grove, 2015), construct validity includes content and predictive validity. It is concerned with validity of inferences from the observed persons, the settings, cause and effect relationships involved in the study and the constructs that these instances may be representing (Burns and Grove, 2015, Polit and Beck, 2017). The construct in this study were factors associated with non-adherence to cervical cancer screening uptake. To cover this construct the following elements were assessed: patient-related factors, socio-economic factors, disease, and treatment related factors along with cultural and religious related factors.

3.9 RELIABILITY

Reliability indicates that the research approach is consistent and well documented such that would another researcher follow the same approach they would get similar results. Reliability is defined as the extent to which an instrument consistently measures a concept or the degree of consistence or dependability with which an instrument measures an attribute (Burns and Grove, 2015). Reliability focuses on level of similarity of results obtained when measurement is repeated even on the same subject or group (Joubert et al., 2015, Heale and Twycross, 2015, Creswell and Creswell, 2017). Method to assess internal consistency that is the alpha coefficient. Test-retest reliability, which was used in this current study, is a form of reliability

achieved when the same instrument is administered to the same group of respondents on two different occasions and yet look at the correlation between the two sets of scores. Twenty percent (20%) (n=19) of the sample size (n=105) that attended the community based educational program were followed up after 2 weeks and requested to answer the same pre-test and post- test questionnaire again. Of the 19 attendees who took up the test again, 17 (89.5%) scored the same mark or higher whilst two got a mark less than their first post test. Henceforth the reliability co-efficient was taken as 0.89. A reliability co-efficient of at least 0.80 for all well-developed tools and 0.70 for a newly developed tool is considered acceptable (Bolarinwa, 2015). Prior to the co-efficient assessment, reliability of the instrument was ensured by engaging healthcare practitioners, women, who are the service users, and men involved with the cervical cancer screening program. Secondly, the questions were derived from the given information in the Namibian Cervical Cancer Prevention Guidelines (MoHSS, 2018) . The statistician's input provided additional information to ensure the reliability of the instrument. Pre-testing of the instrument and also maximised on reliability of the instrument as feedback was incorporated before instrument was used for this study.

3.10 CONCLUSION

This chapter focussed on the research methodology employed in this study and outlined all aspects of the methods including populations, sampling, recruitment, data collection and data collection instruments and data analysis. The supporting evidence for trustworthiness of qualitative research, validity and reliability of the quantitative aspects were provided. Ethical considerations were also described.

CHAPTER 4: THE SCOPING REVIEW

4.1 INTRODUCTION

In the previous chapter, the research design and methods of the total study were described. This chapter focused on Phase 1 of the study and will present the details of the research process thereafter the results will be presented and discussed. A quick overview of Phase 1 will be presented in sequential steps as shown in figure 4.1 below.

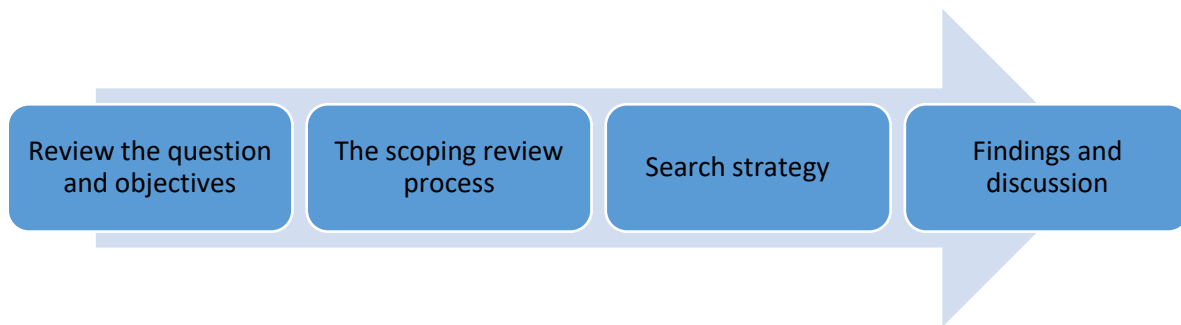


Figure 4. 1 The four steps of the scoping review

4.1.1 Review of the purpose and aims of the scoping review

The purpose of this review was to identify, appraise and synthesise the interventions employed to improve cervical cancer screening utilisation in Africa for the ten-year period from 1 January 2008 to 31 December 2018.

The review was guided by the question

Which interventions have been employed to increase cervical cancer screening utilisation in Africa and what were their outcomes?

4.2 METHODS

4.2.1 Scoping review process

A scoping review is a tool to define the scope or coverage of a body of literature on a specified subject and gives clear indication of the volume of literature and studies available as well as a broad overview on the topic (Munn et al., 2018, Lockwood et al., 2019, Tricco et al., 2016). Scoping reviews are conducted with the goal to gain information, summarize, and disseminate research findings, note research gaps, and make recommendations. It is a type of knowledge synthesis which should be rigorously conducted, transparent and trustworthy. The scoping review was guided by Joanna

Briggs Model 2015 with the following framework; based on a specified research question, identify the studies, select the studies, chart data and summarise and report (Tricco et al., 2018, Peters et al., 2015, Tricco et al., 2016).

4.2.2 Search strategy

The following databases were searched: PubMed, Scopus, Sabinet, and CINAHL for the period 1 January 2008 to 31 December 2018. The key words were interventions/programs + cervical cancer screening + utilisation + Africa. Additional keywords included in the search were strategies, uptake, improve and increase.

Only studies in English were eligible as it is the language both reviewers, the researcher and study supervisor, are conversant with. In order to capture only the output of published research, literature reviews, dissertations, editorials and letters to the editor, case reports, discussion papers, and grey literature were excluded. The researchers planned to contact authors of primary sources when required, but as search progressed this was not deemed necessary

Data gathering started in July 2018 and ended in January 2019. The researcher electronically saved the list of all publications obtained from the databases search and saved references in the Endnote citation manager. The list of publications was reviewed to exclude the work that did not meet the inclusion criteria. The titles were first reviewed followed by an appraisal of the abstracts if the titles were not clear enough. Full texts were used to investigate the authors and country in which the study was conducted.

Study selection and methodological assessment were conducted by two independent reviewers, the researcher and study supervisor. Deductive and inductive coding was used. Reviewers resolved disagreements through discussion to agree on studies to be included in the review and those excluded with reasons. Findings on interventions employed in Africa were tabulated and summarized into a narrative to present the synthesised data.

The data was entered in a data extraction sheet (Appendix 1) adopted from the Johana Briggs Institute (Tricco et al., 2016, Tricco et al., 2018, Peters et al., 2015). The extraction form was used to extract study information under subheadings; sequential number, year of publishing, title of article, author, name of the African country,

description of intervention, design, measure of outcome and did the intervention improve screening. The results were tabulated for easy evaluation of differences and similarities in the studies. Content analysis was used to come up with themes and led into conclusions on the scoping review (Davis et al., 2009, Tricco et al., 2016).

This scoping review only focussed on studies that investigated outcomes of interventions on screening uptake. Of the 4054 records identified, eleven (n=11) were included in the review. Systematic searching from the four databases identified a total 4054 potential records (Science direct - 1025, Scopus 737, PubMed – 123, Clinical key 95 Cinahl 2064, 5 other sources). After removal of duplicates they were 3365 records which were screened of which 2557 were excluded based on the title leaving 1108 records. Thereafter the 1108 abstracts were screened, of which 1091 were discarded for not meeting the criteria. The remaining 17 full texts were then retrieved of which eleven (11) studies met the selection criteria. Figure 4.2 shows the steps undertaken in the search and selection of studies to be included in the review.

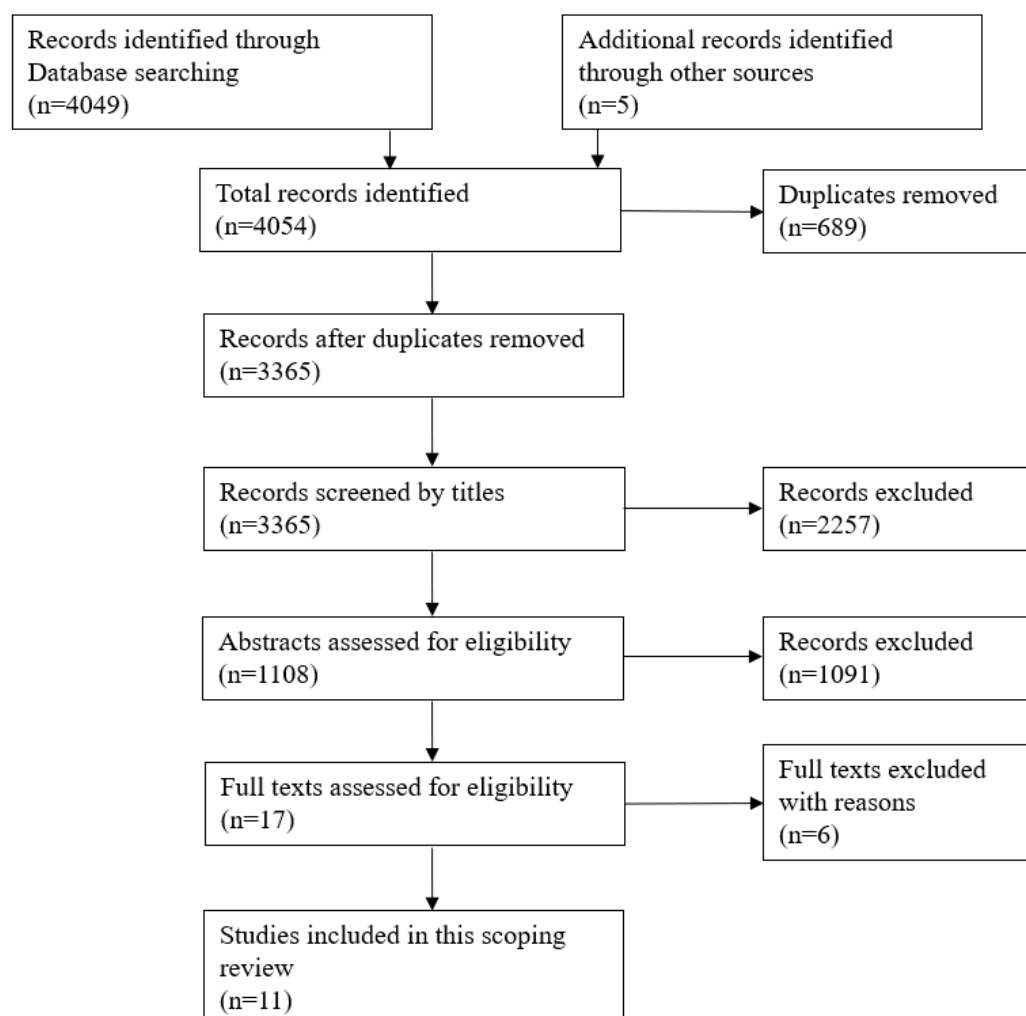


Figure 4. 2 Flow diagram of the search and selection process for the included studies according to the Preferred Reporting items for Systematic reviews (PRISMA)

4.3 RESULTS

4.3.1 General information

4.3.1.1 Characteristics of the studies

Most of the studies (36%; n=4) originated from Nigeria, whilst two (18%; n=2) were from South Africa, two (18%; n=2) from Kenya, and one (9%; n=1) from Uganda, Botswana and Ghana respectively.

The quality assessment of the retrieved articles was done using the quality assessment tool for quantitative studies developed by the National Collaborating Centre for Methods and Tools (2008) retrieved from <http://www.nccmt.ca/resources/search/14> original work by Thomas et al. (2004). The tool grades the quality of the article based on eight (8) components specifically, selection bias, study design, confounders, blinding, data collection methods, withdrawals and dropouts, intervention integrity and analysis. The methodological rating is concluded as strong, moderate, or weak. Of the 11 studies six (6) were graded as strong, three (3) as moderate and two (2) as poor. However, no study was excluded based on quality and all studies identified as assessing screening uptake were included. The characteristics of the studies (n=11) are summarized in Table 4.1 below.

4.3.1.2 The focus of the studies

All eleven (n=11) studies focussed on improving cervical cancer screening utilisation in Africa. The study population were women with the sample sizes of studies ranged from 188 to as high as 1327 (Okore, 2011, Chigbu et al., 2017). These studies employed a quantitative design as they assessed numerical values of women screened for cervical cancer. Three studies used pre and post-test design (Tum et al., 2013, Maree et al., 2012, Chigbu et al., 2017), six employed a control group for comparison, (Rosser et al., 2015, Moses et al., 2015, Abiodun et al., 2014, Wright et al., 2011, Gana et al., 2017, Okore, 2011), the remaining two had no comparator (Swanson et al., 2018, Awua et al., 2018). Although these studies assessed screening uptake, some studies assessed other additional outcomes such as knowledge (Rosser

et al., 2015, Abiodun et al., 2014, Wright et al., 2011, Gana et al., 2017), value of educator (Tum et al., 2013) whilst others screening result (Maree et al., 2012, Swanson et al., 2018).

4.3.2 Themes arising from the data

After content analysis, four (4) themes emerged from the scoping review namely, health education, HPV testing, integrating services and use of multi-faceted health promotion activities. These themes and the subthemes are summarised in table 4.1 below.

Table 4. 1 Themes and subthemes arising from the studies included in the review.

S/N	Theme	Subthemes
1.	Health Education	• Studies that yielded improved screening uptake • Studies that did not yield improvement
2.	HPV testing	• Studies that yielded improved uptake • Studies that did not yield improvement
3.	Integration of service	• Outcome of combining breast and cervical cancer testing to improve cervical screening
4.	Multi-faceted health promotion activities	• Face to face, pamphlets, posters

4.3.2.1. Theme 1: Educational interventions

Although 55% (n=6) of the studies tested educational interventions, the outcomes of this interventions were not the same across studies. Of these studies, 33% (n=2) yielded improved screening whilst 67% (n=4) did not yield improved screening after the educational intervention.

Sub-theme 1: Studies in which education yielded improved screening

From this scoping review, 33% of the studies reported that education could successfully improve screening uptake. Chigbu et al. (2017) in Nigeria used house to house education within the community which resulted in percentage of women screened increasing from pre-intervention 3.2% to 67.6%. Similarly, Abiodun et al. (2014) had a health education movie shown to 350 participants in Nigeria. However,

by the end of study, the proportion of women who had undertaken cervical screening improved from 4.3% to 8.3%.

Sub-theme 2: Studies in which education did not yield improved screening

In 67% of educational interventions, the screening outcome did not improve. Firstly, from South Africa, Tum et al. (2013) trained a community health worker who offered health education on cervical and breast cancers to women. In spite of this, screening did not improve regardless of the valued role of the CHW. Secondly, Rosser et al. (2015) from Kenya, tested the outcome of a health talk and concluded that although knowledge increased there was no difference in screening uptake between the control and intervention arms. Thirdly, Wright et al. (2011) from Nigeria, after employing an intervention of educational sessions in the community to one group and comparing it with a control concluded that education alone was not sufficient to improve screening.

Table 4. 2 Profile of studies excluded from the scoping review with reasons (n=6)

Title	Author	Name of country in Africa	Type of Intervention	Design Pre and Post-test or Control	Measure of outcome	Reason why full text was excluded
Screen and Triage by Community Extension Workers to Facilitate Screen and Treat: Task-Sharing Strategy to Achieve Universal Coverage for Cervical Cancer Screening in Nigeria	Awolude et al. (2018)	Nigeria	Trained community health extension workers CHEW who were nonprofessional health workers on screening using VIA and link positive cases to care.	No pre and post-test or control	Compared the degree to which VIA result of CHEWs agreed with that of the expert team. Also compared the rate of similar result between nurse and expert team. Of the 63 rescreened by CHEWs and CHOs (data grouped), and nurses, 88.1% and 92.3%, respectively, agreed with expert team review.	No outcome on screening uptake.

Effect of an Educational Intervention on Women's Knowledge and Attitude Regarding Cervical Cancer	Ebu et al. (2019) Originally 2018	Egypt	Outcomes of an educational session delivered to 65 women at an outpatient clinic allied to the obstetric department.	Pre and post-test design A quasi-experimental design.	Total knowledge Mean score was improved from (11.33±7.28) at pre intervention to (21.20±47) at post intervention phase. So did attitude towards screening improve after education.	No outcome on screening uptake
Effect of Self Learning Package Based on Health Belief Model on Cervical Cancer Prevention among Female University Students	Hanaa and Hend (2014)	Egypt	A purposive sample of 314 married female students received educational material on cervical cancer. A control group had 157 participants.	Control group	The experimental group had significant improvement in knowledge, perceived susceptibility severity of cervical cancer, as well as perceived benefits of early detection and HPV vaccination and intention to take HPV vaccination and do Pap smear	No outcomes on screening uptake

Assessing the Acceptability, Feasibility, and Effectiveness of a Tablet-Based Cervical Cancer Educational Intervention	Caster et al. (2017b)	Malawi	Tablet-based educational intervention aimed at improving cervical cancer knowledge among women in rural Malawi. 243 women took part over a period of half a year.	Pre and post-test of knowledge	After the intervention, 93 % of women indicated a desire for cervical cancer screening.	No outcome on screening uptake
Text messages to increase attendance to follow-up cervical cancer screening appointments among HPV-positive Tanzanian women (Connected2Care): study protocol for a randomised controlled trial	Caster et al. (2017b)	Tanzania	700 HPV positive women assigned either to control group (350) or experimental (350) which will receive 15 one-directional health educative text messages and SMS reminders for their appointment for a period of ten months.	Control group	Primary outcome will be attendance rate for follow-up. Secondary objectives are cost-effectiveness, and knowledge of cervical cancer	Future study, no outcomes yet
Intervention Strategy to Promote Utilisation of Cervical Cancer Screening Services at Vhembe District, South Africa	Vhuromu (2017)	South Africa Limpopo	Develop an intervention strategy to promote utilisation of cervical cancer screening services.	A Multi-faceted approach structured. Validated using SWOT PESTLE and BOEM	Not tested, only a validated strategy.	Approach not tested. No screening uptake outcome

Table 4. 3 Studies included in the scoping review

Title	Author	Name of the African country	Type of Intervention	Design	Measure of outcome	Did the intervention improve screening
Creating awareness and facilitating cervical and breast cancer screening uptake through the use of a Community Health Worker: a pilot intervention study	Tum et al. (2013)	South Africa	A Community Health Worker was trained and tasked to raise awareness of cervical and breast cancer and motivate women to take up screening.	Pre- and post-test	The intervention was assessed in terms of three outcomes: screening uptake, awareness, and the value of the Community Health Worker. Despite the fact that the Community Health Worker's role was valued, screening uptake and the level of awareness remained low.	No
Combining breast and cervical screening in an attempt to increase	Maree et al. (2012)	South Africa	Combining cervical screening and breast screening lead to an	Pre- and post-test	The intervention was assessed in two outcomes: cervical	Yes

cervical screening uptake. An intervention study in a South African context			increase in cervical screening uptake. The pre-intervention survey showed that only 14% of the sample (n = 299) reported having been screened for cervical cancer previously		screening uptake and the findings of the screening. All participants were willing to have breast examination while 65.4% of those eligible for cervical screening got screened. Mainly using VIA. Conclusion was that combining breast exam with cervical screening improved cervical cancer screening uptake even though they had inadequate knowledge	
The impact of community health educators on uptake of cervical and breast cancer prevention services in Nigeria	Chigbu et al. (2017)	Nigeria	The intervention was house-to-house education on cervical cancer and breast cancer prevention. 1327 women were enrolled. Pre- intervention 3.2% had been screened for	Pre- and Post-test.	Outcomes were uptake of cervical and breast cancer screening, and HPV vaccination within 6 months of intervention. All three outcomes improved with education	Yes

			cervical cancer. Post intervention 67.6% was screened. Breast examination improved from 4.4% to 67.6% after the intervention. Regarding HPV vaccination to eligible girls it improved from 0.9% of 214 children at baseline to 33.2% after the community health educators' intervention			
Patient Education Changing knowledge, attitudes, and behaviours regarding cervical cancer screening: The effects of an educational intervention in rural Kenya	Rosser et al. (2015)	Kenya	Evaluated a health talk's outcome on cervical cancer knowledge, attitudes, and screening rates in rural Kenya. 419 women attending government clinics randomly allocated to either control or experimental group. Assessment done at baseline, just at the end	Control	The primary outcomes were the change in knowledge scores and the final screening rates at three-month follow-up. Secondary outcomes were changes in awareness about cervical cancer screening, perception of personal cervical cancer risk, cervical cancer and HIV stigma,	No

			of the talk and after three months.		and screening acceptability. Mean Knowledge Scores increased but there was no difference in screening uptake between the two arms.	
Uptake of community-based, self-collected HPV testing vs. visual inspection with acetic acid for cervical cancer screening in Kampala, Uganda: preliminary results of a randomised controlled trial	Moses et al. (2015)	Uganda	In the HR-HPV arm, 248 of 250 ($p < 0.01$) women provided samples, while in the VIA arm, 121 of 250 (48.4%) women attended screening	control	Outcome measures were uptake of screening, HR-HPV prevalence, VIA result and treatment rates. Self-collection-based cervical cancer screening had a higher uptake than VIA.	Yes
Impact of health education intervention on knowledge and perception of cervical cancer and cervical screening uptake among adult women in rural communities in Nigeria	Abiodun et al. (2014)	Nigeria	This study aimed to determine the effect of health education on the awareness, knowledge and perception of cervical cancer and screening among women in rural Nigerian communities. Each group had 350 women.	Control.	Awareness improved to 100%. Similarly, good knowledge of cervical cancer and screening rose from 2% to 70.5%, whilst good perception rose from 5.1% to 95.1%. There was increase in the proportion of	Yes

			The health education was a movie.		women who had undertaken cervical screening from 4.3% to 8.3%	
Awareness and uptake of the Pap smear among market women in Lagos, Nigeria	Wright et al. (2011)	Nigeria	Participants in the intervention group received sessions of community-based health information on cervical cancer screening tests while participants in the control group received health information on hypertension	Control group with pre and post assessment	Knowledge of the Pap smear increased in the intervention group ($P<0.05$) but there was no significant change in uptake. Concluded that knowledge alone is insufficient to improve screening.	No
Educational intervention on knowledge of cervical cancer and uptake of Pap smear test among market women in Niger State, Nigeria	Gana et al. (2017)	Nigeria	Aim: the effect of educational intervention on the knowledge of cervical cancer and subsequently the uptake of Pap smear test.	Control with pre and post	Respondents' knowledge of cervical cancer was comparable at pre-intervention but were statistically significantly better ($P<0.0001$) at post-intervention in the intervention group compared to the control group for every variable	No

					measured. However, the uptake of Pap smear test remained low even after intervention.	
The Use of health promotion to increase the uptake of cervical cancer screening program in Nyangabgwe Hospital, Botswana	Okore (2011)	Botswana Francistown	Two populations at different health facilities, one exposed to health promotion activities namely flyers with translations in English and Setswana given to participants, posters which were posted at various strategic positions in the hospital and as well as in female wards and Interactive health education sessions. Control group was not exposed to any.	Control group with pre and post design.	The effect of health education talks in the hospital and clinics was greater (67%), than the effects of flyer or pamphlets (35%) and posters in hospitals and clinics (17%) in escalating uptakes of cervical cancer screening services. Concluded – there is need for visible and accountable comprehensive health promotion activities to sustain screening.	Yes
Evaluating a community-based cervical cancer screening strategy in	Swanson et al. (2018)	Kenya	Women in the community were mobilised and counted before a four-day	No control, no pre and post	Door-to-door enumeration identified approximately 870 eligible women in the	Inconclusive (no comparison)

Western Kenya: a descriptive study			community health campaign (CHC). The campaign educated participants about cervical cancer prevention and offered self-administered HPV screening.		area. 267 women attended the campaign of which 255 women enrolled and collected samples: 243 tests were successfully resulted and 12 were indeterminate. Of the 243 ,47 (19%) were positive for HPV 76% of HPV positive women were informed of their result but just half came for treatment. Linkage to treatment is a challenge.	
A tailored within-community specimen collection strategy increased uptake of cervical cancer screening in a cross-sectional study in Ghana	Awua et al. (2018)	Ghana	Women were recruited via a house survey and requested to report at a hospital either within 7 days or after for either self or health-personnel specimen collections. There were poor turnout women were asked to report at a central	No pre and post. No control	Response rate of 60.4%. Of those recruited, 89.7% (226 of 253) of the women performed both self and health personnel sample collection. Conclusion: Community based specimen collection	Inconclusive (no comparison)

			location within their respective communities for specimen collections at times of the woman's convenience.		improves screening when compared to hospital based.	
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4.3.2.2. Theme 2: Community based HPV testing as an intervention to improve screening.

Three of the eleven studies used HPV test as the screening modality in an effort to improve screening.

Sub-theme 1 Studies that yielded improved screening uptake

One of the studies yielded an improvement in screening uptake. (Moses et al., 2015) from their study in Uganda had two segments comparing VIA and HPV self-test as screening methods. The study concluded that, HPV self-test for cervical cancer screening had a higher uptake than VIA thus inferring improvement in screening following this study intervention.

Sub-theme 2: Studies for which improvement in screening uptake were inconclusive

Due to lack of clear design on control or post-test in two of the studies the screening uptake improvement could not be concluded. The first study was by Swanson et al. (2018) from Kenya where they mobilised the community and ran a campaign for four days offering HPV testing. However, as a once off four-day event, there was no documented comparison, for example, baseline number of women screened before intervention, in order to conclude on the outcomes of the intervention. Noteworthy is that, of the 267 women who attended the campaign, 255 (96%) got tested using HPV self-tests which this arguably a successful intervention. The second study is that of Awua et al. (2018) from Ghana, who recruited women in the community and offered them HPV test at designated areas within women's locality and convenience. Although, the response was positive, the study lacked a design to substantiate that HPV test improves screening.

4.3.2.3 Theme 3: Integrating services

Of the eleven studies, one study combined services and assessed the outcomes. Maree et al. (2012) tested outcomes of combining breast exam and cervical cancer screening. The study witnessed an increase of cervical cancer screened women from 14% at pre-intervention to 67% post-intervention.

4.3.3.4 Theme 4: Multi-faceted health promotion activities

Lastly, in Botswana (Okore, 2011) conducted a study that employed health promotion activities namely posters, pamphlets and face to face group talks with women.

However, when the different facets were compared, health talks were the most effective. Another example of multi-faceted activities was tested in Winston over a two-year period (Rajkumar, 2012). It included community-based educational sessions with different facets namely, free meals, integration of educational session in church programs, brochures distribution, mass media, birthday cards with information, and targeted mailings. The study concluded that screening rose by 14% in intervention city whilst it decreased by 7% in the control city.

4.4 DISCUSSION

There were both similarities and differences between the outcomes of our review and other previous reviews on interventions to improve screening. The four main themes identified in this review namely health education, community-based HPV testing, integrating services and multiple faceted health promotion activities also emerged in other previous reviews.

The review of Rees et al. (2018) which had 29 studies concluded by categorizing interventions into local interventions including HPV self-testing, lay health advisors and strategies enhancing attendance within an organized program. Notably, the major similarities with the current review of African studies to improve screening is that HPV testing is popularly tested as an intervention, along with educational interventions which in most cases are conducted by lay health workers.

Similarly, Naz et al. (2018) in their review detected that about one fourth of the articles were based on health education methods which predominantly applied the health belief model. Various methods were used to convey information by (Naz et al., 2018) and their review concluded that educational interventions modified cervical cancer screening behaviour of women which corresponds with the current findings of 55% observed in our review. In spite of this, education alone did not yield an improvement in screening uptake in 67% of the educational interventions.

Additionally, (Agide et al., 2018) review of 17 studies from across the world, predominantly USA concluded that although almost all interventions boosted the screening uptake, the individual level health education interventions were prioritized by most researchers. Nevertheless, there was limited quality in the studies reviewed thus the need for further research.

On the other hand, there are other reviews which yielded themes that were not found in this current review of studies from Africa 2008-2018. For example, (Albrow et al., 2014) in their review where 4 studies met the inclusion criteria, three of the studies investigated outcomes of an invitation letter. Our review did not have studies assessing invitation letters, probably as this method was not operationally conceivable in some African systems, possibly due to malfunctioning or ineffective postal systems. Furthermore, this review also had studies supporting physician and telephone reminders which was not selected in our review. Operationalising such studies may be hindered by high burden of physician – patient ratio in most African countries and high tariffs for calls and limited access to telephones in some areas especially rural settings. The only similarity of the review by Albrow et al. (2014) was that it also yielded HPV self-sampling as an intervention and concluded that HPV self-sampling had a positive effect when compared with a reminder letter.

Knowledge gap in cervical cancer knowledge denotes the need for health education across different studies (Wong et al., 2009, Abotchie and Shokar, 2009, Mwaka et al., 2016, Nwankwo et al., 2011, Van Schalkwyk et al., 2008). Only 33% of the educational interventions yielded an improvement in screening uptake in the current review (Chigbu et al. (2017), Abiodun et al. (2014). The meta-analysis on educational interventions and HPV sampling by Musa et al. (2017) also concluded on theory-based cervical cancer education as an intervention to improve screening uptake. Beyond Africa, use of video platforms in cervical cancer education has proven to modify screening uptake, although there is need for acceptance and appropriateness of this approach (Love et al., 2009, Musa et al., 2017, Ornelas et al., 2018, White et al., 2017) Other educational interventions such as other types of invitations, reminders or counselling, also increase screening rates, but it is unclear which interventions are most effective (Hitzeman and Xavier, 2012).

On the contrary, in 67% of educational interventions, the screening outcome did not improve across these studies (Rosser et al., 2015, Wright et al., 2011)(Rosser et al., 2015, Wright et al., 2011). Various explanations have been ascribed as to why some educational interventions fail to improve screening. These include ethnic population, methods of program delivery, and study setting (Lu et al., 2012). Notwithstanding those studies which failed to improve screening, Naz et al. (2018) are still in favour of educational strategies from their systematic review. Everett et al. (2011) also contend

that there is some degree of evidence to support educational interventions although it is unclear which format is most effective.

In this review, three of the eleven studies (27%) investigated use of HPV test to improve screening with outcomes were mixed. One study (33.3%), conducted in Uganda, comparing VIA and HPV self-test as screening methods and concluded that HPV self-sampling had a higher uptake than VIA and improved screening rates (Moses et al., 2015). The positive outcome of this study supports the notion of (Nakisige et al., 2017, Arrossi et al., 2015) that HPV testing is an opportunity for countries to decisively improve screening uptake. (Murphy et al., 2016, Rees et al., 2018, Albrow et al., 2014) also note that HPV testing increases the perceived threat and may improve intent and ultimately screening uptake. In-fact Chibweshu and Cu-Uvin (2011) maintains that HPV self-collection allows the woman to be screened without the need for a speculum or pelvic examination by a trained personnel.

The findings from the other two studies investigating outcomes of HPV testing were regarded as inconclusive due to non-existence of clear design particularly a control or post-test. Without a design which allows comparison it was difficult to draw conclusion as to whether the strategy improves screening or not (Swanson et al., 2018, Awua et al., 2018). Noteworthy is that, although these studies focussed on HPV test, their being community-based indirectly improved access to service which is often a structural barrier. It could be argued that positives outcomes were due to ease of access to service in comparison to conventional facility based screening (Kakehongo, 2018, Zengwe, 2016).

In one of the eleven (9.1%) studies, Maree et al. (2012) combined services and assessed the outcomes with a resultant increase of cervical screened women from 14% of pre-intervention to 67%. Within the confines of this review we could not get other studies which have combined services to support or conflict the findings of this study. However, some cervical cancer screening national programs combine breast exam and cervical screening (MoHSS, 2018)

Another study of the eleven (9.1%), employed health promotion activities such as posters, pamphlets and face to face group talks to women and concluded that face to face health talks improve screening (Okore, 2011, Guvenc et al., 2013). Other interventions that support increase community demand such as client reminders, client

incentives, small media, mass media, group education, and one-on-one education have also been observed to improve screening uptake (Guide, 2018).

4.4.1 Limitations

The reviewers undertook a thorough search following the set inclusion selection criteria. Although, cross-checking by two independent reviewers was undertaken and is trusted to ensure integrity of this review, it is possible that some published articles might have been missed during our search.

4.5 CONCLUSIONS

The authors concluded that educational interventions are the most tested interventions to improve cervical cancer screening. Although it was evident that education may modify screening behaviours of women, it alone may not achieve improvement without addressing barriers to accessibility of screening service or tailor making the educational interventions to suit other pertinent operational needs. The scoping review suggested that irrespective of equipment-related costs, HPV screening holds a potential breakthrough for screening utilisation in Africa, especially when it is community based. As such, financially able countries should consider this method as an intervention to improve testing (WHO, 2013). Combining cervical screening with breast cancer was also effective in improving screening, as was combined promotional activities especially face to face education. To conclude, there is need to combine education with other strategies to address population specific barriers to screening in Africa if the region is to see improvement in screening utilisation.

This scoping review recommends that further studies which aim to improve screening utilisation should first investigate barriers to screening in the specified community before presumptive interventions are employed. Consequently, interventions should adopt a holistic approach in their efforts as singular approaches may not give desired output. Henceforth, we recommend for studies that are multi-staged addressing identified gaps before employing interventions for instance educational interventions, as gaps may still hinder success of the intervention.

This chapter of the thesis, outlined the conducting of the scoping review from a set research question through review process, search strategies, reporting of findings and finally recommendations. The next chapter, outlines Phase 2 of the study describing

barriers to screening through qualitative interviews with women, men, and nurses together with clinic audits.

CHAPTER 5: FINDINGS OF PHASE 2 OF THE STUDY

5.1 INTRODUCTION

The previous chapter focused on the scoping review concluding that there is need to combine education with other strategies to address population specific barriers to screening. In this chapter the barriers to screening as described by women, men and nurses will be presented. To meet the second research objective, three (3) cohorts were interviewed in order to describe the barriers to screening and strategies to improve screening and clinic audits were conducted to assess clinic readiness for offering cervical cancer screening. The findings from women, men and nurses' in-depth interviews are presented below.

Qualitative data were collected between October 2018 and January 2019. Interviews were done at venues the participants found comfortable. A qualitative descriptive design was utilised with data collected through in-depth interviews comprising 18 women, 16 men as well as 19 registered and enrolled nurses from primary health care urban clinics. The qualitative data were organised using ATLAS.ti software and content analysis was done, grouping the data into subthemes and ultimately themes. Two rounds of clinic audits were conducted first round in May and the second one in August 2019.

5.2 WOMEN'S COHORT

As previously mentioned, 18 women were interviewed.

5.2.1 Participants

The demographic characteristics of the sample are outlined in Table 5.1 below.

Table 5. 1 Demographic characteristics of the women's cohort

Characteristics	Women (n=18)
Age (in years)	
Less than 20	1 (5.6%)
20-29	5 (27.8%)
30-39	9 (50%)
40-49	1 (5.6%)
50 years	2 (11.1%)
Tribe	
Nama- Damara	8 (44.4%)
Oshiwambo	2 (11.1%)
Caprivian	0
Kavango	2 (11.1%)
Otjiherero	0
Colored	0
White Namibian	2 (11.1%)
Tswana	0
Bushmen	0
Others	4(22.2%)
Religion	
Catholic	6 (33.3%)
Orthodox	4 (22.2%)
Protestant	7 (38.9%)
Islam	0
Hindu	0
African tradition	0
Others	1 (5.6%)

Marital status	
Never married	11 (61.1%)
Married	6 (33.3%)
Separated/divorced	1 (5.6%)
widow or widower	0
Level of education	
Never went to school	0
Basic education	9 (50%)
Elementary education	4 (22.2%)
College diploma and above	5 (27.8%)
Number of pregnancies	
Never	4 (22.2%)
1-3	5 (27.8%)
4-5	8 (44.4%)
More than 5	1 (5.6%)
History of Sexually Transmitted Diseases	
No	16 (88.9%)
Yes	2 (11.1%)
Current employment status	
Employed	9 (50%)
Unemployed	9 (50%)

5.2.2 Themes arising from the data

Three (3) themes and a total of ten (10) sub-themes arose and are summarised in Table 5.2 below.

Table 5. 2 Themes and subthemes that arose from the women's cohort

SN	Theme	Subthemes
1.	Women's knowledge of cervical cancer and its screening	• Defining cervical cancer
		• The causes of cervical cancer
		• Preventing cervical cancer

		• The signs and symptoms of cervical cancer
		• Cervical cancer screening
2.	The influence of fear	• Fear of the procedure
		• Fear of the results and diagnosis of cancer
		• Fear of myths and hearsay from the community
3.	Strategies to improve cervical cancer screening utilisation	• Educational Approach
		• Using cervical cancer survivors to assist with health education

5.2.3 Theme 1: Women's knowledge of cervical cancer and its screening. "No idea, I don't know".

This theme describes the knowledge of the participants (women) with regards to cervical cancer and its screening. All participants were women who had never been screened for cervical cancer as per inclusion criteria.

5.2.3.1 Sub-theme 1: Defining cervical cancer

Most of the participants openly stated that they did not know about cervical cancer. Not taking initiative to read or do research about the disease were given as reason for their lack of knowledge.

No idea. I don't know. (W₈)

I think it's about their private parts where the disease is coming. (W₁₃)

Cervical cancer, I have never read about it and never did research I just know that it's a cancer that's all. (W₄)

The participants acknowledged that they did not know about cervical cancer and believed this was a significant barrier to screening. Similarly, some requested the researcher to teach them about the disease. Some participants felt that women in informal settlements do not have the privilege of access to information in comparison to their counterparts in formal suburbs.

I think they don't have the information especially in informal settlements where most women are not educated. (W₁₀)

I think it's also ignorance. (W₁₂)

I don't have a lot of understanding about this cervical cancer so maybe you can teach me. (W₇)

5.2.3.2 Sub-theme 2: The causes of cervical cancer

The participants were unsure about the causes of cervical cancer. Although some mentioned possible causes, they were not sure of how the causes they alluded to could cause cervical cancer. Nevertheless, this was what they had been told. The participants revealed various possibilities including excessive sexual activity, using condoms during sexual activity, and using different cosmetic scents.

No, I don't know what causes it. (W₁₅)

It may be caused by this STDs, having sex without using a condom and sleeping around with too many men. (W₁₃)

They say too much sex. I think there about too much sex, in my own understanding I am really confused. How will too much sex cause cervical cancer? (W₁)

By doing sex with condom, it might be. Because the oil that they put on the condom it's having some different smells and some of them have flavours which can cause problem. (W₁)

Some of the participants believed cervical cancer is caused by foreign objects that are left in the woman's reproductive tract during delivery, trauma caused during procedures conducted by nurses and mechanical contraceptive devices.

It might be during giving birth that the nurses do not remove everything in the body, or they make an injury somewhere. (W₁)

It affects few women, only those that have access to mechanical devices to prevent pregnancies. (W₁₂)

Having sex with a partner with a large penis, multiple sex partners, poor hygiene, eating too much sugar and diabetes was also seen as possible causes of cervical cancer.

Because they say that boys have different sizes, one maybe big which will cause your cervix to be enlarged more or it could be having many sexual partners. (W₁₂)

We can get cancer disease if you are not washing your body ... and if you are eating too much sugar. (W₁₅)

Having diabetes maybe you can also get it that's why they say it's necessary to test. (W₅)

Some of the women reported that family planning methods can increase a woman's risk to develop cervical cancer. Therefore, they considered themselves to be at risk for the disease. In contrast, some only considered intrauterine devices as possible causes.

I'm on family planning and I have learnt from a pamphlet that some family planning can also contribute to cancer, so maybe I can be at risk. (W₃)

It only affects those that have access to mechanical devices that prevent pregnancies and unlike us from the village who uses the rhythm method...it does not affect us. (W₁₂).

5.2.3.3 Sub-theme 3: Preventing cervical cancer

Generally, participants did not mention how cervical cancer can be prevented. Some of the participants were of the opinion that health education messages on cervical cancer should clearly explain the prevention methods. HIV was used as example, as clear prevention methods reduced fear.

We now know that there is prevention, you can still survive with AIDS. So, I think they must also be clear if there is any prevention of this cervical cancer. That way people will not be so much afraid. (W₇)

5.2.3.4 Sub-theme 4: The signs and symptoms of cervical cancer

The participants agreed that pain is one of the symptoms of cervical cancer. The participants were of the opinion that women seem to ignore this symptom and treat it with analgesics instead of going for screening. Other symptoms mentioned were difficult in bending, weight loss and eventually death.

...women are staying with this pain thinking that it's just pain while you have this cancer. (W₄)

Ignoring (pain) just pushing it aside. (W₇)

She was having cervical cancer could not bend for a long time. (W₁₂)

My body will fall or lose weight... I'm just thinking just from my opinion I will just die. (W₁₃)

The participants were of the opinion that some people believe cancer is not like HIV. They believed the signs and symptoms of cancer are local and consequently one can hide the disease from others in contrast with HIV manifestations that cannot be hidden.

And there's a belief that if you are affected by cancer there's no one who see that you are affected by cancer. But if you are affected with HIV one can see that you have HIV. (W₁₂)

5.2.3.5 Sub-theme 5: Cervical cancer screening

The participants agreed that they lack knowledge about cervical cancer screening they were of the opinion that there is no clear explanation of the procedure which created fear of the unknown. The participants were not fully aware of the importance of testing. Some felt they were not at risk as they did not practice any risky behaviour.

I just feel like all of us are not really informed about Pap smear, we don't really know what Pap smear is and what is being done during Pap smear. (W₂)

I really don't know about the procedure; I really don't know how it's done. (W₅)

The understanding of the disease and the reason why that procedures done... we don't have that information. (W₆)

I know that am not too much in having sex with condom, or having sex too much, those things... maybe am just fine to be like that (not tested). (W₁)

For some, their decision to test was based on the information they would receive about the procedure. Most did not know whether the procedure is painful and felt unsure about the use the speculum.

Maybe just to ask is it really painful (laughs) or people are just say. (W₆)

I also want to know (laughs) what they put in me to check the things. Is it a metal thing? (W₉)

I'm not afraid of any pain but I just don't know is it the same like testing the blood. From there then I will be able to decide if I can go. (W₉)

Some of the participants confessed that they missed opportunities to learn about screening from other women who had undertaken screening. They were also of the opinion that women who attend the clinics for other services, have an opportunity to hear about cervical cancer in contrast to women who do not attend clinics.

I didn't pay attention when someone was telling me about Pap smear after she had gone for the test. (W₇)

But if you go to the clinic like for family planning they always tell you that you must come every Friday for the Pap smear. (W₉)

Some of the participants felt educated women are more likely to understand health related matters. Furthermore, educated women are well positioned to have access to health care, which is not the case for uneducated women and this scenario was seen as a barrier to cervical cancer screening

Some people, like educated people can know their rights and know where to get tested but the uneducated or illiterate they don't know. (W₁₂)

In summary, most of the participants confessed their lack of knowledge about the disease. Not all the participants knew what causes cervical cancer and they suggested; too much sex, use of condoms, foreign objects left during delivery and intrauterine contraceptive devices. Most participants did not know how cervical cancer could be prevented and pain was the most common symptom mentioned. Most participants lacked knowledge about the screening procedure and wanted clear information about the screening procedure as well as the disease.

5.2.4 Theme 2: The influence of fear. “They say the pain is more than giving birth.”

Participants expressed an emotion of fear which was a barrier to screening. Three sub-themes were identified namely; fear of the procedure, fear of the results, fear diagnosis of cancer, and fear of myths and hearsay from the community.

5.2.4.1 Subtheme 1: Fear of the procedure

The participants experienced various fear. Most feared the procedure as they have heard it is painful and uncomfortable.

They say the pain is more than giving birth. (W₁)

It's uncomfortable and also very painful. (W₆)

They say they don't feel any pain... it's comfortable. So it depends with the person. (W₁₀)

My mother didn't say something about pain. (W₁₃)

The speculum also created fear and served as barrier to screening. Some of the participants related their fear to the bad experiences they had with the speculum during child birth. The type of speculum, whether plastic or metal, was also important and some highlighted they were specifically scared of metal speculums. In addition, some of the women believed that the speculum is a “big thing” which they did not want to be inserted.

That instrument they're talking about that they are putting; I don't want it. It was used on me when I was delivering a baby it was the worst thing that demotivated me to do the Pap smear. (W₄)

They place that metal in you, and it's scary because it is not rubber or something soft, it's a metal. (W₁)

I'm not going there, I'm always at that clinic but I'm not testing because they are putting in a big thing. (W₁₃)

Some of the participants were of the opinion that the screening procedure will invade their privacy as it involves their private parts. Some feared the fact that they would

have to open their legs whilst others thought some healthcare practitioners want to expose them and see the physical appearance of their genitals.

It's not private...and you don't feel confident and so on. (W₁₀)

I heard, if you find a naughty person... just want to check the size of the vagina after giving birth. Whether it went to the normal or it extends. (W₁)

I know that most of my friends say that it's an uncomfortable procedure like you have to really open your legs. (W₆)

5.2.4.2 Sub-theme 2: Fear of the results and diagnosis of cancer

The participants agreed that they feared the results of cervical cancer screening as the feared being diagnosed with cancer. They believed such a cancer diagnosis is a death sentence, as there are no treatment options. A cancer diagnosis was so dreaded, that some of the participants would rather receive an HIV diagnosis.

Most women are afraid of the results, they think maybe you won't be able to handle the results. (W₉)

Some would be afraid that if they are diagnosed with this cervical cancer, then people will say I am dead. It's a death sentence. (W₇)

In our community people say they would prefer AIDS above cancer, that is how worse cancer can be for us. (W₄)

Some of the participants preferred not being tested as they wished to protect themselves from the depression they might experience after receiving a cancer diagnosis. Some even preferred dying in their ignorance than knowing. However, some participants believed that knowledge was better than staying without testing. Other participants supported pre-test counselling similar to that of HIV to allay anxiety.

So, people will decide staying without knowing is better. Then I will just die and wake up dead one day with my disease. (W₇)

If you are told that you are having cervical cancer it will also affect the mental state of thinking that is the end of life because it has no cure. (W₁₂)

I think it is good to test so that you can know early if you are okay. (W₉)

I think you can just apply the same thing like for this HIV test, they do counselling before they test you. (W₉)

5.2.4.3 Subtheme 3: Fear of myths and hearsay from the community

The women agreed that they receive information from within the community; some were merely myths. However, the hearsay and myths became a barrier to screening. The participants reported that they hear a lot of information resulting in women opting out of cervical cancer screening. Both women who had had screening as well as those who had never been screened, spread such information.

People are talking too much that's why I'm afraid, it's the problem. (W₁₃)

"And some are afraid to go to test because of hearing from other women that it's not private, it's not comfortable, and it's painful and so on. (W₁₀)

It is a mixture some of them have gone there at clinic, but others head from others who didn't go for testing. (W₆)

The myths spread in the community included that Pap smear can cause paralysis and infection. Unfortunately, some participants believed messages even if they lacked detail and clear explanations.

Apparently one lady got injured in the process of this tests and she was not walking for almost a year, and this is kind of scary, it's only that story that got me scared and I've said to myself no I will go. (W₂)

People are also afraid that you may get some infection because this is an internal organ. (W₆)

This theme outlined how fear influenced women in their screening behaviour. Women had fear of invasion of privacy, fear of pain, fear of results and possible cancer diagnosis. The information women received from peers in the community also stood as barrier as it was predominantly myths and incorrect information which induced fear in women.

5.2.5 Theme 3: Strategies to improve cervical cancer screening utilisation.

“The health people can go from house to house to make them aware that there is cervical cancer problem.”

The women in this study identified the lack of knowledge as one of the barriers to cervical cancer testing. Approach to health education was highlighted and was linked to the low knowledge level and non-testing for cervical cancer. Two subthemes emerged, that is, the educational approach and using cervical cancer survivors in health education.

5.2.5.1 Subtheme 1: Educational Approach

Participants suggested that the approach to health education should be delivered as a campaign on cervical cancer in the community rather than in hospitals or clinics. Others suggested a house-to-house based approach and use of existing community groups like churches, health extension workers to spread the message as part of the campaigns.

Maybe they have to campaign about the cervical cancer. (W₁)

Not at the hospital maybe in the location you gather all the women and you talk about this cancer. (W₁₃)

The health people can go from house to house to make them aware that there is cervical cancer problem. (W₁₀)

On the contrary, some participants favoured less of the approach of using posters suggested temporary tents instead. These participants were of the opinion that face-to-face presentations using pictures and pamphlets would yield awareness. Participants similarly suggested other platforms and ways of delivering health education including broadcasting services such as the radio. Social media platforms like WhatsApp were also proposed as a way of spreading educational messages on cervical cancer. The unavailability of information through different media platforms could be linked to the lack of knowledge.

Not poster but pitch a tent for the day and educate women. (W₉)

I do not hear about this on the radio, we must use the radio. (W₄)

They can prepare presentations and use different pictures like this have pamphlets.
(W₂)

They can get their numbers with the permission of that person and add to a WhatsApp group for cervical cancer awareness. (W₄)

The participants suggested that the women should receive health education on disease, its effects, prevention, and treatment. Some suggested highlighting the dangers of the disease and showing pictures of how dangerous the disease is as a way of encouraging women to test.

What must be taught is what kind of disease it is, how it affects people, how to prevent it and how to treat it. (W₁₅)

Then they can show the womb, the cervix itself, how it can be damaged maybe make it scary and make people feel like I don't want to have that disease. (W₁₇)

Another aspect highlighted was language, which is a barrier to getting and understanding health education on cervical cancer. English, which is mainly used, was said to be understood by a few people in the community. Participants proposed that authorities should write the educational information in multiple local languages to reach everyone.

Must translate to various languages as well as Afrikaans, Nama- Damara so that everyone is catered for. (W₁₈)

The people in this location do not understand English. (W₁₆)

Participants' thought that by obtaining educational information people will get to understand the need for testing and can be motivated to go for testing thereby improving screening uptake.

First is educational information on Pap smear women must know why they should test.
(W₂)

If we are given more information on Pap smear, then most women can go. (W₁₃)

5.2.5.2 Subtheme 2: Using cervical cancer survivors to assist with health education

Participants thought that using survivors of cervical cancer or women who have tested for cervical cancer as teachers could help encourage other women to test. Another participant suggested that if she see how grave the disease is it could motivate her to screen. Others believed that those who screened could share their experiences with women and motivate them for screening.

Because I really want to see how this disease look like. It might be that I see how serious it is and I test because am afraid of pain of disease and to die. (W₁)

They can get someone we have been tested and that person can talk out of own experience of what he or she went through and how it was done... (W₂)

Women acknowledged that they lacked knowledge about cervical cancer and needed health education from informed sources. Community based educational approaches were widely suggested. The women believed this could improve screening. Engaging cervical cancer survivors in health education was also suggested.

5.3 MEN'S COHORT

As stated, prior, in-depth interviews were conducted with 16 men.

5.3.1 Participants

Table 5.3 below illustrates the demographic characteristics of this sample.

Table 5. 3 Demographic characteristics of the men's cohort

Characteristics	Men's cohort (n=16)
Age (in years)	
Less than 20	0 (0%)
20-29	7 (43.8%)
30-39	6 (37.5%)
40-49	2 (12.5%)
➤ 50 years	1 (6.2%)
Tribe	
Nama- Damara	3 (18.8%)
Oshiwambo	5(31.3%)
Caprivian	0 (0%)
Kavango	3 (18.8%)
Otjiherero	0
Colored	3 (18.8%)
White Namibian	0
Tswana	0
Bushmen	0
Others	2 (12.5%)
Religion	
Catholic	8 (50%)
Orthodox	5 (31.3%)
Protestant	3 (18.8%)
Islam	0
Hindu	0
Marital status	
Never married	13 (81.2%)
Married	3 (18.8%)

Separated/divorced	0
Widow or widower	0
Level of education	
Never went to school	0
Basic education	6 (37.4%)
Elementary education	5 (31.3)
College diploma and above	5 (31.3%)

5.3.2 Themes arising from the data

Two (2) themes and six (6) subthemes arose from the data of the interviews conducted with sixteen (n=16) men and it is summarized in Table 5.4 below.

Table 5. 4 Themes and subthemes that emerged from men's cohort

SN	Theme	Subthemes
1.	Barriers related to the provision of cervical cancer screening services:	• Accessibility of screening services
		• Lack of a of community-based approach
		• The service provider
2.	The role of knowledge and support	• The knowledge of men
		• Women's lack of knowledge
		• The role of men in cervical cancer screening

5.3.3 Theme 1: Barriers related to the provision of screening services: "It's more like some women are far from the clinic."

This theme consists of 3 sub-themes namely, accessibility of screening services, lack of a community-based approach and the service provider.

5.3.3.1 Sub-theme 1: Accessibility of screening services

The men agreed that women do not test for cervical cancer because of accessibility issues. These included the limited time the services were provided, the distance to the

health facility and financial problems. The provision of services on certain days of the week limited women's access and women who stayed far from health facilities needed transport money, which they might not have.

I think the services should be done anytime of the week when a woman comes for Pap smear. (M₂)

It's more like some women are far from the clinic. (M₉)

The transport money for the hospital can be a problem. (M₁₂)

The male participants considered resources as another barrier to cervical cancer screening. The lack of equipment and the human resources were mentioned.

Also, the case of the equipment and the number of available health care workers. (M₁)

I think there should be a cervical wing opened at each and every clinic for cancer screening, we don't have that one currently. (M₂)

5.3.3.2 Sub-theme 2: Lack of a of community-based approach

The participants were of the opinion that the centralisation of services at health facilities rather than in the communities, was a barrier to the cervical cancer screening. Within the communities, the lack of a relationship between professionals at clinics and the community was expressed as another barrier. Health extension workers, who are always in the community and use community resources, could improve the uptake of screening.

If the service is brought near to the community it'll be much better. (M₁)

I think the community health workers people that are in the community, the health workers there, should also be involved in this because they know more about the people and the relationships with the community. (M₃)

5.3.3.3 Sub-theme 3: The service provider

The gender of the nurses providing the test services was also highlighted as a possible barrier to cervical cancer screening. The participants suggested that women would be more comfortable to be tested by a woman rather than a man. Some men even indicated that they would feel safe if women and not men tested the women they are

in relationships with. However, a few participants thought that gender did not matter, as the male nurses were professionals too and would do the test in a professional way.

It should be women not men who test because the test is confidential. (M₃)

Women are not comfortable with men around them, when it comes to their bodies. (M₆)

I will be more comfortable when she's going there it is a woman looking after her. (M₁₈)

I will be very comfortable because it's for your own best, because even that male nurse is trying to do their job. (M₁₄)

Some of the participants were of the opinion that the nurses' attitude and approach to the care of women during testing, prevented women from using screening opportunities. They assumed that nurses might not have time to provide women with information about the screening. The participants thought by providing explanations and accommodating the needs of the women, the nurses can improve their bad attitude.

A barrier could be the attitude of the nurses. (M₁₁)

When these tests are being done, they are not explained, and women are not given a choice to say they don't want the test, they just been told come tomorrow for the test and when she comes tomorrow the sister says lie on the bed, let's do it and that's it. (M₂)

In this theme, men expressed concern over accessibility of the cervical cancer screening service where the clinics are far from the community and the service is only offered on particular days. Therefore, participants were of the opinion that the centralisation of services was a barrier and there was need to make services community based. In addition, the participants were of the opinion that having male health providers for the screening procedure was a potential barrier and suggested that only females should carry out the screening procedure.

5.3.4 Theme 2: The role of knowledge and support. “The thing is I want to support, but I don’t have information.”

5.3.4.1 Sub-theme 1: The knowledge of men

The participants admitted they had little knowledge of cervical cancer and the screening. The majority of the men reported that they were hearing the word cervical cancer for the first time and had not been involved in any cervical cancer education previously. However, some participants knew cervical cancer is dangerous and can lead to death.

From the start I said, I do not know about it. (M₉)

I don't know anything about this disease cervical cancer. (M₆)

I know cervical cancer is some type of cancer that is applicable in women and is very deadly. (M₁)

Despite not knowing what cervical cancer was, most of the participants were of the opinion that cervical cancer targets women of childbearing age who are mainly sexually active. Some of the participants stated the specific ages of the women at risk.

...all women of childbearing age can be tested, whether they are sexually active or not, they can be tested. (M₂)

The older women can go for Pap smear, maybe from 50 maybe from 40 to 60, they can also go for the Pap smear. (M₇)

The participants lacked knowledge on the causes of cervical cancer; only one mentioned the HPV as the cause. Instead, they were of the opinion that sexual activity, the use of soap and even bacteria, could contribute to cervical cancer. Additionally, most of the participants knew the signs and symptoms of cervical cancer, some were even able to indicate that the cancer is asymptomatic at some point.

Cervical cancer is caused by sexual activity. (M₂)

...for hygiene it's the kind of soap they're using that maybe. (M₃)

...but then I think it can be caused by bacteria. (M₆)

Cancer is asymptomatic but you can have severe bleeding, severe pain and also formation of warts or something like that. (M₁)

Most of the men knew the name of the test and identified it as the Pap smear. They were also aware of the vaccine that can prevent cervical cancer.

OK, I know the Pap smear. It is done in females whereby they examine these females' intimate parts in order to detect if there are any cancer cells present. (M₁)

There is a vaccine available now but only to people who are not sexually active. (M₂)

5.3.4.2 Sub -theme 2: Women's lack of knowledge

Some of the participants described women's lack of knowledge about cervical cancer as a disease and cervical cancer screening as reasons why they are not screened. Some were of the opinion that people misinterpret the information and think that Pap smears were not for every woman. They believed that healthcare practitioners do not provide the necessary information. They believed that nurses merely tell the women to book and come for the test without sharing information about the procedure.

It is the lack of knowledge; they don't even know what HPV is. If you ask a woman on the street what is HPV, she does not have an idea ...people have lack of knowledge Pap smear itself. (M₂)

They don't get the knowledge, or the people don't tell them about the dangers of not doing a Pap smear. (M₁₄)

I think there's a misinterpretation people think that Pap smear is only meant for certain women. (M₂)

5.3.4.3 Sub-theme 3: The role of men in cervical cancer screening

The men agreed that they play a role in the decision women make about screening and not being supportive was a barrier to screening. Some considered themselves supportive and encouraged the women to be tested. Furthermore, most men highlighted that they are comfortable to advise their partners to go for cervical cancer screening. Others expressed the desire to support women in screening but lacked knowledge and further advised that men also need information to better perform their supportive role.

Probably I may need to also encourage more by being present and go with her to take such test. (M₄)

Us men also, we are supposed to encourage our women. Also, those who are not married, or children or parents they must encourage their daughters when they are going for family planning. (M₁₀)

The thing is I want to support, but I doesn't have information. If I am given clear information I can encourage my partner, female friends, mother, and sisters. (M₁₂)

To conclude, the participants reported that they had inadequate knowledge of cervical cancer and its screening. They believed that this hindered them to effectively support women in screening. Also, some men felt that women similarly lacked knowledge about the disease and the screening test thus they did not get tested. Lastly, men were of the opinion that they have a role to play in cervical cancer prevention, however they needed clear information about cervical cancer in order to effectively support women.

5.4 NURSES' COHORT

This cohort comprised of 19 participants

5.4.1 The participants

The characteristics of this sample are illustrated in table 5.5 below.

Table 5. 5 Demographic characteristics of the sample (n=19)

Characteristic	Nurses (n=19)
Gender	
Male	8 (42.1%)
Female	11 (57.9%)
Age (in years)	
Less than 20	0
20-29	3 (15.8%)
30-39	6 (31.6%)
40-49	6 (31.6%)
➤ 50 years	4 (21.0%)
Professional designation	
Enrolled Nurse	5 (26.3%)
Registered Nurse	14 (73.7%)
Duration of employment as a nurse at the clinic	
3-6 months	0
6-12 months	0
1-3 years	3 (15.8%)
3-5 years	3(15.8%)
5 or more years	13 (68.4%)
Nurses level of education	
Certificate	5 (26.3%)
Diploma	6 (31.6%)

Degree	2 (10.5%)
Post Graduate qualification	6 (31.6%)

5.4.2 Themes and subthemes emerging from the interviews

Two themes emerged from the in-depth interviews specifically; barriers to screening and strategies to improve screening utilisation. There were five (5) subthemes under the barriers theme and three (3) sub-themes under the theme on strategies to improve screening. The themes and subthemes are summarized in the table 5.6 below.

Table 5. 6 Themes and subthemes emerging from the data

Theme	Subtheme
Barriers to cervical cancer screening utilisation	• Knowledge of the cervical cancer disease • Knowledge of the cervical cancer screening procedure • Emotional barriers • Shortages in the health care delivery system • Woman's Demographics and knowledge
<i>Strategies to improve screening utilisation</i>	• Nurses Training • Health Education • Modifying the Health care delivery system

5.4.3 Theme 1: Barriers to cervical cancer screening. “It has a debilitating effect on the woman.”

This theme describes the barriers to screening identified by participants. The subthemes that emerged were knowledge of the cervical cancer disease, knowledge of the cervical cancer screening procedure, emotional barriers, shortages in the health care delivery system and woman's demographics and knowledge.

5.4.3.1 Sub-theme 1: Knowledge of cervical cancer as disease

The participants outlined different factors they believed to be causes of cervical cancer. A few participants clearly stated the HPV as the cause of cervical cancer. The majority mentioned risks such as number of sexual partners, condom use, having a partner with multiple partners and you or your partner having STIs. The use of traditional medicines, unhealthy diet, smoking, and idiopathic causes were also mentioned as other causes.

...use of traditional medicine in this time and era. (N₁₁)

An unhealthy diet like you are not eating fruits and veggies you are just following the same diet every day. (N₈)

Regarding prevention methods, the majority of the participants believed safe sex practices were an effective prevention measure against cervical cancer. These practices included, condom use, not having multiple partners, having a circumcised partner, not using herbs in the vagina and freedom from STIs, especially HIV. Some participants identified immunization against HPV as a prevention measure. Most of the participants also cited screening as a preventative measure a woman can take.

...for now, the government was talking about the vaccine but it's still not, yet it is stage where we can start offering. (N₉)

...on prevention to use a condom to avoid multiple and concurrent partners because that's where the human papillomavirus is being transmitted, they should also educate their partners on the issue of multiple partners... (N₉)

Cervical cancer can be prevented through diagnosis like Pap smear. (N₁₅)

Some participants described the disease in terms of its signs and symptoms. They mentioned a foul smell from cervical cancer patients as one of the symptoms. Others stated it was asymptomatic particularly with reference to pain, yet others simply referred to the debilitating effect of the disease without mentioning the specific clinical manifestations of the disease. In fact, one nurse was of the opinion that if nurses have an experience of nursing a cervical cancer patient and witnessed the level of discomfort the patient experienced, it would prompt nurses to engage in rigorous screening efforts.

Signs are mostly... from discharges, abdominal pains, I can say burning micturition, odour some type of odour, foul discharge from the female part. (N₁₅)

...it has a debilitating effect on the woman.... (N₅)

...yeah I think there is a link once you see how serious the disease is and how the patient presents in the advanced stage then as a nurse you be forced to advice other clients that they need to have the Pap smear and it will be easier for the nurses to explain how it presents. (N₇)

Some participants were of the opinion that cervical cancer could not be treated whilst most of the participants stated treatment could be offered. Some added that the early stages could be treated while in the advanced stages only palliative care could be offered. Most of the participants were aware that chemotherapy is a treatment option for the cancer patients, whilst a few cited radiotherapy and surgical intervention. One participant noted that some patients use traditional medicines to treat the disease while others mentioned “management” which they did not classify.

... It's not curable but it can be treated if diagnosed early. (N₂)

...when it comes to stage 3 and 4 chemotherapy will be the best, surgery won't do much to help. (N₁₁)

...Oh yeah radiotherapy as well. (N₇)

They are referred for further management in Windhoek. (N₁₄)

Most of the participants highlighted that the outcomes of cervical cancer were dependent on the disease progression at the time of diagnosis. Late diagnosis was associated with complications such as total hysterectomy, inability to have children and death.

... if it is early diagnosis of cancer it can be healed. (N₁)

When it happens to childbearing mothers sometimes, they might fail to conceive there is a possibility. (N₁₀)

5.4.3.2 Sub -theme 2: Knowledge of the cervical cancer screening procedure:

The participants identified the test by its name as the Pap smear test and explained that it is used to screen for cervical cancer. Similarly, they also highlighted that the

nurse had to prepare the woman for the Pap smear procedure. The preparation started with the booking an appointment to ensure when the woman come, there was a good chance of obtaining the correct specimen. This also involved informing the woman to avoid sex three (3) days prior to testing and to come at least three days after her menstruation. This information was part of the education provided to the patient. Information about STI screening was also provided beforehand to prepare the woman physically and psychologically for the test. Other participants noted that the woman must sign a consent form for the procedure.

We call it Pap smear, the Pap smear test. (N₄)

When clients come for booking, we tell them no sexual intercourse 3 to 5 days prior to the test. (N₅)

First, she must agree and... must sign that consent. (N₁)

Some participants reported that there were certain conditions in which the screening procedure cannot be done. The appropriate timing is required in order to collect the best specimen and minimise hurt in case of other illnesses particularly STI.

If there is any active STI it is not going to be done. (N₁₁)

...especially the people who were sexually active within past 3 days or if you are menstruating, we cannot do Pap smear. (N₆)

With regard to the screening procedure itself, the participants explained that nurses do the speculum examination and they should be conversant about the anatomical features of the normal cervix. Being able to identify the endocervical and ectocervical area was listed as a requirement for a successful screening test.

You also have to know the real cervix ok. (N₁₂)

We have to take endo-cervical that's why the Ministry also make sure they procure the brushes that enables it to be easy how to obtain the endo-cervical (N₉)

Some participants described the test as accurate and suggested that the sample should be carefully collected. Others noted that in some instances the nurse is unable to interpret the screening results and have to consult online explanations.

This test is an accurate test. (N₃)

...sometimes the results are also coming then I have to Google what is this result really saying. (N₁₂)

...and sometimes the quality of the specimen is poor when it reaches the laboratory is just thrown away. (N₇)

Competency to conduct the screening was also raised. Whilst some participants were confident that they are highly competent in performing the screening owing to training, others reported that they avoided the procedure, as they felt incompetent. Some expressed that there was shortage of trained nurses.

I'm comfortable, as a trained person. (N₇)

Some of us we don't have the skills to do the Pap smear I think that will also be a barrier. (N₁₆)

There are few members of staff trained in conducting the procedure. (N₁₁)

There was a concern that the enrolled nurses, who are described as sub-professionals, could not do the screening. It was not clear whether it was their choice or their scope of practice that prohibits this. However, some participants were confident that enrolled nurses are well prepared to carry out the procedure.

...and the other thing is I know that its only registered nurse that are doing Pap smear. (N₁₀)

Enrolled nurses are competent enough. (N₁₁)

5.4.3.3 Sub-theme 3: Emotional barriers.

The participants were of the opinion that fear was one of the barriers to cervical cancer screening. They were of the notion that women are afraid to discover they have cervical cancer and rather avoid screening. Lack of knowledge about the procedure also created fear as some woman thought that it is a painful operation. The participants attributed the pain to the fear of the speculum and the discomfort experienced during the procedure. However, some participants believed that the fear is not only based on hearsay but actual patient experiences of the procedure. The participants also perceived that nurses' fear of conducting the screening procedure was another a barrier to screening.

...also, there's fear on the side of the clients. They are afraid of discovering that they have cancer. (N₁₃)

...the fear that women have it's just from the hearsay stories from the locations saying the thing is painful without experiencing it. (N₃)

...the women are scared like me... it was just in-service training that I got. (N₁₂)

The participants furthermore expressed concern about invasion of privacy. The majority highlighted that women are uncomfortable to have the procedure done by male nurses. Women are shy and feel embarrassed especially with someone of opposite sex working with their private parts. The participants added that some women actually think male nurses would do the procedure to see the woman's genitals. Therefore, even if male nurses are competent, they avoid cervical screening and would only comply if there is no female nurse available, a situation that exists at PHC clinics. Additionally, the participants were concerned about the lack of privacy as only curtains are used to provide privacy and other people could enter the screening area during the procedure which leads to embarrassment and the invasion of privacy. The fact that woman had to undress in front of the nurse, was also regarded as a shameful experience.

...they're uncomfortable with male nurses because that's an intimate procedure. (N₅)

...even me myself as a male nurse it's very difficult to convince such type of a person. (N₁₇)

Privacy is lacking, sometimes you are busy with a person and someone just opens the door and comes in. (N₁₆)

The participants added that nurses' general behaviours and their attitudes towards cervical cancer screening often prevents women from utilizing screening opportunities. The participants asserted that all nurses were educated and trained to conduct the screening procedure and that nurses who did not perform it simply had a bad attitude towards the procedure. Some participants highlighted that nurses lacked motivation to screen the women and expressed their dismay with colleagues for their lack of motivation to screen women even if they received training. Furthermore, older nurses were accused of having a bad attitude and that women reporting for screening feared that they would screen them. Nurses were also accused of not valuing the procedure

and not concentrating when conducting the screening leading to worthless samples that hold no benefit for the woman screened.

It is only one nurse who is responsible for Pap smear and the others don't feel the importance of sending the patients for Pap smear. (N₈)

... women just don't want the old nurses... the old nurses tend to scold. (N₅)

Sometimes the quality of the specimen is poor when it reaches the laboratory it is just thrown because probably, we are rushing. (N₉)

Furthermore, participants suggested that all nurses should be involved in cervical cancer program and nurses should be sent for formal training at a workshop. Some were of the opinion of getting the female nurses to be screened themselves first, so that they in turn can screen others.

All nurses should be involved... (N₈)

We should offer the test to our staff members first... (N₈)

5.4.3.4 Sub-theme 4: Shortage of resources in the health care delivery system

This sub-theme describes the notion of the participants that the health care delivery system is not sufficiently equipped to run a successful cervical cancer screening program. Participants identified gaps in the system that they believed were barriers to screening which included shortages of speculums, size of speculum, type of speculum, supply chain of speculums, other shortages other than speculums, and shortage of nurses

Speculum shortage was the most commonly mentioned shortage by participants. In the absence of speculums patients were either turned away, referred to other clinics or the nurses borrowed the speculum from another facility. In some cases, it was not complete absence of speculum but no right size for that specific woman was available. Besides this, women were said to prefer the plastic speculums to the metal ones.

There's always a problem with the speculums. (N₁₀)

No, we try our best to look at the other facilities so that we can get it. (N₁)

There are the small sized people, you cannot use a bigger speculum. (N₉)

.... women complain about the speculums because of their nature – metal, they prefer the plastic disposable ones. (N₇)

Difficulties in the replenishing of speculums from the Central Sterilise Services Department (CSSD) to the relevant PHC clinic were underscored, especially delays and incomplete ordered items. Inefficiencies were also emphasised with orders being wrongly distributed to other clinics and insufficient speculums or incorrectly sized speculums being sent in some instances. Nevertheless, a few participants contended that the facilities have enough speculums to effectively run cervical cancer screening adding that the state facilities also have the plastic disposable speculums.

Sometimes when CSSD is sending the speculums that are ordered by our clinic to another clinic. (N₁₂)

It is running well we also have disposables speculums. (N₁₂)

Some participants attributed these challenges to centralisation of the sterilising service in the district. Sterilization of all speculums from the district's PHC clinics is done at the district hospital CSSD and instrument requests from the various clinics and departments appeared to overwhelm the CSSD. Sometimes the CSSD autoclaves were out of order for lengthy periods with instruments having to be transported for sterilization to other districts or regions several kilometres away.

...but now all these facilities we are ordering from one place this is where the problem comes in. (N₂)

Some participants felt that the hospital maternity ward was prioritized ahead of the PHC clinics when it came to distribution of speculums. However, other participants acknowledged that the CSSD distributed available speculums according to need and allocated to PHC clinics comparably to the hospital. Actually, some participants were of the opinion that the problem arose from delays by PHC nurses to return speculums for sterilisation at the CSSD after conducting Pap smear procedures with the resultant blame being shifted to the CSSD nurses.

CSSD balance because maternity they get what they should get and PHC also get... (N₉)

...after doing Pap smear nurses don't send back the things to CCSD so they will have the unsterilized speculums. (N₉)

Some participants noted shortages of other consumables other than speculums such as cervical brushes, liquid base, and on some occasions the room to perform the procedure as impediments.

Brushes can run out of stock and the laboratory sometimes do not have. (N₈)

... Nowadays we are now using liquid base and we are running out of that. (N₈)

But for a long time, there was no space, the space was also a problem. (N₁)

Participants went on to propose on how the current shortages could be addressed. Some recommended that the CSSD should increase the number of speculums they have for distribution. Others advised that the CSSD needed to sterilize more speculums so as to meet the current demand or alternatively supplement with disposable ones. Still, others were of the opinion that there was need to decentralize sterilization of equipment, specifically speculums to PHC clinics as they had sufficient capability to do so.

The Ministry needs to pull up their socks, this program needs money. (N₁₇)

...each clinic should have its own autoclave in the clinic... (N₁₃)

Shortage of staff was a great concern. Some participants stated that there are days when there is only one nurse in the clinic, and she cannot do cervical cancer screening. It appears nurses are hesitant to invite women for screening as they are worried if women do turn up in numbers it will add to the already high workload. Others highlighted they were already burnt out and were forced to prioritise certain services such as post-natal instead. However, some participants contended that the available nurses were adequate to effectively run all services including cervical cancer screening. They perceived that the workload was sometimes relatively low, but the nurses were simply not committed to screening women.

There are times when you are alone here so can cannot perform the Pap smear. (N₁₅)

Work overload as well you feel like screaming, you're supposed to see other patients and to do post-natal. (N₁₇)

Yes, we prioritise and do what is more important and urgent. (N₃)

Current statistics show that nurses no longer have a lot of work these days. (N₁₈)

5.4.3.5 Sub-theme 5: Woman's Demographics and knowledge about cervical cancer

The participants highlighted the women's demographic characteristics that were barriers to screening. These included age, cultural beliefs, and woman's knowledge on cervical cancer.

The participants highlighted that there were few young women (under 45 years old) who come for screening with majority those attending screening being older women aged over 45 years. Participants attributed the apathy in screening of young women to different factors such as that young women generally perceive the screening procedure to be uncomfortable, believe cancers are only for geriatric people and the nature of the screening procedures - the non-parous women were uneasy about the procedure in comparison to parous women.

It is the elderly those who are 60 years who are coming for Pap smear the young ones they don't want to come. (N₇)

I think also generally people, believe that cancer, cervical cancer is a disease for the older woman like the old age. (N₁₈)

...to a woman who did not give birth yet, to say you just come we need to insert a speculum and take a swab most of the ladies they are very. (N₁₇)

Cultural beliefs were also identified as barriers to screening. Participants highlighted that some women believe they are immune to cervical cancer because of the traditional therapies they used and thus did not see the need for screening. Similarly, it was indicated that some proclaimed that even if they develop cervical cancer they could still get treated by traditional healers. Some of the participants argued that instead of helping the women, the traditional therapies were actually causing cervical cancer. Some participants also believed that cervical cancer was linked with women from certain tribes. The participants believe this challenge needs intersectional

collaboration of health officials, community leaders and traditional healers was proposed.

Some of the traditional people insert (traditional therapies) in their private parts that are causing cancer. (N₁₇)

... Some women of certain tribes say they don't suffer from this kind. (N₁₇)

... Intersectional collaboration we need to involve these traditional healers... (N₁₇)

The knowledge a woman possesses about cervical cancer and its prevention was considered a determinant factor on her screening practice. The participants were divided in terms of knowledge. Some believed women lack knowledge on a number of issues related to cervical cancer and screening resulting in low screening, whilst others believed that patients are well informed about cervical cancer.

Lack of knowledge, if you don't know something why would you want to come and test for it. (N₅)

Lack of information on the time the clinics are providing pap smears like at Keetmanshoop clinic it's only once a week only Fridays. (N₈)

We are giving health education, so I think all the women know. (N₁)

In addition, participants argued that the lack of knowledge in the women was as a result of lack of awareness or inadequate health education contending that informed women would come requesting the test. Others argued that, participants lacked personnel experiences with a cervical cancer patient consequently they do not regard it as crucial.

We are doing very little to sensitise our community with regard to Pap smear. (N₁₁)

If the people of the community know the importance, they will come asking at clinic. (N₁₃)

Sometimes if the woman has never come across a patient having cervical cancer it's something minor to them. (N₁₇)

Additionally, some participants described messages circulating among women, which are incorrect and often mere myths that misinform women and prevent them from screening. The most popularly mentioned myth was that some women believe that if

they are screened with Pap-smear test they can become pregnant. Another belief was that Pap smear tests for HIV. It was also noted that some women think cervical cancer tests are only for the married people, the procedure uses a big spoon in your vagina and the Pap smear could make you paralysed.

Once Pap smear is done it's like you're opening the cervix and the woman will get pregnant. (N₇)

Some women do not know the difference of HIV testing and Pap smear. (N₆)

Some are saying Pap smear is for married women with children. (N₉)

They say it's a big spoon we put in in the vagina and women can't come because of that. (N₆)

They say you get paralysed or something. (N₁₂)

To summarize, participants highlighted on a number of barriers they believed were hampering screening services. Knowledge of the cervical cancer disease and the cervical cancer screening procedure was presumed as inadequate and a barrier. Emotional barriers such as fear and shortages in the health care delivery system particularly speculums were other barriers identified. Woman's demographics such as young age and low academic status were also identified as barriers.

5.4.4 Theme 2: Strategies suggested to improve screening utilisation.

“Explain to the people in every language.”

This theme describes the possible strategies suggested in order to improve screening utilisation. There were three subthemes: health education, nurses training and modifying the health care delivery system.

5.4.4.1 Sub-theme 1: Health education

This sub-theme describes the current gaps in health education, available opportunities and methods that can be employed to improve women's knowledge of cervical cancer.

The participants agreed that not enough was being done to educate the community on cervical cancer and the importance of screening, although there was room to improve. Participants believed that women would listen if nurses would give health

talks. Participants mentioned a number of cadres who could be involved in the health education of the community. These included nurses, HEWs, health care consumers (community members volunteering) and cervical cancer survivors.

Community sensitization should be done, I think it's not being done but we should, and we must make sure that the resources are available. (N₁₁)

It's due to lack of information that they don't go. We (nurses) must provide more health education in the community, we can also use Health Extension Workers. (N₁₀)

The consumer who is working here always give health education before they patients enter the (consulting) room. (N₁)

Maybe if the survivors, could be recorded and videos are taken where they explain experiences with cervical cancer. (N₇)

Moreover, some participants were of the opinion that all stakeholders in community health should take responsibility for educating the community and raising awareness on cervical cancer and the need for screening.

Not only PHC clinics should be involved in Pap smear but the entire system. (N₁₄)

The participants believed community-based strategies have the potential to reach bigger audiences than facility-based education. The HEWs were considered to be the most suitable cadre of health practitioner to render these services as they already work in the community. House to house education was also preferred. Another method suggested was use of the Ministry of Health's mobile unit to educate the community. Community meetings were the third strategy proposed including existing women's groups.

It can be done anywhere house to house via Health Extension workers. (N₃)

The truck maybe can go at the big shops, try to put it on the loudspeaker. (N₁₅)

Maybe if there are community meetings then the nurses talk about Pap smear also. (N₈)

In the community, we have women groups, can make use of them. (N₉)

Another approach proposed was incorporating cervical cancer education into the existing school health programs. Participants thought that it was high time cervical

cancer was prioritized similarly to the attention HIV was receiving. Lastly, another opportunity identified by the participants was workplaces as part of existing wellness programs.

Through school health programs. (N₇)

Cervical cancer has never been so important, it should be included in educational curriculum. (N₁₇)

And workplaces just to spread the information on the importance of screening for cervical cancer. (N₁₆)

Besides community-based education, the participants also identified various opportunities within healthcare facilities where service providers could provide health education on cervical cancer. For instance, nurses can educate the women during screening or history-taking at PHC, in the waiting area, ANC clinics and female wards

There in your own room (consultation) where you are screening the patients, you can start giving health education on Pap smear. (N₂)

We can talk with the women every day while they are in waiting area. (N₁)

Especially in antenatal care we should educate on Pap smear. (N₉)

Female wards, that is where most women are, educate them also. (N₁₄)

The participants considered the media as more effective than one on one health education sessions. To justify their opinions, they cited examples of when media campaigns have reaped positive results. Media such as television, radio and WhatsApp were suggested as they have larger audiences.

The major impact is to use the media the way we advertise cholera, the way we advertise HIV. (N₁₇)

Radio stations, local ones like Karas FM, not other ones because people listen to the local radio. (N₇)

We should also put it in our WhatsApp group, on our status, and then they ask questions in the WhatsApp group, then we try to answer. (N₂)

People value it when they see it during the news hour, when everyone is glued on the television. (N₁₇)

Some participants thought that the printed media could capture women's attention. Education and communication (I.E.C) materials were repeatedly mentioned by most participants especially pamphlets, flyers, and posters more so when in local languages. However, some participants were worried about the costs involved particularly in advertising and printing, thus suggested on the need to source funds from non-governmental organisations

In the newspaper and women's magazines, that is where we need to put up. (N₆)

Yeah, we need more pamphlets, flyers and posters in the local language talking about cervical cancer. (N₇)

Explain to the people in every language. (N₁₀)

I'm concerned about money; we need non-governmental organisations. (N₁₇)

Concerning the content of the health education, participants mentioned that women need to be educated on cervical cancer as a disease, followed by the importance of screening and the Pap smear procedure using visual aids such as the real speculum. Furthermore, some participants stated that health education should inform women about causes, the signs and symptoms of the disease and prevention strategies especially safe sex to avoid acquiring of the HPV.

Must be health education on cervical cancer. (N₁)

And the procedure how it works, and all those questions should be addressed about the procedure, also the signs and symptoms. (N₇)

We also need to educate them on prevention to use a condom, avoid multiple and concurrent partners because of Human Papillomavirus transmission. (N₉)

Furthermore, the participants believed that health education sessions should correct all incorrect information and myths that women have pertaining to cervical cancer and screening. Another factor that participants wanted as part of the educational messages was access to the service, specifically the days of the week when screening can be done and to emphasize that it is free of charge.

So, we as nurses we need to correct all that myths. (N₂)

Some people don't know when the Pap smear is done so tell them the dates and times. (N₃)

Must tell them no fee is asked. (N₁₀)

5.4.4.2 Sub-theme 2: Nurses training on the cervical cancer screening procedure

The participants highlighted that training was needed and should include updating nurses on recent developments in the field of cervical cancer. Some participants proposed that at least one nurse per facility be trained while others noted that training on the procedure was required by both the newly graduated nurses and the rest of the nurses. Still others proposed that the nursing programs should include the cervical cancer screening procedure so that upon graduation, graduates would be competent. Furthermore, the training should have comprehensive theoretical input to equip nurses with correct information to answer all questions.

Nurses need training, they really need in service training on this. (N₁₇)

Make sure that each facility at least has a trained person. (N₁₈)

The curriculum should be that new nurses coming from school are competent to perform this procedure. (N₁₃)

Empowering the nurses with more information about Pap smear so that they are comfortable talking about it and answer questions. (N₁₄)

Regarding the type of training, participants suggested in service training and workshop-based training. Other participants stated that they were actually teaching other nurses through facility based on job training. In terms of the duration of the training, some participants proposed that the training for Pap smear needs at least a 3-days workshop while others thought just a short time of 3-4 hours was enough.

In-service training should be done on spot, in -house, you don't need to go somewhere to be trained because it's just a simple procedure. (N₁₃)

There was no Pap smear being done when I came, I gave in-service training and she's the one now doing the Pap smear. (N₈)

We need to go for workshops, come back and do the Pap smears. (N₂)

I think it should be 3 days. (N₇)

It doesn't even take long maybe 3-4 hours. (N₁₆)

5.4.4.3 Sub-theme 3: Modifying the Health care delivery system

This subtheme discusses modifications to the health care delivery system suggested by participants in order to improve screening utilisation. These included need for engagement of administrators and healthcare managers, modification of current health passports, need for a cervical cancer focal person, and increasing days of the week screening is offered. In addition, some participants suggested monthly screening targets for nurses, creating a friendly environment in the clinics and excluding cervical cancer from integration of primary healthcare services.

Most participants stressed the need for commitment of administrators and healthcare managers to the cervical cancer screening program. Some participants believed that major decisions influencing the success of the program are made through the health officers in charge. Some of the crucial decision makers mentioned were the primary health care supervisor and other administrators who decide on trainings. Some of the activities that management was expected to ascertain was training of nurses, resources availability and viable staff distribution so that no clinic is without a competent nurse to offer screening at any time.

Maybe if the Administrators could see the importance because the final decision lies with them, maybe we should show them statistics. (N₇)

Each program like TB or HIV there is focal person but in cervical cancer there's no focal person so they must appoint a focal person. (N₇)

A revision of the current health passports where all patient consultations are entered so that it includes cervical cancer screening was also among proposed changes. This would serve as a reminder to the health care practitioners to offer the screening test. Some suggested sterner control measures on the number of women each nurse screens in a given period.

If the screening test is included in our patients care booklet it will help women. (N₁₄)

Each healthcare worker should be given a target to meet on women screened for cervical cancer. (N₁₁)

The participants highlighted a number of factors related to service access which they believed were barriers to screening particularly, distance to clinic and days of the week service is offered. Some suggested that community outreaches to remote areas would improve screening. In addition, some PHC clinics offered screening only once weekly and the participants suggested the need to increase number of days screening is offered.

The clients are travelling from so far to come for the test. (N₁₆)

We need to take the service to the women through community outreaches. (N₂)

They schedule their appointments only on Friday, instead it must be done every day. (N₁₆)

The participants also mentioned that the clinics were using an integrated care delivery approach. However, the participants were of the opinion that the integration approach forces nurses to prioritize services at the expense of those deemed not urgent such as cervical cancer screening. Some participants contended that the integration of services was actually a barrier to screening and pointed out that a separate room for the service with an assigned nurse would realise better results than integration as Pap smears require women to undress and it should not be done in a room which offers other services.

I am busy with ART patients and general patients so I can't come back and do Pap smear here. (N₁₂)

I think for the Pap smear it shouldn't be integrated because the lady has to undress herself. I think there must also be a separate room for Pap smear run by an assigned nurse. (N₁₀)

In contrast, some participants supported integration and advocated that cervical cancer screening should be incorporated into integration. One participant stated that at their clinic all equipment and resources needed for screening is available and therefore integration of cervical cancer screening is feasible.

I think it should be integrated. (N₈)

It is should be integrated because in all the rooms there is examination bed and all that nurses need is to do Pap smear. (N₉)

Additionally, the participants highlighted that although not compulsory, the MoHSS is recommending HIV testing to all women undergoing cervical cancer screening. Some were of the opinion that women who are not ready for HIV testing may find this recommendation as a barrier. Conversely, they suggested that it should always be made explicitly clear that the HIV test is a recommendation and not compulsory. Some considered the general set up of the PHC clinics unfriendly to women in particular young people. The participant acknowledged that the NAPPA (Namibia Planned Parenthood Association) clinic was a good example of a patient-friendly clinic, especially for young people.

Probably the HIV testing, we must inform women that it is not forced, they can still do Pap smear even if they don't test for HIV. (N₁₈)

Like if you take NAPPA clinic that one is strictly for young people and they (women) like it. We must have a nice for corner for females. (N₁₂)

Overall, participants suggested some strategies that could be employed to improve screening uptake. Health education was widely proposed, and participants identified available opportunities for educating women namely health facility and community-based methods. In addition, training of nurses on cervical cancer was identified as a need. Participants also suggested some modifications to the healthcare delivery system in an effort improve screening utilisation such as leadership engagement and editing of the current health passport.

5.5 CLINIC AUDITS

To comprehensively address the objective of identifying barriers to screening, clinic audits were done. Two audits were carried out, the first one assessed the availability of resources in order to act and the second one was to ensure the clinics were ready before the intervention was implemented.

5.5.1 First Round of clinic audits

Three urban clinics were audited during the week of 6-10 May 2019 using the clinic audit tool adopted from Sibiya (2012). The following tables summarize the findings from the pre-intervention assessment.

Table 5. 7 Clinic audit of clinic 1

Code of Clinic: 1

First Clinic Audit

Equipment/ resources	yes / n/a	no /n/a	quantity/ n/a	Comments including adequacy or condition and methods of sterilisation where applicable
Number of consulting rooms available for CC screening	√		1	Also serves as multipurpose, EPI and emergency room
Curtains/ Screens		√	0	Lock with a key
Drugs for treatment		√	0	If needed referred to pharmacy
Cusco vaginal speculum	√		5	2 large and 3 small size
Endocervical brushes	√		20	
Liquid base bottles	√		23	Use liquid based bottles instead
Cytological fixative	N/A			Not necessary with liquid based

Cytology laboratory forms	√		12	
Water for lubricating speculum	√		0	Use tap water
Paper hand towel for draping		√	0	Out of stock at pharmacy
Angle poise lamp/torch	√		1	
Couch	√		1	
Sheets/ Draw sheets	√		0	
Linen Protector		√	0	Out of stock
Bucket with disinfectant		√	1	Throwing into the sink used instruments
Gloves	√		1 box	
Steriliser/Autoclave		√	0	Sterilised at central place at hospital
Registered Nurses available	√		3	
Enrolled Nurses available	√		5	

On the day the clinic audit, the clinic was unable to offer screening to women due to absence of linen (draw sheets) for covering the examination couch. However, in the preceding week there was evidence of screening being done at the clinic. Other commodities not available were buckets for soapy water to clean equipment, sterile water for lubrication of the speculum, and hand towels. The screening room also

lacked curtains, which is a requirement for privacy of woman during examination. Although the clinic had a total of eight (8) nurses working at the clinic, three (3) nurses reported to be comfortable carrying out the Pap smear procedure and only one of those were actually doing Pap smears.

Table 5. 8 Clinic audit of clinic 2

Code of Clinic: 2

First Clinic Audit

Equipment/ resources	yes / n/a	no /n/a	Quantity/ n/a	Comments including adequacy or condition and methods of sterilisation where applicable
Number of consulting rooms available for CC screening		√	1	Was awaiting for PEPFAR renovation for VIA roll out
Curtains/ Screens		√	0	Lock with a key
Drugs for treatment		√	0	If needed referred to pharmacy
Cusco vaginal speculum		√	0	Awaited from CSSD
Endocervical brushes		√	0	Out of stock
Liquid base bottles	√		20	Use liquid based bottles instead
Cytological fixative	N/A			Not necessary with liquid based

Cytology laboratory forms	√		30	
Water for lubricating speculum	√		Running tape	
Paper hand towel for draping		√	0	Out of stock at pharmacy
Angle poise lamp/ torch	√		1	
Couch	√		1	
Sheets/ Draw sheets	√		2	
Linen Protector		√	0	Out of stock
Bucket with disinfectant	√		1	Throwing into the sink used instruments
Gloves	√		1 box	
Steriliser/Autoclave		√	0	Sterilised at central place at hospital
Registered Nurses available	√		4	
Enrolled Nurses available	√		5	

Similarly, this clinic could not offer screening services as the screening room was under renovation by PEPFAR in preparation for the roll out of VIA. Besides the major renovations, the site lacked crucial equipment in particular, speculums, endocervical brushes, paper towels and linen savers. In addition, of the nine (9) nurses appointed at the clinic, three (3) conducted Pap smears.

Table 5. 9 Clinic audit of Clinic 3

Code of Clinic: 3

First Clinic Audit

Equipment/ resources	yes / n/a	no /n/a	Quantity/ n/a	Comments including adequacy or condition and methods of sterilisation where applicable
Number of consulting rooms available for CC screening	√		1	Was awaiting PEPFAR renovation for VIA roll out
Curtains/ Screens	√		0	Lock with a key
Drugs for treatment		√	0	If needed referred to pharmacy
Cusco vaginal speculum		√	0	Awaited from CSSD
Endocervical brushes	√		35	Out of stock
Liquid base bottles	√		25	Use liquid based bottles instead
Cytological fixative	N/A		0	Not necessary with liquid based
Cytology laboratory forms	√		11	
Water for lubricating speculum	√		0	

Paper hand towel for draping		√	0	Out of stock at pharmacy
Angle poise lamp/ torch	√		1	
Couch	√		1	
Sheets/ Draw sheets	√		2	
Linen Protector		√	0	Out of stock
Bucket with disinfectant	√		0	Throwing into the sink used instruments
Gloves	√		1 box	
Steriliser/Autoclave		√	0	Sterilised at central place at hospital
Registered Nurses available	√		1	
Enrolled Nurses available	√		1	

At the time of the clinic audit the clinic was offering cervical cancer screening. However, the screening room lacked the following items specifically speculums, paper towels and linen savers. However, the screening room is next to the CSSD room, therefore the nurses said speculums could be considered available as they were in the CSSD.

5.5.2 Second Clinic Audits (Before Educational Intervention testing)

In August 2019, the week the educational intervention was starting, two of the 3 urban clinics were re-audited. Clinic code 1 was not re-audited because when VIA was rolled out at the two other urban clinics, MoHSS district management agreed that clinic 1 will

not be offering screening until VIA is rolled out at this facility. As such, since it was not going to be screening it was not audited. This second audit aimed to ensure that the clinics would be ready for screening should the educational intervention create such a demand.

Table 5. 10 Second clinical audit Clinic 2

Clinic Code 2

Re-audit Pre-intervention

Requirement	Available	Not available	Comment
1. Designated examination room	√ 1		Renovated by PEPFAR
2. Examination table, preferably with stirrups	√		Provided by PEPFAR
3. Stool	√ 1		Provided by MoHSS
4. A halogen lamp (bright light)	√ 1		Provided by PEPFAR
Instrument tray with the following			
5. Sterile *bivalved (not Sims) speculums (large and medium)	12 metal and 100 disposable		Metals from MoHSS Disposable from PEPFAR
6. Clean disposable examination gloves	2 boxes		Provided by MoHSS
7. Clean cotton swabs	2 packs		Provided by MoHSS
8. Sterile-ring or pickup forceps	20		Provided by MoHSS
9. Small sterile metal dish (gallipot)	12		Provided by MoHSS
10. Table vinegar, or 3%–5% dilute acetic acid	4 litres		Provided by PEPFAR
11. Watch or clock	1		Provided by PEPFAR
12. Prescription paper	Use patient passport		Provided by MoHSS
13. Paper towels	1 pack		Provided by MoHSS
14. A plastic container with soapy water	2 buckets		Provided by PEPFAR
Optional			
i. If available Camera that may be connected to computer or TV	1		One camera per district
ii. Large cloth or blanket	4 sheets		Provided by MoHSS
iii. Large screen	1, Curtain available		Provided by MoHSS
iv. HIV testing kit	2 boxes		Provided by MoHSS
v. A small bed side stool	1		Provided by MoHSS

Table 5. 11 Second clinical audit Clinic 2

Clinic Code 3

Re-audit Pre-intervention

Requirement	Available	Not available	Comment
1. Designated examination room	√ 1		Renovated by PEPFAR
2. Examination table, preferably with stirrups	√		Provided by PEPFAR
3. Stool	√ 1 chair		Provided by MoHSS
4. A halogen lamp (bright light)	√ 1		Provided by PEPFAR
Instrument tray with the following			
5. Sterile *bi-valved (not Sims) speculums (large and medium)	10 metal and 50 disposable		Metals from MoHSS Disposable from PEPFAR
6. Clean disposable examination gloves	3 boxes		Provided by MoHSS
7. Clean cotton swabs	1 pack		Provided by MoHSS
8. Sterile-ring or pickup forceps	10		Provided by MoHSS
9. Small sterile metal dish (gallipot)	10		Provided by MoHSS
10. Table vinegar, or 3%–5% dilute acetic acid	2 litres		Provided by PEPFAR
11. Watch or clock	1		Provided by PEPFAR
12. Prescription paper	Use patient passport		Provided by MoHSS
13. Paper towels	1 pack		Provided by MoHSS
14. A plastic container with soapy water	2 buckets		Provided by PEPFAR
Optional			
i. If available Camera that may be connected to computer or TV	0		One camera per district
ii. Large cloth or blanket	2 sheets		Provided by MoHSS

iii.	Large screen	Curtain available		Provided by MoHSS
iv.	HIV testing kit	2 boxes		Provided by MoHSS
v.	A small bed side stool	1		Provided by MoHSS

5.5.3 Summary of the Clinic Audits

The tables above show that clinics readiness to offer cervical cancer improved from the first audit to the second and they were ready to screen with the commencement of the intervention.

5.6 CONCLUSION

This chapter outlined the findings of the research objective number two by investigating barriers to screening at the study site and possible strategies to improve screening. In-depth interviews with women, men and nurses yielded three, two and three themes, respectively. The two rounds of clinic audits assessed the clinic readiness to offer screening services. The readiness was improved on the second audit and two clinics were ready. All these were designed as groundwork for testing an intervention to improve screening. The next chapter (Chapter 6) describes the implementation and outcomes of the community based educational intervention.

CHAPTER 6: FINDINGS OF PHASE 3 OF THE STUDY

6.1 INTRODUCTION

The in-depth interviews with women, men, and nurses together with the clinic audits culminated into the development and pilot testing of an intervention, a community based educational program, to improve cervical cancer screening utilisation. The primary outcome was the absolute numbers of women screened. The secondary outcomes were knowledge, attitude and practices of women, and the clinic's improvement of its readiness to offer screening services. The results of the readiness were presented in the previous chapter, Chapter 5. This chapter will present the implementation of the steps of intervention and the outcomes. For clarity, the process is depicted in figure 6.1 below



Figure 6. 1 The intervention process

6.2 PREPARING THE HEALTH EXTENSION WORKERS

An education and training programme on cervical cancer and screening was offered over a two-day period at the Keetmanshoop Regional Health Training Centre on 15 and 16 May 2019 to Health Extension Workers (HEW). This course was aimed at equipping Health Extension Workers with information about cervical cancer and its screening to enable them to provide health education in the community and mobilise women for the community based educational program.

6.2.1 Education and Training Objectives

The following objectives were posed:

By the end of the course, attendees were expected to be able to:

- i. Describe how big the problem of cervical cancer is in Namibia
- ii. Describe what is cervical cancer
- iii. Describe causes and risks of cervical cancer
- iv. Describe the prevention methods particularly testing in Keetmanshoop.
- v. Implement the health education as an intervention to increase screening uptake

6.2.2 The education and training programme

A total of 21 HEWs (n=21), 6 males and 15 females, from the Keetmanshoop Health District attended the training. The training program, pre-test and post-test marks obtained by the attendees, as well as the evaluation of the training programme are attached as Appendix 15 and 16 accordingly. The picture of attendees of the education and training program is found in the gallery section with their permission. An attendance register was also kept and available on request.

An attendance register was kept, and it is available on request. The training needs of the HEW education and training were addressed as follows; meals were provided by MoHSS Keetmanshoop Hospital PHC office whilst a Wits University grant enabled provision of training material, printing, and stationery including pens, and files.

The program started at 8h00 with registration and finished both days at 17h00. Both days had a thirty-minute break, one in the morning and another in the afternoon, as well as a one hour lunch time. Didactic lectures using PowerPoint presentations, discussions, question and answer, role play, group work and clinical demonstration of the procedure of Pap smear were used. The main facilitator was the researcher supported by four lectures from the Keetmanshoop Regional Health Training centre. The training centre's administrative staff assisted with venue preparation, tea break and lunch servings to the attendees.

6.2.3 Knowledge assessment

On the first day, attendees were requested to write a pre-course test consisting of 30 questions. The questionnaire is attached as Appendix 13. The questionnaire was compiled with assistance of the Namibia Cervical Cancer Program (CeCaP) technical advisor and lecturer colleagues at the Keetmanshoop Regional Health Training

Centre. The assessment focussed on the epidemiology of cervical cancer, the causes, HPV, risk factors, prevention of cervical cancer with special attention to secondary prevention through screening. At the end of the education and training programme, the attendees wrote the same assessment as a post-test. After the pre and post-test assessments were marked, the difference in marks was calculated. Most attendees' marks improved between 10% and 60%. However, one participant scored less in the post-test in comparison to the pre-test. The results of the pre and post-test are presented in Figure 6.1 below.

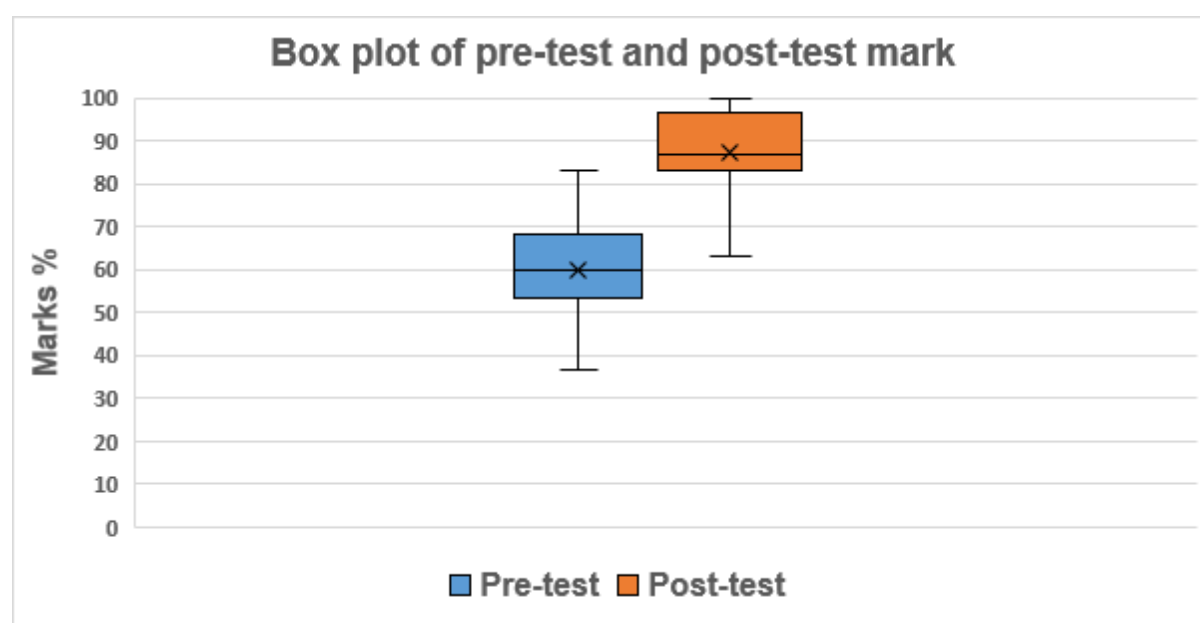


Figure 6. 2 Pre and Post-test marks of attendees

As seen in Figure 6.1, higher marks were obtained after the education and training programme. The mean knowledge for the post-test (M=87.14%, SD=9.40%) was higher than mean knowledge obtained during the pre-test (M=59.84%, SD=12.08%). The training and education program increased the mark by mean of 27.30%; (95% CI: 13.46- 41.15). The attendees' marks in the pre and post-test are shown in table 6.1 below.

Table 6. 1 Attendees marks in the pre and post-test marks

Question Number	Question	Attendees who answered	Attendees who answered

		correctly in Pre-test	correctly in Post-test
1.	Cervical cancer is the number..... common cancer in women in Namibia.	9.52%	85.72%
2.	Cervical cancer deaths are more common in which group of women	33.33%	100.00%
3.	Which of the following is correct about cervical cancer cases in Namibia?	47.62%	85.72%
4.	Which of the following is true about HPV and HIV?	90.48%	95.24%
5.	Which of the following is correct about the cervix?	100.00%	95.24%
6.	Which of the following is the cause of cervical cancer?	95.24%	100.00%
7.	Which of the following is correct about the HPV?	14.29%	95.24%
8.	Cervical cancer develops through how many steps?	52.39%	85.72%
9.	All of the following are risk factors for developing cervical cancer <i>except</i> ?	28.58%	80.96%
10.	All of the following are signs and symptoms of cervical cancer <i>except</i> ?	85.72%	76.20%
11.	Cervical cancer prevention is in how many levels	57.14%	71.43%
12.	The first level called primary prevention is about preventing the woman from contracting	14.29%	61.90%
13.	Second level is about for cervical cancer	4.76%	57.14%
14.	The third level is about the cervical cancer disease when it has been diagnosed.	42.86%	71.43%

15.	HPV is the most effective and reliable primary prevention technique	0.00%	42.86%
16.	The test currently used in Keetmanshoop to test for cervical cancer is called	57.17%	90.48%
17.	Is someone is found with cervical cancer; Drs will decide the appropriate treatment method. It can be Surgery (operation) or Radiotherapy (burning with waves) or or a combination.	9.52%	90.48%
18.	In Keetmanshoop, where can a woman be tested for cervical cancer	95.24%	100.00%
19.	Currently the clinics perform cervical cancer tests on which day of the week	80.95%	100.00%
20.	Currently the clinics do the cervical cancer tests on which day of the week	19.05%	90.48%
21.	HIV negative women who are aged between 25-49 years should have a Pap smear once in every years	14.29%	85.71%
22.	When a nurse does Pap smear on a woman, they use a smooth to rub the mouth of the womb to collect cells which are send to the lab	23.81%	80.95%
23.	The nurses cut some piece of cervix for testing cervical cancer	85.72%	100.00%
24.	Pap smear is only for people who are HIV positive	95.24%	100.00%
25.	Pap smear is only for old women	95.24%	100.00%
26.	Pap smear makes you pregnant	95.24%	100.00%
27.	Pap smear can make you paralysed	90.48%	100.00%

28.	It's done by nurse who just wants to see private parts of the women	95.24%	100.00%
29.	It's more painful than labour or delivering a baby	90.48%	100.00%
30.	Nurses can leave instruments in you	95.24%	100.00%

6.2.4 The evaluation of the education and training programme

The attendees (n=21) were requested to evaluate the programme. An evaluation form (Appendix 14), adapted from Ministry of Health and Social Services for the evaluation of workshops, was used. Table 6.2 below summarizes the attendees' responses on evaluation of the education and training program results.

Table 6. 2 Attendees responses on evaluation of the education and training program (n=21)

Rating the quality:	1 Not Applicable	2 Poor	3 Fair	4 Good	5 Very Good	6 Excellent
a. Course Venue			4.76%	9.52%	52.38%	28.57%
b. PowerPoint Slides				4.76%	61.90%	33.33%
c. Audio/Visual Equipment		9.52%		4.76%	52.38%	38.10%
d. Participant Handbook				4.76%	61.90%	28.57%
e. Overall Course Curriculum				14.29%	42.86%	38.10%
f. Small group Exercises	4.76%			33.33%	52.38%	9.52%
g. Large group Discussions	4.76%			23.81%	33.33%	23.81%
h. Scenarios/Dilemmas	4.76%		4.76%	14.29%	52.38%	14.29%
i. Energizers/Icebreakers			4.76%	19.05%	42.86%	28.57%
j. Course Facilitators					38.10%	57.14%
k. Evaluations/Feedback Opportunities				4.76%	57.14%	38.10%

Table 6.3 below recaps the attendees’ responses on attainment of objectives of the education and training programme.’

Table 6. 3 Attendees responses on attainment of objectives of the education and training programme (n=21)

Degree to which attendees’ felt the objective was achieved	Did not Achieve	Achieved Somewhat	Fully Achieved
1. Introduction to cervical cancer in Namibia	4.76%	9.52%	85.71%
2. What is cervix, cervical cancer, cause and signs and symptoms	4.76%	9.52%	85.71%
3. Prevention methods for cervical cancer	4.76%	9.52%	85.71%
4. Barriers to screening and strategies to improve	4.76%	9.52%	85.71%
5. Counselling in cervical cancer	4.76%	19.05%	76.19%
6. The health education program and the way forward	4.76%		95.24%

Table 6.4 below sums up the attendees’ responses on different concepts of the education and training programme.

Table 6. 4 Attendees responses on different concepts of the education and training programme (n=21)

Concept evaluated	Attendees’ views	n	%
The part of training participant found most useful.	Signs and symptoms	5	23.81
	Pap smears	9	42.86
	Anatomy of the cervix and reproductive system	3	14.29
	HPV clearance from the body	1	4.76
	Risk factors	1	4.76
	Health education	1	4.76
	Treatment of cervical cancer	1	4.76

The part of training participant found least useful	Everything useful,	18	85.71
	Health education	1	4.76
	Deep scientific words	1	4.76
	Procedure of Pap smear	1	4.76
Knowledge/skills participant will use at work	Health Education on cervical cancer.	6	28.57
	Health education on importance of pap smear (14/20)	14	66.67
	Did not respond to the question	1	4.76
Skill/ knowledge attendees will need more training	Counselling	8	38.10
	HPV and pap smear	2	9.52
	TB testing	1	4.76
	Health Education	2	9.52
	Conducting awareness campaign	1	4.76
	Maternity care	3	14.29
	VIA Method	1	4.76
	cervical cancer prevention	1	4.76
	Did not respond to the question	2	9.52
What could be changed in the training	TB/HIV training	1	4.76
	Workshop too short needs to be longer	2	9.52
	Improve on meals, amount of food was too little	2	9.52
	More detail to the content	1	4.76
	Need subsistence and Allowance payments	2	9.52
	Include all HEWs including those from rural areas around Keetmanshoop	1	4.76
	The training is good as is no need for changes	5	23.81
	Did not respond to the question	7	33.33

6.2.5 Conclusion with regards to the preparation of health extension workers

The two-day education and training improved the knowledge of the HEWs pertaining to cervical cancer and its screening. The program concluded with the attendees enthusiastic to go and share the information with the communities they work in.

6.3 STAKEHOLDER MEETING AND COMMUNITY BASED EDUCATIONAL PROGRAM LAUNCH

The stakeholder meeting and launch of the cervical cancer community based educational program was held on the 5th of June 2019 at the Roman Catholic Der Sales Centre community hall in Keetmanshoop, Tseiblaagte location. The objectives of this meeting were to:

1. Share findings of Phase 2 of the study (barriers to cervical cancer screening in Keetmanshoop and suggested strategies to improve screening) with the stakeholders.
2. Outline the proposed intervention for the input of the stakeholders.

6.3.1 Attendees

The feedback meeting and launch of the community based educational program was attended by government and political figures, church leaders, business community, government line ministries and other members of the community. The guest of honour and keynote speaker was the Governor of the //Kharas Region, Honourable Lucia Basson. Other dignitaries included the deputy mayor of Keetmanshoop town, Her Worship Deputy Mayor Hilia Titus, Director MoHSS Mr. Bartholomew Mutenda, the Senior Medical Officer of Keetmanshoop Health District, Dr Herve Sabwa, representatives of local banks, University of Namibia lectures and Church leaders. A list of the attendees is attached as Appendix 15. This launch was televised on Namibia Broadcasting Cooperation prime time news available on <https://www.nbc.na/news/mohss-can-launch-cervical-cancer-awareness-campaign-keetmanshoop.21070>, Namibia Newspaper (attached as Appendix 16) and the New Era newspaper (see Appendix 17).

6.3.2 Program and presentation

The two (2) hour program consisted of messages from local and political leadership on cervical cancer screening and a presentation by the researcher on the barriers to

cervical cancer screening and the proposed community based educational program. The Director of MoHSS spoke on behalf of the ministry about addressing the gaps which were discovered in the service delivery system, such as instruments shortage, particularly speculums. The Regional Governor gave keynote speech calling women to go for cervical cancer screening. Once the addresses were delivered, a discussion and question and answer session followed, and the following were raised:

1. The Deputy Mayor remarked on Pap smear being free of charge as highlighted in the question and answer segment by the Director of MoHSS and emphasized that since this was the case, women should go and get tested, there is no excuse.
2. The Governor requested that MoHSS must ensure there are trained nurses and that nurses should respect clients, build nurse-patient relationships and treasure confidentiality.
3. The Governor requested the MoHSS not to limit the community based educational program to face to face sessions, but also make use of the media, especially the local radio. In addition, she requested the message to be translated or interpreted into local endemic languages including Afrikaans, Nama-Damara and Oshiwambo.
4. The Constituency Councillor requested MoHSS to share crucial messages such as these with community leaders such as pastors and councillors so they can share the information during the meetings with the community members.

6.4 THE COMMUNITY BASED EDUCATIONAL PROGRAM

The community based educational program was pilot tested from August 2019 until November 2019 excluding three weeks in October where the researcher was out of the town on work related matters. The community based educational sessions were conducted once a week on Wednesdays for one and a half hours between 14h00 and 15h30. The duration of sessions depended on the size of the group and questions raised by attendees.

6.4.1 Recruitment

The community based educational program started at the furthest suburb from the CBD which is an informal settlement on the 8th August 2019 and moved from one location to the next. The trained HEWs across the different geographical areas in Keetmanshoop urban verbally invited women to attend the community based

educational sessions in their respective work areas. Those who accepted the invitation, attended the session, and signed the consent form before participating in the community based educational session. HEWs could not enumerate all women invited to the sessions, therefore the study cannot ascertain the specific participation rate, however an approximation of participation rates was made. From the number of women invited from the HEW's jurisdiction areas and those who attended the sessions, participation rates were approximated as women who attended the community based educational session as a fraction of those who had been invited. The lowest participation rate was 42% (5/12) at the Tinkerbell area where twelve women were invited and five attended whilst the highest was 68% (17/25) at Ileni Der sales centre. The respondents came from various socio-economic backgrounds. A summary of the sessions, venues and dates of the community based educational session are provided in Table 6.5 below.

Table 6. 5 Sessions, venues, dates, sequential numbers, and total number of attendees of the community based educational program

Session Number	Date (2019)	Location, venue	Sequential numbers	Total number of attendees
1.	08/08	Ileni, Der Sales Centre	1-17	17
2.	15/08	WAD centre	18-27	10
3.	30/08	Hospital Grounds	28-39	12
4.	06/09	Tseiblaagte, Youth Centre	40-54	15
5.	14/10	Kronlein	55-73	19
6.	8/11	Training Centre	74-82	9
7.	15/11	Training centre	83-90	8
8.	18/11	FIF Church	91-100	10
9.	23/11	Tinkerbell hall	101-105	5
Total				105

The nine (9) separate community based educational sessions were offered at different venues which included community halls and churches. Each session was attended by between five (5) and 19 women. A total of 105 women (n=105) attended the community based educational program. The results of the community based educational program are outlined below.

6.4.2 RESULTS OF THE PILOT TEST

As previously mentioned, 105 women (n=105) participated in the community based educational programme.

6.4.2.1 Demographic profile

A demographical profile of data for these participants is shown in table 6.6 below.

Table 6. 6 General characteristics of the sample (n=105)

Characteristic		n	%
Age	20-29 years	22	20.95
	30-39 years	41	39.05
	40-49 years	30	28.57
	>50 years	12	11.43
Marital status	Single	62	59.05
	Married	33	31.43
	Divorced	7	6.67
	Widow	3	2.86
Educational level	Never went to school	11	10.48
	Grade 8	53	50.48
	Grade 12	31	29.52
	College diploma and above	10	9.52
Religion	Catholic	37	35.24
	Orthodox (ELCN, Methodist...)	37	35.24
	Protestant	23	21.90
	Islam	1	0.95
	Hindu	0	0
	African tradition	1	0.95
	Others	6	5.71
Tribe	Nama- Damara	43	40.95
	Oshiwambo	31	29.52
	Caprivian	0	0
	Kavango	5	4.76

	Otjiherero	4	3.81
	Colored	12	11.43
	White Namibian	0	0
	Tswana	0	0
	Bushmen	0	0
	Others	10	9.52
Employment status	Employed	38	36.19
	Unemployed	67	63.81
Number of children	No child	12	11.43
	1 child	21	20.00
	2 to 4 children	56	53.33
	>4 children	16	15.24
History of STIs including HIV	Yes	56	53.33
	No	49	46.67

6.4.2.2 The results of the primary outcome: Screening uptake

A total of 45 (n=45) women were screened after attending the community based educational program; 42.85% of the total number that attended the programme. A Chi-square test was performed to examine the relation between attending an educational program and going for screening for cervical cancer. A chi-square statistic of $\chi^2 (1, N=105) = 8.5714$ and a p value of .003415 was obtained. It can be concluded that the relation between these variables was significant at $p < .05$. Furthermore, when calculating an odds ratio, it was observed that knowledgeable women are 2.4 times likely to test for cervical cancer than those without knowledge. Table 6.7 below shows the Chi-square of attending community based educational program and screening utilisation.

Table 6. 7 Chi-square attending educational and screening utilisation

Assessment of practices of cervical cancer screening		
	Screened	Not screened

Have you been tested for cervical cancer	n	%	n	%
Yes (screened)	25	23.8	45	42.9
No (not screened)	80	76.2	60	57.1
Total	105	100.00	105	100.00
χ^2 (1, N=105) =8.5714; p=0.0034; the result is significant at p<0.05				

When comparing the demographic profile of the attendees with screening, it was primarily women between the ages 30 and 39 who attended the community based educational program and were screened. Notably, no significant relationship was found between demographic characteristic of the sample and being screened. Table 6.8 below provides the details.

Table 6. 8 Demographic characteristics of the sample and screening (n=105)

Characteristic	Screened		Not screened	
Age	n	%	n	%
20-29 years	9	20.00	13	21.67
30-39 years	17	37.78	24	40.00
40-49 years	12	26.67	18	30.00
>50 years	7	15.56	5	8.33
Total	45	100.00	60	100.00
χ^2 (3, N=105) =1.3402; p=0.7196; the result not significant at p<0.05				
Marital status	n	%	n	%
Single	29	55.00	33	64.44
Married	13	33.33	20	28.89
Divorced	2	8.33	5	4.44
Widow	1	3.33	2	2.22
Total	45	100.00	60	100.00

	χ^2 (3, N=105) =1.2445; p= 0.7424; the result not significant at p<0.05			
Educational level	n	%	n	%
Never went to school	7	15.56	4	6.67
Grade 8	19	42.22	34	56.67
Grade 12	16	35.56	15	25.00
College diploma and above	3	6.67	7	11.67
Total	45	100.00	60	100.00
	χ^2 (3, N=105) =4.6477; p= 0.1995; the result not significant at p<0.05			
Religion	n	%	n	%
Catholic	17	37.78	20	33.33
Orthodox (ELCN, Methodist...)	17	37.78	20	33.33
Protestant	8	17.78	15	25.00
Islam	0	0.00	1	1.67
Hindu	0	0.00	0	0.00
African tradition	0	0.00	1	1.67
Others	3	6.67	3	5.00
Total	45	100.00	60	100.00
	χ^2 (5, N=105) =2.5256; p= 0.7726; the result not significant at p<0.05			
Tribe	n	%	n	%
Nama- Damara	20	44.44	23	38.33
Oshiwambo	13	28.89	18	30.00
Caprivian	0	0.00	0	0.00
Kavango	3	6.67	2	3.33
Otjiherero	1	2.22	3	5.00
Colored	6	13.33	6	10.00
White Namibian	0	0.00	0	0.00
Tswana	0	0.00	0	0.00
Bushmen	0	0.00	0	0.00
Others	2	4.44	8	13.33

Total	45	100.00	60	100.00
	χ^2 (5, N=105) =3.7494; p=0.5860; the result not significant at p<0.05			
Employment status	n	%	n	%
Employed	12	26.67	26	43.33
Unemployed	33	73.33	34	56.67
Total	45	100.00	60	100.00
	χ^2 (1, N=105) =3.0930; p=0.0786; the result not significant at p<0.05			
Number of children	n	%	n	%
No child	5	11.11	7	11.67
1 child	8	17.78	13	21.67
2 to 4 children	25	55.56	31	51.67
>4 children	7	15.56	9	15.00
Total	45	100.00	60	100.00
	χ^2 (3, N=105) =0.2795; p=0.9638; the result not significant at p<0.05			
History of STIs including HIV	n	%	n	%
Yes	24	53.33	32	53.33
No	21	46.67	28	46.67
Total	45	100.00	60	100.00
	χ^2 (1, N=105) =0; p=1; the result not significant at p<0.05			

6.4.2.3 The results of the secondary outcome: Knowledge

The graph shows that the marks obtained were higher for the post-test compared to the pre-test. Mean knowledge for post-test (M=92.91%, SD=10.12%) was more than mean knowledge for pre-test (M=41.48%, SD=25.10%). The intervention increased the mark by a mean of 51.43% marks; (95% CI: 46.37%- 56.48%)

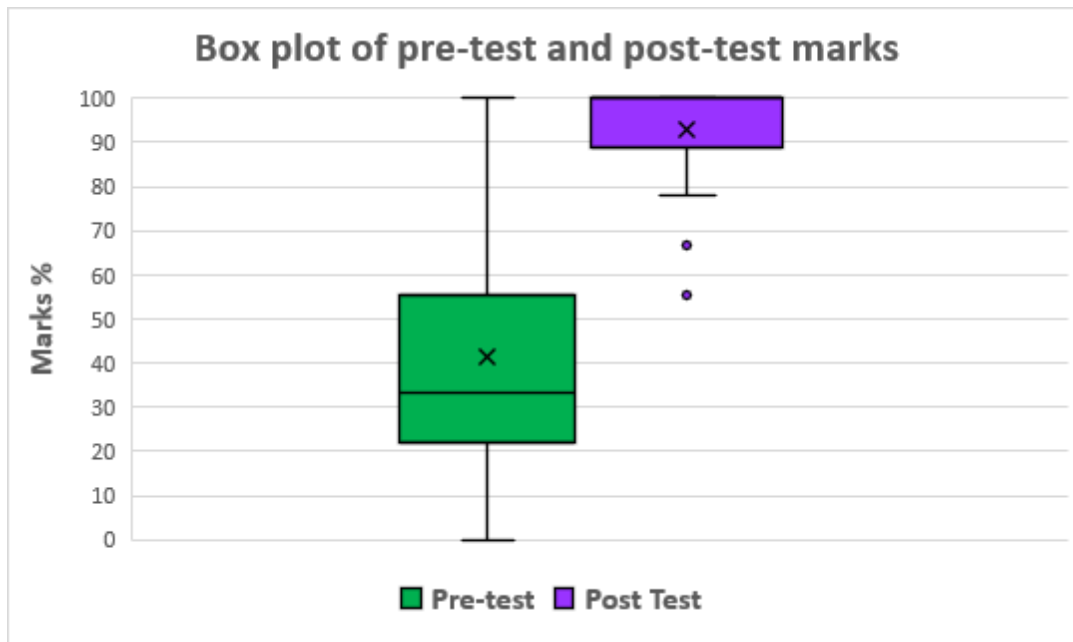


Figure 6. 3 Box plot showing women's pre-test and post-test marks in the community based educational program.

Overall, in the pre-test, 47% of the total responses were correct compared to 94% correct responses in the post-test. Figure 6.2 below illustrates the results.

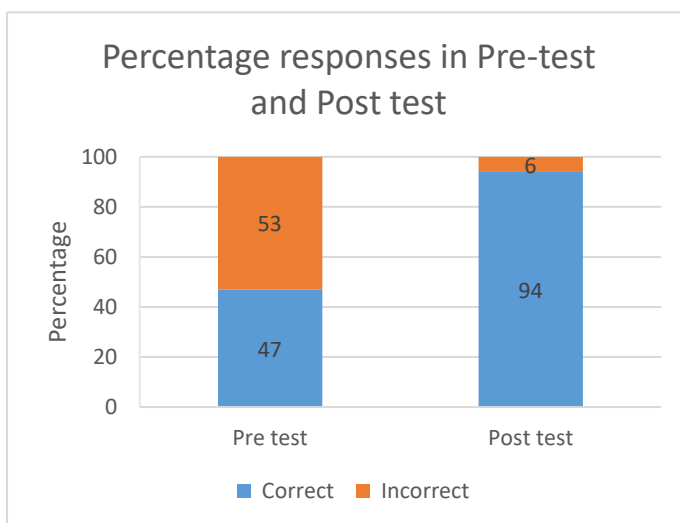


Figure 6. 4 Percentage of correct responses in pre and post-test (n=105)

Attendees scored higher marks in the post-test than in the pre-test in all the education questions. A comparison between pre- and post- test performance is shown below in table 6.9

Table 6. 9 Knowledge of cervical cancer before (n=105) and after community based educational program (n=105)

Assessment of knowledge on cervical cancer and screening				
	Before education program		After education program	
What is cervical pre cancer?	n	%	n	%
Same as cancer cannot be treated	48	45.71	3	2.88
Abnormal cells that can be treated	57	54.29	101	97.12
Total	105	100.00	104	100.00
	$\chi^2 (1, N=105) = 51.9555$; $p=1.0E-12$; the result is significant at $p<0.05$			
What do you think causes cervical cancer?	n	%	n	%
Poor hygiene	47	46.08	2	1.90
Nurses inserting instruments	16	15.69	2	1.90
Human Papilloma Virus (HPV)	39	38.24	101	96.19
Total	102	100.00	105	100.00
	$\chi^2 (2, N=105) = 79.6458$; $p=0$; the result is significant at $p<0.05$			
What can I do to prevent cervical cancer?	n	%	n	%
Clean my vagina nicely	37	35.92	1	0.96
Get tested and treated	66	64.08	103	99.04
Total	103	100.00	104	100.00
	$\chi^2 (1, N=105) = 42.2020$; $p=8.2E-11$; the result is significant at $p<0.05$			
Can cervical pre- cancer be treated?	n	%	n	%
Yes	46	44.23	88	85.44
No	58	55.77	15	14.56
Total	104	100.00	103	100.00
	$\chi^2 (1, N=105) = 38.4890$; $p=5.51E-10$; the result is significant at $p<0.05$			
Who should be tested for cervical cancer using the new method?	n	%	n	%
18 years and above	74	71.15	16	15.69

HIV negative 25-49years and HIV negative 25-49years and HIV positive 20-49 years	30	28.85	86	84.31
Total	104	100.00	102	100.00
	$\chi^2 (1, N=105) = 64.3989$; $p=0$; the result is significant at $p<0.05$			
What is the name of the new test used to test women for cervical cancer?	n	%	n	%
VIA	45	43.27	104	99.05
Sonar	59	56.73	1	0.95
Total	104	100.00	105	100.00
	$\chi^2 (1, N=105) = 79.4261$; $p=0$; the result is significant at $p<0.05$			
Where can a woman have this test done?	n	%	n	%
Tseiblaagte clinic and hospital	54	51.43	100	95.24
Only at hospital	48	45.71	5	4.76
Only at big hospital in Windhoek	3	2.86	0	0.00
Total	105	100.00	105	100.00
	$\chi^2 (2, N=105) = 51.6271$; $p=6.00E-12$; the result is significant at $p<0.05$			
What will the nurse use in the new test?	n	%	n	%
Spirit	58	56.31	5	4.81
Vinegar	45	43.69	99	95.19
Total	103	100.00	104	100.00
	$\chi^2 (1, N=105) = 64.8340$; $p=0$; the result is significant at $p<0.05$			
With the new test, how long does it take to get my results	n	%	n	%
After 2 weeks	72	70.59	8	7.69
Same time I do the test	30	29.41	96	92.31
Total	102	100.00	104	100.00

	χ^2 (1, N=105) =85.7601; p=0; the result is significant at p<0.05
	χ^2 (1, N=105) =8.5714; p=0.0034; the result is significant at p<0.05

6.4.2.4 The results of the secondary outcome: Attitudes

After the community based educational program, 99.05% (n=104) of the attendees felt that cervical cancer screening was important for them compared to 83 (79.05%) attendees before the educational program. A chi-square statistic of χ^2 (2, N=105) =21.5401; p=0.000021; at p < .05 was obtained showing that the relation between attitudes and education was significant. Table 6.10 below shows the Chi-square statistic of attitudes and education.

Table 6. 10 Chi-square of attitudes and education

Assessment of attitudes of cervical cancer screening				
Do you feel this cancer test is important for you?	n	%	n	%
Agree	83	79.05	104	99.05
Disagree	1	0.95	0	0.00
Don't know	21	20.00	1	0.95
Total	105	100.00	105	100.00
	χ^2 (2, N=105) =21.5401; p=0.000021; the result is significant at p<0.05			

6.4.2.5 The results of the secondary outcome: Clinic Improvement

When comparing the readiness of the clinics, the second audits found the two clinics where VIA was being rolled out were completely equipped to conduct cervical cancer screening using the VIA method. The third clinic where VIA was not rolled out was still not ready to provide cervical cancer screening and referred patients for screening to the VIA designated clinics. As mentioned earlier, cervical cancer screening method in Namibia transitioned from Pap smear-based testing to VIA testing during the period

the research was being conducted. Table 6.11 provides the details of the readiness of the clinics to screen.

Table 6. 11 Clinics readiness to offer cervical cancer screening services

Clinic Code	1 st Clinic Audit (May 2019) % of requirements available	2 nd clinic audit (Aug 2019) % of requirements available	Comment
1	10/18 (56%)	20/20 (100%)	PEPFAR supported, VIA rolled out
2	12/18 (67%)	*N/A	Not PEPFAR supported, awaited VIA roll out.
3	13/18 (72%)	20/20 (100%)	PEPFAR supported, VIA rolled out

**The clinic was no longer offering screening services whilst awaiting VIA roll out.*

Table 6.12 summarizes the number of women referred but not screened due to shortage of resources to perform the screening procedure.

Table 6. 12 Number of women referred but not screened due to shortage of resources

Month (2019)	Total screened	Total who attended clinic but not screened and sent home
Feb	5	N/A
March	7	N/A
April	10	N/A
May	17	16
June	2	23
July	3	5
August	43	N/A
September	21	N/A
October	62	N/A
November	53	N/A

December	14	N/A
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6.5 CONCLUSION

This chapter presented the findings of the pilot test of the intervention, a community based educational program. The findings from the preparation of Health Extension Workers, the stakeholders meeting and launch of the community based educational program and the outcomes were outlined. The following chapter presents the discussion of the findings of Phase 2 and Phase 3.

CHAPTER 7: DISCUSSION OF FINDINGS FROM PHASE 2 AND 3 OF STUDY

7.1 INTRODUCTION

This chapter of the thesis presents a comprehensive summary of the outcomes of the research work, the discussion, and the interpretation of the findings. Phase 1 findings of the scoping review were discussed in detail in Chapter 4 and in this chapter only the themes that emerged are stated. The Phase 2 barriers to screening and Phase 3 intervention findings are discussed, and interpretations laid out in this chapter.

7.2 OUTLINE OF CONCLUSION FROM PHASE 1: SCOPING REVIEW

There have been reviews on interventions to improve screening in various parts of the world however, literature search did not find a scoping review specifically for Africa. Therefore, the need for this review for interventions to improve screening, focussed on Africa for the decade 2008-2018.

7.2.1 Phase 1 objective:

To describe the interventions previously employed to increase cervical cancer screening utilisation in Africa.

7.2.2 Themes that emerged from the scoping review

Four main themes were derived as findings from this scoping review namely:

- Health education,
- Community based HPV testing,
- Integrating services
- Multiple faceted health promotion activities.

7.2.3 Author's conclusion of the scoping review

- Educational interventions were the most tested interventions to improve cervical cancer screening utilisation.
- Only third of studies testing educational interventions yielded improvements in screening uptake.
- There is evidence that education modifies screening behaviours of women.
- HPV testing, particularly self-testing, can improve screening utilisation especially when it is community based.

- Combining cervical screening with breast cancer screening yielded an improvement in screening utilisation.
- Combined promotional activities yielded improved utilisation.
- Among an array of activities, face to face education were the most effective in improving screening utilisation.
- Education alone without addressing other significant barriers, may not achieve improvement in screening utilisation.
- There is need for studies that identify population specific barriers, and comprehensively address the barriers in combination with health education.

7.3 OUTLINE OF CONCLUSION AND DISCUSSION PHASE 2 FINDINGS: BARRIERS TO CERVICAL CANCER SCREENING UTILISATION AND STRATEGIES TO IMPROVE SCREENING

Phase 2 consisted of in-depth interviews with women, men and nurses and quantitative clinic audits.

7.3.1 Phase 2 objective

To explore the barriers to cervical cancer screening utilisation according to women, men and nurses and the healthcare delivery system.

7.3.2 Triangulation of findings

This section presents the triangulation of findings from the women (18 participants), men (16 participants) and nurses (19 participants). To gather the whole, the themes from the three groups of participants are discussed together.

7.3.2.1 Demographic profile

The sample size of the women, men and nurses' cohorts were 18, 16 and 19, respectively. Generally, nurses by virtue of being health care practitioners had more information to share on cervical cancer in comparison to the other groups. Hence their sample was the largest as more ideas were shared the interviews continued until saturation was reached. By gender, the total sample of 53 participants had 24 (45.3%) men and 29 (54.7%) women.

7.3.2.2 Barriers to cervical cancer screening

a. Inadequate knowledge about cervical cancer

- The women and men had insufficient knowledge about cervical cancer and its screening.
- Most men responded that they did not know anything about cervical cancer without attempting to express any thoughts.
- Nurses demonstrated satisfactory knowledge in the sections of defining cervical cancer and outlining prevention methods but had unsatisfactory knowledge regarding signs and symptoms, treatment, and prognosis.
- Nurses and women had no personal experience of meeting someone with cervical cancer.
- All three cohorts believed that a cervical cancer diagnosis pronounce death.

The study found out that majority of women had never had an encounter with a person with cervical cancer and some felt meeting someone affected with cervical cancer could motivate them to screen. This agree with findings of Ncube et al. (2015) that a personal encounter with a cervical cancer patient was a motivator to screening. The current study showed that majority of women lacked knowledge about cause of cervical cancer. Similar findings are echoed by Wong et al. (2009) from their Malaysian study where none of the respondents had ever heard of the human papillomavirus therefore did not know that HPV is the cause of cervical cancer. Women are reported to believe in myths and misconceptions, for example in Nigeria , participants believed that wizardry and use of vaginal herbs cause cervical cancer and only one participant knew about HPV (Modibbo et al., 2016). Similarly, in Ghana, only 7.9% of the respondents(women) were aware of the link between HPV and cervical cancer and the common barriers were lack of knowledge and fear of losing virginity (Abotchie and Shokar, 2009). In addition, studies that included nurse respondents found the respondents knew very little about the cervical cancer (Williams and Amoateng, 2012, Shayo, 2018) .

On the contrary, to current findings Mukama et al. (2017) from their study among community women in Uganda and Mwaka et al. (2016) also from Ugandan women settled that general knowledge about cervical cancer prevention was comparatively high among women, and attitudes mostly positive, but screening was low.

Unlike other studies where knowledge was found to be adequate, the participants in the current study lacked sufficient knowledge to promote screening. As Morema et al. (2014) conclude in their Kenyan study, knowledge and perception of higher susceptibility are motivators for screening. The current study concludes that knowledge of factors such as the severity and the risks of cervical cancer, ultimately affects the perceived risk of nurses, women and men resulting in the low screening rates in the study setting.

b. Inadequate knowledge about the cervical cancer screening procedure.

- Only a few nurse participants felt they were competent to perform the screening procedure, the majority reported they felt unsure.
- The women had no or very minimal knowledge about the screening procedure. However, the inclusion criteria only allowed women who had never been screened to participate in the study.
- Women who spoke, spoke out of hearsay from the community – most of the information was incorrect.
- Most of the men simply confessed their lack of knowledge regarding the procedure. Those who attempted to explain said it was done “in private parts of the woman.”

Lack of knowledge about the screening procedures has been reported previously. For instance, Rubini et al. (2018) found more than half of the women in their study were of the opinion they do not need a Pap smear if they were not sexually active. In addition, Kasting et al. (2017) found only 26% of women knew what the purpose a Pap smear is. The above findings are synonymous with findings of Hoque et al. (2014) who cited that knowledge pertaining to cervical screening in particular, is low in women.

As seen in the current study, the men lacked knowledge of the screening procedure. This finding is supported by Ndejjo et al. (2016) who found a similar trend in Northern Namibia. Additionally, Rubini et al. (2018) stated, the main barrier for males to encourage their spouses to use screening opportunities, was lack of knowledge. Furthermore, more than half of the men believed that their partners do not have to have a Pap smear if she did not have any children

However, there are studies that concluded that knowledge about screening procedure was adequate. A study from Botswana documents that almost all the women

participants were aware of cervical cancer screening particularly the Pap smear. However, only 27.5 of the participants had ever been screened (Tapera et al., 2017)

Generally, inadequate knowledge about the screening test is reported often. This study therefore concludes that lack of knowledge about the screening procedure, was a barrier.

c. Influence of fear

- The influence of fear was strongly reported in the women and nurses' cohort. However, the men also reported women's fear pertaining to nurses' attitudes and the outcomes of the test.
- Fear was related to anticipated procedural pain, invasion of privacy, fear of the results and a cancer diagnosis.
- Believing in myths and hearsay from the community contributed to the women's fear.
- Some nurses were rude resulting in women being afraid of the nurses' attitudes, therefore they avoid taking up screening.

Fear has been widely documented as a barrier to screening. Ma et al. (2013) argue that women who do not understand what is done during a Pap smear, are mostly scared of being diagnosed with cervical cancer, believe having a Pap smear done is embarrassing or believe there is no need for a Pap smear when feeling well. The current findings concur with Kakehongo (2018) from Northern Namibia, that barriers to screening include fear of a cervical cancer diagnosis and fear of procedural pain. In addition, Modibbo et al. (2016), reported that women were afraid of contracting nosocomial infections during the procedure.

As seen in the current study, the participants also mentioned fear of invasion of privacy and embarrassment. This is not unique as the screening procedure indeed invades the private space of a woman and in some instances it is exacerbated when the provider is a man (Anaman-Torgbor et al., 2017, Dunn and Tan, 2010, Waller et al., 2009). In addition, the outcome pertaining to the attitude of nurses being a barrier are similarly highlighted by Bukowska-Durawa and Luszczynska (2014), where a quarter of participants reported that prior contacts with health professionals who are predominantly nurses hindered them from using cervical cancer screening opportunities.

Thus, it can be concluded that fear, perpetuated by insufficient knowledge, is an important barrier to screening. Closing the knowledge gap could promote screening utilisation. There is need to improve privacy during the procedure and re-assure women to ease their fears as nurse attitudes influence the uptake of services by the community.

d. Shortage of resources

- Shortage of resources was echoed across all groups although most pronounced in the nurses' cohort.
- The most fundamental instrument, a vaginal speculum, was reported to be either lacking or inadequately supplied across the three urban PHC clinics.
- The nurse cohort advocated for each clinic to have its own autoclave, as the centralised CSSD at the hospital was not coping with the provision of instruments on time.
- The women cited that their peers, who had gone to the clinic for screening, had been turned back without screening due to the lack of instruments.
- The men commented on the general shortages within the public healthcare facilities and believed the lack of equipment for screening was a barrier.
- The clinic audits confirmed inadequacies within the clinics.
- On the audit day none of the three clinics met all requirements for screening, two of the clinics had no speculums.

These findings are like studies from other developing nations where the healthcare delivery system is crippled with shortages of resources to effectively provide screening. More than a decade ago, Denny et al. (2006) highlighted that there were various gaps pertaining to cervical cancer screening which included lack of infrastructure, trained personnel, lack of equipment required for screening, diagnosis, and treatment, limited health budgets and competing healthcare priorities. Limited funding in low resource countries results in shortage of resources. In fact some developing countries do not have a national screening program due to financial constraints (Toliman et al., 2018, Nakisige et al., 2017). In addition, more African countries expressed inadequacies in health systems (Munthali et al., 2015, Bukowska-Durawa and Luszczynska, 2014). Similarly, the 2011 Namibian assessment concluded that there were significant gaps in the health care system in terms of reproductive cancer screening (MoHSS, 2012).

Therefore, this study concludes that shortage of resources is a significant barrier for cervical cancer screening.

Women's demographic characteristics

- The nurses highlighted that age was associated with screening. Young women did not report for screening and it was mainly women older than 45 who used the screening opportunities.
- Cultural beliefs were barriers to screening.
- Women's level of education was reported to influence screening.

These findings are similar to previous reports where educated women and those who had ever used contraception, were more likely to be screened, compared to their counterparts who were less educated (Nene et al., 2007). Other demographic profiles, such as economic status and employment, which are closely linked to educational level, have also been linked to screening. For example, in Northern Namibia, women who had access to information through education and those with medical insurance were more likely to use screening opportunities (Kangmennaang et al., 2015). In Zimbabwe, females who were financially independent were 6.61% more likely to report for screening compared to those who were dependent on their husbands (Mupepi et al., 2011).

With reference to age, the findings of Nene et al. (2007) disagree with the current findings that a younger age was a barrier to screening. These authors found that women who had been screened, were mostly younger, between the ages 30 to 39 years. This current study noted that some women believe traditional therapies can be useful for cervical cancer prevention. These cultural beliefs deter women from taking up screening. Cultural beliefs are documented as a barrier (Bayrami et al., 2015, McPherson et al., 2019, Modibbo et al., 2016). Considering the woman's demographic characteristics, the researcher concludes that the economic status, educational level, and cultural beliefs of women are potential barriers to screening.

e. The role of knowledge and support

This emerged from the men cohort and was supported by the nurse participants but not highlighted by the women cohort.

- The nurses believed the reproductive health of women, including in other important matters such as antenatal and post-natal care, lacks the necessary support of men.
- The nurses believed women who receive spousal support are likely to use services such as cervical cancer screening.
- The male participants expressed willingness to support their partners but lacked information to provide support.
- The men did not identify the HPV as cause of cervical cancer.
- The men were aware of their role in the prevention of cervical cancer and mentioned avoiding contracting HPV, condom use and male circumcision.

The research findings resonates with the Ghanaian study of Williams and Amoateng (2012), where several of the participants indicated they would be willing to provide spousal support for cervical cancer screening as long as they were well informed about the disease and its screening. Similar to the findings of the current study, the participants said that they knew very little about the disease. In addition, (Lim and Ojo, 2017) mention lack of spousal support among the reasons why women did not use screening opportunities. The lack of husbands' involvement was also identified as a significant barrier in Malawi (Munthali et al., 2015). In addition to spousal support, (Sewali et al., 2015) found that women who had family support were approximately three times more likely to use screening than those without family support. As a result, some researchers believe interventions that activate social support will increase screening uptake (Documet et al., 2015).

There is no guarantee that educating men about cervical cancer and its screening, will lead to in an improved screening uptake. Rwamugira et al. (2019) pilot tested an educational program to equip men with knowledge to educate women about the need for screening. The results showed that the men's knowledge improved after the educational program where 120 men participated in the intervention and 66 participants reported that they educated their partner whilst only 30 women reported for screening (Rwamugira et al., 2019).

The study findings assert that male engagement is necessary, to promote primary prevention of cervical cancer and screening uptake. However currently men's role is minimal as men are incapacitated due to lack of knowledge.

7.3.2.3 Strategies to improve screening utilisation

a. Health Education

- Health education was suggested by all three cohorts of participants to close the information gap, which is currently a barrier.
- No structured health education about cervical cancer and the need for screening, is currently being offered to the community.
- The current health education pertaining to cervical cancer and its screening is insufficient due to staff shortages and the scanty knowledge nurses have about the subject.
- The MoHSS should engage HEWs to educate the community during their home visits.
- Health education sessions during community-based meetings in addition to health facility-based education was suggested.
- The need for media incorporation to reach the masses with the crucial messages was suggested.
- The content of health education messages should be user friendly for the consumers and translated to endemic languages.
- Information, education, and communication materials on cervical cancer is not currently available.

Current findings conclude that the study provides evidence that all three cohorts, nurses, women, and men, acknowledged the need for health education as an intervention. From the scoping review of African studies 2008-2018, most of the health educational interventions failed improve screening uptake. However, effective female education and free mass screening, remain fundamental for any successful cervical cancer program (Nwankwo et al., 2011). The current study supports the findings of Morema et al. (2014) stating that increasing knowledge, enhancing health education and providing free services may increase screening uptake among women, however, other gaps should also be addressed if the improvement is to be noticed. The health education strategy remains widely recommended (Van Schalkwyk et al., 2008, Fouda and Elkazeh, 2013, Abiodun et al., 2014, Naz et al., 2018).

b. Modifying the healthcare delivery system

- Modifying the healthcare delivery system was reiterated by all three participant groups.
- The need for leadership involvement at the regional and district management level was identified.
- The need for structures to monitor and assess the indicators of cervical cancer screening utilisation was identified.
- There is a need for the appointment of a person responsible for the cervical cancer screening program.
- Community based screening such as community outreaches instead of facility-based screening was highlighted.
- Only female nurses should perform Pap smears to promote comfort. This was unexpected by the researcher as I often assumed what is important to clients is a health care practitioner without noticing for some men, it matters to them the gender of the practitioner.

The need for tailoring health service delivery to meet the needs cervical cancer screening have been documented earlier. Long distances to healthcare facilities are known to contribute to non-screening (Munthali et al., 2015). In addition, Benard et al. (2014) agree that a successful cervical cancer program, needs buy-in at a high level in the organizational structure, a focal provider, and a dedicated clinical coordinator. Regarding, gender of provider, the WHO (2014) encourages female providers particularly in areas where female nurses reduce women's anxiety and promote screening. If male providers are engaged in these activities, the (WHO, 2014) advocates for the presence of a female companion. A South Australian study conducted by Rockwell et al. (2003), reported 84% of male doctors had a nurse or assistant present whilst only 31% of female doctors had such support. It was interesting to note that those who used a chaperone, were significantly younger and did fewer Pap smears per month than those who did not have an assistant in the room. Several other authors have also supported female providers as an intervention to improve screening (Munthali et al., 2015, Anaman-Torgbor et al., 2017, Mills et al., 2012, Osingada et al., 2015, Modibbo et al., 2016). In-fact, a Taiwan study reports that female doctors have a positive and significant effect on the utilisation of Pap smear especially in women under 30 years. Therefore the study recommended that the

government promotes female nurses in performing Pap smear in order to encourage screening (Lin and Chen, 2014).

In contrast to the current findings, Balayla (2011) argues that although the historical role of men in gynaecologic procedures has been ambiguous, there is sufficient evidence in the literature that demonstrates a provider's gender is not an issue. The author contends that other characteristics of the provider, like communication and personal traits are more important (Balayla, 2011).

Considering the above, it can be concluded that, the healthcare delivery system needs to be remodelled and tailor make the cervical cancer program to meet the needs for an improved screening service. Outreach or community-based testing coupled with focal persons managing the program and the promotion of female nurses into screening roles can enhance screening utilisation.

c. Nurse Training

- The need for nurse training was only mentioned by the nurse participants
- Nurses were concerned about their incompetency to perform the screening procedure.
- All three urban clinics audited, employed three to nine nurses, but only one to three nurses conducted the screening in each facility.
- The training could be facility practical based or workshop based but should focus on clinical demonstrations and nursing practice.

The in-depth interviews were conducted between October 2018 and February 2019. Fortunately, during August 2019, the Ministry trained three nurses from two clinics identified for VIA roll out. The VIA training allowed the PHC clinics to have two trained nurses and the Hospital clinic to have one trained nurse to conduct VIA screening. Despite this training, there is need for more nurses to be trained, as screening is not done when these nurses are absent. The need for training healthcare practitioners particularly nurses in cervical cancer screening is not new, and has been recommended previously. Van Schalkwyk et al. (2008) recommended that the national cervical cancer strategy should be prioritized encompassing health education and re-training of health professionals. Similarly, Munthali et al. (2015) highlighted how the gross shortage of staff served as a barrier to screening in developing nations. The (WHO, 2014) recommends that with competency-based training, any provider who

knows how to do a speculum examination, can perform any of the cervical cancer screening tests. The providers can be nurses, auxiliaries or assistant nurses, trained midwives, clinical officers, or medical doctors. Health care providers need training not only for implementation but also for organising, and coordinating screening services. Shayo (2018) recommended in-service training at each district hospital in Namibia as well as reviewing the nursing curriculum in the preparation of graduates competent in cervical cancer prevention and management.

It is against this background that this study concludes that there is need for training of qualified nurses as well as those who are still being educated and trained in order to address the lack of suitable qualified nurses to prevent and screen for cervical cancer.

7.3.3 Clinic Audits

The clinic audits formed part of identifying the barriers to screening within the health delivery system. The second audits found the two clinics where VIA was being rolled out, were completely equipped to conduct cervical cancer screening using the VIA method. VIA requirements are quite similar to Pap smear requirements except that there is no need for brushes and liquid base containers. However, VIA screening requires acetic acid and if available, a camera. In comparison to the initial audits where the clinics were 56%, 67% and 72% equipped to offer screening services. The improvement in clinic readiness were fundamental in the offering of the community based educational intervention.

7.3.4 Conclusion of Phase 2 findings

The major barriers were inadequate knowledge about cervical cancer and the screening procedure, emotional barriers, the women's demographic profile, shortages within the healthcare delivery system (confirmed by clinic audits) and the lack of men's support. The suggested strategies were modelling of the service delivery system to community based, health education, nurses training and addressing basic resources shortages.

7.4 OUTLINE OF CONCLUSION AND DISCUSSION OF PHASE 3: PILOT TESTING THE INTERVENTION

7.4.1 Objectives

The objective of this phase of the study was to develop and pilot test an intervention to improve cervical cancer screening utilisation. The primary outcome was the absolute numbers of women screened. The secondary outcomes were knowledge, attitudes and practices of women, and the clinic's improvement of its readiness to offer screening services.

7.4.2 Discussion of the findings

The outcomes of the intervention are outlined below:

7.4.2.1 The Stakeholders meeting

The objective of this meeting was to inform the stakeholders of the findings of Phase 2 of the study - the barriers to screening and suggested strategies to receive input and modify the intervention program if necessary. More than 50 attendees were present. The response rate of the invited guests was positive at approximately 85% attended the meeting. This showed the commitment of the political and government leadership to address the challenges of improving cervical cancer screening utilisation.

a. Outcomes of the stakeholders meeting and launch of the educational program

Firstly, the launch served as an awareness strategy, not only for the study site, but for the nation at large, as it was broadcasted nationally and also in print form. Secondly, it captured the needed community engagement. This opened doors for venues for the community based educational sessions as stakeholders such as churches and municipality took ownership of the program. Thirdly it resulted in women going to the clinics requesting for screening services, however the clinics had shortages of speculums, linen, and consulting room and as a result most women were sent back without being screened. Political engagement was obtained as the deputy Mayor of Keetmanshoop after attending the launch, invited her colleagues and other women to go for screening. Three (3) days after the launch, the deputy Mayor accompanied 13 women to a clinic to be screened, but unfortunately due to the short supply of speculums and consulting room, which was under renovation, these women could not be screened.

The study experiences with the launch re-enforces the importance of stakeholder engagement for the success of community based programs. Wood et al. (2014) emphasize that, for community engagement, cervical cancer programs should disseminate information and current findings with the stakeholders and community members prior to carrying out interventions. The engagement and support of the stakeholders are better when the program's progress, findings, and future directions are shared with them Wood et al. (2014). Effective linkages with key stakeholders can also dispel rumours that may arise and hinder progress of interventions Agurto et al. (2005)

7.4.2.2 The Training and Education of Health Extension Workers

Objective: This course aimed to equip Health Extension Workers with information about cervical cancer and its screening to enable them to provide health education in the community and mobilise women for the community based educational program.

The Knowles Education Theory was applied, and the researcher took cognisance of the existing knowledge and experiences the HEWs had, and only taught what was relevant to their roles (Merriam and education, 2001). The post-test marks improved significantly compared to the pre-test marks. These findings are supported by previous studies that training of promotoras on cervical cancer can improve their knowledge (Molokwu et al., 2016, Tum et al., 2013, Arrossi et al., 2015)

a. Outcomes of education and training of Health Extension Workers

After the training and education sessions held on 15 and 16 May 2019, the HEWs started sharing the information they had learnt with the community during their home visits. Although the community based educational program (the intervention), had not been officially started, the urban clinics witnessed an increased number of women requesting screening services from Friday 24 May and the weeks that followed. However, most of these women could not be screened as the clinics experienced several shortages such as speculums and linen.

When inspecting the Pap smear register for the periods February to April 2019, there was no information indicating that women were turned back without having been screened. In May 2019, there was a significant rise in women screened and also the number of women turned back. This was likely due to the demand created by the HEWs who received training during May. Additionally, The Our Lady of Perpetual Help

Parish of the Roman Catholic Church (OLPH), requested a health talk on Mother's Day 12 May. A health talk on cervical cancer was given during the church service after the sermon to a group of about 300 women. This congregation consists of low- and middle-income earners living in Keetmanshoop, and it is highly likely that some consulted private doctors. It is interesting to note that one of the private medical practitioners reported there was a high demand, a more than 50% increase, in the request for cervical cancer screening in private practice.

On the 5th of June, the stakeholders' feedback meeting and launch of the community based educational program was held and it was broadcasted on the National TV and in print. Although the educational intervention had not started, the launch created a demand, explaining the high number of women seeking screening services. Unfortunately, most were not screened due to a shortage of speculums. In July, the researcher had to request the HEWs to stop creating a demand until the clinics were ready to offer the services to prevent women becoming frustrated because they were turned back. In August, VIA was rolled out and the clinics were furnished through PEPFAR funding and the community based educational program started on Wednesday 9 August 2019

b. Invitation of women to the community based educational session

The HEWs expressed their excitement to be able to invite women from within their jurisdiction for educational sessions and screening. As proposed by the participants in Phase 2 of the study, trained HEWs are an essential component to create a demand for cervical cancer screening. It seems as if the community valued the HEWs opinions, recommendations, and invitations. These outcomes are supported by O'Donovan et al. (2019) that the roles of CHWs in cervical cancer screening in LMICs, concentrated on education, outreach, and awareness programmes.

7.4.2.3 The Community based educational Program

a. Participants' Demographic profile

Of the 105 participants there was normal distribution in age with the highest being the 30-39 were 41 (39.0%) and lowest was those 50 years and above were only 12 (11.4%).

In contrast to what the nurses reported about the age of the women who came to the clinics for cervical cancer screening, the greatest percentage of the women who

participated in the educational intervention (39.0%) were between the ages 30 and 39 whilst only 11.4% were 50 years and older. Most of the women were single, which concurs with the finding of 2013 Namibia demographic health survey stating only 14% of couples living together in Namibia were married (MoHSS, 2013).

The participants mainly belonged to the Nama-Damara (41%) or Oshiwambo cultures. This finding reflects the normal distribution of the cultural groups in the south of Namibia where the majority of people are Nama Damara followed by Oshiwambo (NSA, 2013). What was interesting is the STI rate in the current study, which was almost triple usual prevalence. Namibia has a high STI prevalence, and it could have been most likely that the HEWs knew the HIV positive women living within their areas of jurisdiction they purposefully invited them.

On the contrary to current findings were Chi square values showed that none of the demographic characteristics were significant to screening utilisation, some studies have yielded significance between demographic characteristics and screening uptake. Ncube et al. (2015) reported that age and parity were significant predictors of uptake of screening whilst Nene et al. (2007) findings were that younger women were likely to screen than older ones. In terms of educational level, Nene et al. (2007) found out that educated women were likely to screen compared to less or uneducated ones. Kangmennaang et al. (2015) supported by (Mupepi et al., 2011) concluded that employment was closely linked to screening uptake. Lastly on marital status, Ncube et al. (2015) concluded that marital status was an associated factor to screening utilisation, in this study it was insignificant.

7.4.2.4 The outcomes of the intervention, the community based educational program

As previously stated, the intervention was assessed by means of the primary outcome which was absolute numbers of women screened for cervical cancer and three secondary outcomes which were knowledge, attitude and the clinic's improvement of its readiness to offer screening services.

a. The primary outcome: Women screened for cervical cancer

- Before the intervention, most of the 105 participants (76.2%) had never been screened for cervical cancer whilst 23.8% had been screened at least once

- After the educational session 43% (n=45) of the 105 participants had been screened.
- A chi-square statistic of $\chi^2 (1, N=105) = 8.5714$ and a p value of .003415 was obtained. It can be concluded that the relation between these variables was significant at $p < .05$.
- An odds ratio of 2.4 was observed concluding that knowledgeable women were 2.4 times likely to test for cervical cancer than those without knowledge.

The above findings are similar to the reports of the Namibia Health Demographic Survey (DHS) that only 23.6% of eligible women were screened for cervical cancer (MoHSS, 2013). Low screening rates are reported across African countries such as South Africa (13%), Kenya (3.2%) and Ghana (12%) (Rwamugira et al., 2019, Morema et al., 2014, Abotchie and Shokar, 2009).

Considering the percentage of women who were screened before the educational intervention and those who were screened after attending the educational sessions, it can be concluded that the primary outcome was successful. Musa et al. (2017) is of the notion that theory-based educational interventions improve screening uptake with 50%. Similarly, other authors reported an improvement in the number of women screened after educational sessions (Chigbu et al., 2017, Dreyer et al., 2015, Okore, 2011). However, educational interventions are not always successful as failures were reported by (Gana et al., 2017, Rosser et al., 2015, Maree and Moitse, 2014, Maree et al., 2012).

b. secondary outcome 1: Knowledge

- Less than 50% (47%) of the total pre-test responses were correct compared to 94% correct responses in the post-test.
- Mean knowledge score for the post-test (M=92.91%, SD=10.12%) was more than mean knowledge for pre-test (M=41.48%, SD=25.10%).
- The intervention increased the mark by a mean of 51.43% marks, (95% CI: 46.37%- 56.48%).
- All the nine (9) questions assessing women's knowledge on cervical cancer and screening services yielded a significant Chi-square value in relation to pre and post marks

- The educational program improved the knowledge of women regarding cervical cancer and the screening services, significantly.

The study provided evidence of a significant knowledge gap that demands to be addressed. Women lacked fundamental knowledge as they did not know that pre-cancers can be treated, HPV causes cervical cancer and screening is a prevention measure. This finding is supported by Abotchie and Shokar (2009) who found only 7.9% of the sample of women in their study, were aware of the link between HPV and cervical cancer. This inadequate knowledge reinforces the theme of knowledge which were emphasized during the in-depth interviews across all three cohorts' nurses, women, and men. Lack of knowledge is widely documented as a barrier to screening (Mwaka et al., 2016, Zengwe, 2016, Botha and Richter, 2015, Chidyaonga-Maseko et al., 2015, Munthali et al., 2015, Wong et al., 2009, Abotchie and Shokar, 2009). However, some studies have reported adequate knowledge in women (Al-Naggar et al., 2010).

The improvement in knowledge from this current study echoes those of (Abiodun et al., 2014) where the mean differences between the pre- and post-test scores for the intervention group were statistically significant. Similarly, mean knowledge scores were improved through education in Ebu et al. (2015) and also in Hanaa and Hend (2014). On the contrary, Tum et al. (2013) concluded that their intervention did not improve awareness.

c. Secondary outcome 2: Attitude

- Most of the participants (83%) viewed screening as important during the pre-test.
- Although the participant's knowledge was initially poor, their attitudes were positive.
- A chi-square statistic of $\chi^2 (2, N=105) = 21.5401$; $p=0.000021$; at $p < .05$ was obtained showing that the relation between attitudes and education was significant.

These findings oppose the findings of Aweke et al. (2017) that poor knowledge is associated with a poor attitude. The post-test of the current study provided evidence of a 20% improvement in attitude towards screening to almost 100%. Although almost the total sample believed screening was important for them, it was disappointing to find only 45 of the 105 (43%) participants had been screened. However, based on the

positive results obtained in terms of attitudes, it can be concluded that the educational program was successful. Previous studies have also reported an attitude improvement owing to educational interventions (Kocaöz et al., 2018, Ersin and Bahar, 2017, Caster et al., 2017a, Abiodun et al., 2014).

d. Secondary outcome 3: clinic's improvement of its readiness to offer screening services.

- There was an improvement in clinic readiness from the initial audits where the clinics scored 56%, 67% and 72% respectively to 100% for two of the clinics. The third clinic was not subjected to a second audit as it would not be offering screening services.
- Before the improvement of the clinics, women who reported for screening could not be screened due to the lack of basic requirements such as speculums.
- On 15 and 16 May 2019, health extension workers were trained. A cervical cancer message was given on 12 May 2019 as a Mother's Day message at the OLPH Roman Catholic Church to about 300 women.
- After the training of the HEW and the message delivered, there was a surge of women going to the clinics for screening, but the majority were not screened due to the shortage of resources.
- Those who could afford paying for the screening service, accessed the service at private practitioners.
- The research could not exactly enumerate number of women who were turned away at the clinics without receiving service. In May alone, the clinics turned away 27 women who had come for screening.

These outcomes confirm the theme about shortages that all three cohorts of the in-depth interviews (women, men, and nurses) raised. Shortage of resources for effective cervical cancer screening has previously been highlighted several times (PEPFAR, 2017, MoHSS, 2018, Munthali et al., 2015, Bukowska-Durawa and Luszczynska, 2014, Denny et al., 2006). It is against this background that the WHO (2014) recommends improved financial support for cervical cancer programs in order to close the existing gaps in the healthcare delivery system. These recommendations resulted in the fact that Namibia received PEPFAR support towards a cervical cancer program using VIA based population screening. The availability of resources allowed the educational intervention to commence as the clinics were ready to provide screening.

Namibia received a total of US\$2,000,000 in two-year for Cervical Cancer Screening and Treatment programming from the United States of America PEPFAR funding. These funds were specifically allocated to reduce the morbidity and mortality of HIV positive women on ART, by increasing the screening and treatment of pre-invasive cervical lesions. However, HIV negative women have also been screened (USDS, 2019). Through PEPFAR funding and technical support from the U.S. Centres for Disease Control and Prevention, the MoHSS has managed to offer cervical cancer screening services at 37 state facilities across the country – an expansion to 53 facilities by Sept 2020 has been planned (USDS, 2019)

The study concludes that the educational intervention coupled with addressing the gaps in the healthcare delivery system, significantly improved screening opportunities. The months May to July 2019 before the clinics were equipped to offer screening, demonstrated that education can motivate women to go for screening. However, if the system is not ready, screening will not improve. The transition of the screening method from Pap smear based to VIA based also assisted with the availability of resources, as VIA is a cost-effective method. The MoHSS in their transition from Pap smear based population screening, to VIA argues that for an equivalent cost of one Pap smear, 50 VIA screening test can be done (MoHSS, 2018).

7.5 CONCLUSION OF CHAPTER

This chapter discussed the findings of the three phases of the study from which the conclusions were drawn. The discussion of the scoping review was presented in Chapter 4 of the study, whilst in this chapter focused on the barriers to screening utilisation, suggested strategies to improve screening utilisation and the outcomes of the intervention. The next chapter presents the justification, limitations, recommendations, and conclusions of this work.

CHAPTER 8: JUSTIFICATION, LIMITATIONS, RECOMMENDATIONS AND CONCLUSION OF THE STUDY

8.1 INTRODUCTION

This is the last chapter of the study and it presents the justification for the study, the recommendations, limitations, and conclusions.

8.2 JUSTIFICATION OF THE STUDY

An appraisal of the study chapters is presented to justify the study. The overall aim of this study was to understand interventions that have previously been employed to improve cervical cancer screening utilisation, explore barriers to screening and ultimately develop and test an intervention to improve screening utilisation. The study had three phases, each with an objective that was structured to ultimately meet the set overall aim. The objectives were as follows:

1. To describe the interventions previously employed to increase cervical cancer screening utilisation in Africa.
2. To explore the barriers to cervical cancer screening utilisation according to women, men, nurses, and the healthcare delivery system.
3. To develop and pilot test an intervention to improve cervical cancer screening utilisation. The primary outcome was absolute numbers of women screened. The secondary outcomes were knowledge, attitude, and the clinic's improvement on its readiness to offer screening services.

Chapter 1: Orientation to the study

The chapter provided a succinct and comprehensive summary of the study. It outlined the global epidemiology of cervical cancer, barriers to screening and strategies to improve screening utilisation. In addition, it presented the problem statement, aim and objectives, significance of the study, research design and methods, and ethical considerations.

Chapter 2: Literature review

This chapter presented the outcomes of a literature search on cervical cancer, screening and barriers to screening, pre-cancer treatment and the treatment of

cervical cancer. Interventions to improve screening uptake were summarized in this chapter as they were well elaborated in the scoping review chapter.

Chapter 3: Research design and methods

This chapter focussed on the design and methods that allowed the researcher to meet the study objectives. It described the research methods used for the scoping review, the in-depth interviews, clinical audits and finally the pilot testing of the community based educational intervention.

Chapter 4: The Scoping review

This chapter explained the steps followed in conducting a scoping review. It described the purpose and aims of the current scoping review, scoping review process, search strategy and findings. The findings were also discussed in this chapter.

Chapter 5: The results of Phase 2 of the study

In this chapter, the findings of the in-depth interviews with women, men and nurses were presented in terms of themes and sub-themes what emerged from the interview. In addition, the outcomes on the readiness of the clinics to offer cervical cancer screening were outlined.

Chapter 6: The results of phase 3 of the study

This chapter described the step taken leading to the implementation and pilot testing of the community based educational intervention. This included the preparation of Health Extension Workers, the stakeholders meeting and launch of the community based educational program and the pilot test. Both descriptive and Chi – square test was used to assess the outcomes and significance between the variables.

Chapter 7: Discussion of the research findings of Phases 2 and 3

The findings from the three cohorts of in-depth interviews were triangulated together with the clinic audits. The findings were discussed and concluded. In addition, the community based educational intervention outcomes were discussed in terms of the available literature and conclusions were made. Therefore, the study is justified because the objectives were achieved.

Chapter 8: Justification, limitations, recommendations, and conclusion of study

This is the current chapter in which conclusions and recommendations are drawn from the entire study findings.

8.3 LIMITATIONS OF THE STUDY

Although all diligence was taken to ensure the ethical and scientific soundness of this study, the study had limitations. Therefore, the study findings should be considered in light of the fact that:

- The scoping review might have missed some studies which met the inclusion criteria.
- Phase 2 of the study was qualitative. Qualitative studies do not reflect the only truth about a phenomenon, as the raw data can be interpreted in various ways. In addition, the findings of qualitative work cannot be extended to wider populations.
- The knowledge assessments were carried out immediately after the educational sessions and were tested again at a later stage.
- Pre- and post-test design were used and not randomised control study so the generalisation of findings to entire population is limited.

8.3.1 RECOMMENDATIONS

The three phases of this study resulted into the following recommendations. These recommendations are modelled by the constructs of the Health Belief Model (Jones et al. (2015) , Smeltzer et al. (2010) , Polit and Beck (2010) as this was the conceptual framework of choice for the study. The ultimate objective of the recommendations is to improve and maintain cervical cancer screening utilisation.

8.3.2 Improving perceived susceptibility and severity

- a. This study recommends health education, in particular face-to-face, in order to improve screening utilisation.

Throughout the study, from the scoping review, in-depth interviews and the community based educational program, it became clear that knowledge about cervical cancer and its screening was inadequate. The majority of the women did not know that the cause

of cervical cancer was the HPV. This knowledge gap influences the perception of women on their susceptibility to cervical cancer. Low perceived susceptibility influence decisions to take up screening. Similarly, most nurses and women had never had a personal encounter with a woman with cervical cancer, therefore they did not deem cervical cancer as a serious disease. Health education will need to be tailored to address the specific demographic characteristics that were associated with low screening according to the in-depth interviews. These demographic characteristics included young age, women's cultural beliefs and the women's educational level. The current health education intervention improved the utilisation of screening at the study setting. As the women became aware of causes, risks, and severity of cervical cancer, they valued the screening test.

8.3.3 Improving perceived benefits

- a. This study recommends that prevention messages on cervical cancer should emphasize the fact that the disease has a treatable pre-cancer stage.

Most of the women were unaware that cervical cancer can be prevented by eradicating the pre-cancerous cells. Therefore, some could not perceive the benefits of screening as there was no intervention to stop the disease from progressing. In addition, the communities need to be informed that cervical cancer, when diagnosed at an early stage, can be successfully treated with surgery and/or radiotherapy.

- b. This study recommends that the cervical cancer programs considers the lessons learnt from the other programs, for example the HIV program where an HIV positive client uses her life example to educate others on positive living. The cervical cancer program should include women who have had pre-cancers successfully treated, to encourage other women to use screening opportunities. Cervical cancer survivors can also serve as educators, as they are able to share their personal experiences and the importance of screening. There is need for women in particular to be informed of benefits of certain procedures such as 'screen and treat', cryotherapy, thermocoagulation and LLETZ.

8.3.4 Reducing the perceived barriers

Considering the study findings, the following recommendations are made in order to address and reduce the perceived barriers to screening.

1. Implementation of community-based health educational sessions through trained HEWs to supplement facility-based sessions.
2. Cervical cancer screening services should be offered at facilities daily to enhance utilisation of screening. This will prevent that women are sent home without being screened and being booked to return for screening on another day.
3. Implementation of mobile community screening through VIA and treatment with thermocoagulation to address access to service, distance to the clinic, dropouts between educational session and screening at health facility.
4. The appointment and training of focal persons, specifically for the Cervical Cancer Program, who can spearhead the program implementation in a similar way to other programs with assigned persons such as HIV program and TB program.
5. Nurses' education and training is required for the screening procedure and professional conduct to serve the women with respect. Avoiding unprofessional behaviour could reduce one of the barriers to screening, which emerged in the study themes.
6. Governments need to increase and maintain funding or source other funders towards cervical cancer screening programs. Currently in Namibia, PEPFAR is the major partner supporting the government of Namibia in the cervical cancer program. However, PEPFAR funding focusses on HIV positive women whilst the majority of the women, are not yet prioritised at this stage. Although HIV positive women are known to have a five times greater risk to develop cervical cancer in comparison to those who are HIV negative, screening should be available for all woman. Screening remains a priority regardless of HIV status especially in Namibia where there is generally a high incidence of STI, early sexual debut, high smoking rates in women particularly in the south of the country and high parity in some regions such as the Kavango regions. Funding should address current shortages especially instruments such as the vaginal speculums.

8.3.5 Cues to action

The cervical cancer program in Namibia is in its infancy stage after being commenced in 2018. There is need for cues to action to encourage women to use screening opportunities.

1. Stakeholder and community leadership engagement thorough feedback and discussions is a fundamental need for the success of community-based programs. This study experienced enormous support from political, municipal, religious, and business leaders in the community. Communities consider the advice of leaders as seen when the deputy mayor accompanied 13 women for cervical cancer screening in a single day.
2. Enhance social support through educating the public. It is expected to lead to equip the community with correct information and could result in improved peer encouragement to utilise screening services and improved men's influence especially partner support.
3. The gender of service provider should not be a barrier to screening. Communities or individuals who prefer female providers, should be screened by female nurses.
4. Enhance health care practitioner-initiated recommendation for screening especially nurses at PHC clinics as they encounter many eligible women who are yet to be screened for cervical cancer.

8.3.6 Self-efficacy

- a. Health education should inform women that they have power to successfully prevent cervical cancer by preventing HPV acquisition, early diagnosis, and treatment of pre- cancers.

The women and men appear to take cervical cancer as a death sentence. This wrong perception needs to be corrected through clear and concise health education.

8.3.7 Further study

Although the literature and current findings support face-to-face educational sessions, this method may have limitations such as transport costs, venues, and travel restrictions due to infection pandemics such as the recent CoVID 19. Therefore, with the technological advancement, this study recommends further studies investigating

the outcomes interactive virtual educational sessions using platforms such as Skype, Zoom, WhatsApp and Facebook live.

8.4 CONCLUSIONS

This study developed and pilot tested a community based educational program to improve cervical cancer screening utilisation in Keetmanshoop, Namibia. To achieve this aim, the study was divided into three phases, which included a scoping review on interventions employed in Africa to improve cervical cancer screening utilisation in the period 2008-2018. The interventions identified were health education, HPV testing, integrating health services and multi-faceted health promotion activities. Barriers found to deter women from screening for cervical cancer were inadequate knowledge about cervical cancer and the screening test, shortage of resources, influence of fear, woman's demographic characteristics and the role of knowledge and support. Strategies suggested to improve screening utilisation were health education, nurse training and modifications in the healthcare delivery system. Clinic audits were also conducted and shortages of requirements for screening such as speculums, endocervical brushes, linen, linen savers were identified. In response to the barriers and strategies identified, a community based educational intervention program was developed, with the input of stakeholders. Health extension workers (HEWs) (n=21) received a two-day education and training program in order to prepare them to participate in educating and mobilising women for the community based educational program. The knowledge of HEWs improved after the education and training. A total of 105 women participated in the community based educational program; of which 43% (n=45) went for screening after the educational sessions. The secondary outcomes also improved namely, knowledge, attitude, and clinic readiness in offering cervical cancer screening. Statistical analysis showed that the OR of woman screening after the community based educational session was 2.4. Lastly, when reflecting on the outcomes of the study, it can be concluded that the community based educational program was successful in its attempt to improve the utilisation of cervical cancer screening in Keetmanshoop, Namibia.

8.5 CONTRIBUTIONS OF THE STUDY

With cervical cancer being the number one cause of cancer related deaths in women in Namibia and other African countries, there is urgent need for concerted and well-informed efforts to reduce and eventually eliminate cervical cancer in Namibia and beyond. Using scientific methods of research, the study provided scientific data about screening utilisation. Firstly, the scoping review provided evidence on interventions that have been employed in Africa to improve screening utilisation during the period 2008-2018 together with the screening outcomes. This synthesis is crucial for decision makers of cervical cancer programs in adopting interventions as it informs them on modifications that may be required to ensure improvement in screening utilisation. Secondly, the barriers to screening uptake were presented to the local stakeholders in the region of the study setting, which influenced decision making. Using qualitative interviews allowed for a strategic feedback channel from the community and the voices of the consumers of healthcare to be heard. Similarly, some of the nurses' concerns were addressed as the research findings were presented to the stakeholders at the feedback meeting and launch of the community based educational program. In addition, the barriers, and strategies to improve screening uptake were presented to the Namibia Cervical Cancer Program managers. The media awareness through print and electronic media covering the stakeholders meeting and the educational sessions presented to women, had the potential to increase knowledge and awareness throughout Namibia. Thirdly, the educational sessions offered to women in the community, successfully created a demand for screening services and coupled with PEPFAR support, through the roll out of the VIA screening programme, resulted in an increase in cervical cancer screening uptake. This serves as an example of the positive outcomes of additional funding to cervical cancer screening programs. The HEWs engagement by means of the training and education program offered to them, assisted with recruiting women for the community based educational sessions. The National program is in the process of adopting this community-based approach. Overall, this study became a significant scientific informant for the Namibia National Cervical Cancer Prevention Program which was launched in 2018 and was still in the roll out phase at the time of the submission of this thesis.

8.6 RESEARCHER'S REFLECTION ON HER EXPERIENCE

Self-reflections are paramount for a researcher and creates an awareness of the role of the self in the research process. It also helps researchers to contribute to their own development as scholars and identify opportunities and ideas for new research. (Yarrow, 2018, Callary et al., 2012). In addition, reflection maximises doctoral experience so that it is more than just a period of time when students master research skills, submit a thesis and contribute to the literature in the field. (Callary et al., 2012, Murphy and Wibberley, 2017). Instead, self-evaluation or reflexivity allows researchers to consider the influence their position plays in their research with an aim to produce authentic analysis (Orange, 2016).

The scoping review conducted in Phase 1 of the study; it was the first time I conducted such a review. This was one of the most daunting tasks I had to complete as it involved a lot of reading. I learnt the need to remain focussed and use my critical thinking skills when reading. Some of the articles did not meet the inclusion criteria and had to be excluded, however I could easily get lost in the reading and lose valuable time. After I had the scoping findings, my major challenge was writing it up, for which I greatly benefited from mentoring of my supervisor.

In Phase 2, I was anxious about gaining access to participants for in-depth interviews, meeting possible language barriers as the town is multi-lingual and whether I would be able to meet desired sample sizes. However, I was able to cross this barrier easily as the community showed much interest in being interviewed. The participants were eager to give their opinions on the barriers to cervical cancer screening and the possible strategies to improve the utilisation of screening. I was extremely humbled by the participants as they allowed me into their homes and workplaces during the interviews. Indeed, people are the greatest resource needed for the success of any project.

Similarly, Phase 3 of the study had its great moments and some moments of feeling stranded and nervous. I had to learn skills of community entrance. It was an honour being invited to the Governor's office to present my work to her and abreast her before the stakeholders meeting and launch of the community based educational program. The preparation for the launch was involving and exhausting, yet so fulfilling. At the same time I was nervous of something wrong and unexpected happening on the day of the launch whilst the event was being recorded by media. However, the leaders'

engagement and open dialogue about positive change, resulted in a successful event. The contributions of various stakeholders towards the community based educational program confirmed that when community leaders are engaged, the response is better than healthcare practitioners lobbying for support on their own. Indeed, I learnt that I once again realised my passion for facilitation and working with women as I spearheaded the educational sessions across communities of various socio-economic characteristics. The shortages in the healthcare facilities brought so much frustration since women had to be sent home without being screened. This led to the uncomfortable decision to halt the educational sessions to avoid women losing trust in the healthcare system. At that moment, I contemplated purchasing speculums and donate it to the MoHSS. The supervisor's support and guidance during this time of indecisiveness was of great welcome.

If I had an opportunity to repeat this study, I would involve the nurses in charge of the primary health clinics during the HEWs education and training to acquire their engagement in the program. My concern is that the trained HEWs were now more informed than the professional nurses practicing in the clinics. I would also engage medical practitioners in private practice prior to the pilot test. This could help to assess the improvement in screening utilisation more accurately, as the study could not account for women, who after attending the education program, went for screening at private practice. Only one private practice gave feedback that they witnessed a 100 percent increase in the number of women screened as a result of the health education, particularly the session at the OLPH on the Mother's Day. I have learnt from the experience as Guti (2013) notes *apply wisdom by learning from the past mistakes. One mistake is enough to be a good lesson.*

In conclusion, it was more an exploration and experimentation, an understanding of social and ethical issues associated with conducting research through to academic writing and meticulous editing. After this experience I can attest that I am a different person with a developing new academic identity.

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cervical cancer screening in Omaheke, Namibia.*

APPENDICES

APPENDIX 1: DATA EXTRACTION SHEET

NAME OF DATA BASE

Numb er	Year	Title	Author	Name of African Country	Type of Intervention	Pre/post design	Measure of outcome	Other notes

APPENDIX 2. IN-DEPTH INTERVIEW SCHEDULE FOR WOMEN

Name: Temptation Chigova

Student Number: 2060616

Research title: Improving cervical cancer screening utilisation in Keetmanshoop Namibia: An intervention study

Section A: Socio- demographic characteristics of the women

Instruction: - please provide short answer to the socio-demographic questions

Sequential number	Questions	Coding categories	code	Skip	
Participant sequential number:					
	Age in completed years				
	Ethnicity	Nama- Damara	1		
		Oshiwambo	2		
		Caprivian	3		
		Kavango	4		
		Otjiherero	5		
		Colored	6		
		White Namibian	7		
		Tswana	8		
		Bushmen	9		
		Others	10		
	Religion	Catholic	1		
		Orthodox	2		
		Protestant	3		
		Islam	4		
		Hindu	5		
		African tradition	6		
		Others	7		
	Marital status	Never married	1		
		Married	2		

		Separated/divorced	3	
		widow or widower	4	
1.5.	Level of education	Never went to school	1	
		Basic education	2	
		Elementary education	3	
		college diploma and above	4	
1.6.	Number of pregnancies	Never	1	
		1-3	2	
		3-5	3	
		More than 5	4	
1.7	History of Sexually Transmitted Diseases	No	1	
		Yes	2	
1.8.	Current employment status	Employed	1	
		Unemployed	2	

Section B.

Please tell me what you know about cervical cancer.

Please tell me what you know about the test for cervical cancer?

Please tell me what prevented you from being tested for cervical cancer?

What do you think could have helped you or can help you to be tested?

APPENDIX 3: IN-DEPTH INTERVIEW SCHEDULE WITH MEN

Name: Temptation Chigova

Student Number: 2060616

Research title: Improving cervical cancer screening utilisation in Keetmanshoop Namibia: An intervention study

Section A: Socio- demographic characteristics of the man

Instruction: - please provide short answer to the socio-demographic questions

Sequential number	Questions	Coding categories	code	Skip
Women unique code				
	Age in completed years			
	Ethnicity	Nama- Damara	1	
		Oshiwambo	2	
		Caprivian	3	
		Kavango	4	
		Otjiherero	5	
		Colored	6	
		White Namibian	7	
		Tswana	8	
		Bushmen	9	
		Others	10	
	Religion	Catholic	1	
		Orthodox	2	
		Protestant	3	
		Islam	4	
		Hindu	5	
		African tradition	6	
		Others	7	
	Marital status	Never married	1	skip
		Married	2	

		Separated/divorced	3	
		Widow or widower	4	
1.6.	Level of education	Never went to school	1	skip
		Basic education	2	
		Elementary education	3	
		College diploma and above	4	

Section B.

Please tell me what you know about cervical cancer.

Please tell me what you know about the test for cervical cancer.

What do you think prevents women from being tested for cervical cancer?

What do you think could be done to help women to be tested for cervical cancer?

APPENDIX 4: IN-DEPTH INTERVIEW SCHEDULE FOR NURSES

Name: Temptation Chigova

Student Number: 2060616

Research title: Improving cervical cancer screening utilisation in Keetmanshoop Namibia: An intervention study

Section A: Socio- demographic characteristics of the nurse

Instruction: - please provide short answer to the socio-demographic questions

Sequential number	Questions	Coding categories	code	Skip
	Gender	Male	1	
		Female	2	
	Age in completed years			
	Professional designation	Enrolled Nurse	1	
		Registered Nurse	2	
	Duration of employment as a nurse at the clinic	3-6 months	1	
		6-12 months	2	
		1-3 years	3	
		3-5 years	4	
		5 or more years	5	
	Level of education	Certificate	1	skip
		Diploma	2	
		Degree	3	
		Post Graduate qualification	4	

Section B.

Please tell me what you know about cervical cancer.

Please tell me what you know about the test for cervical cancer.

The number of women screened for cervical cancer at this clinic is low, what do you think prevents women from being tested for cervical cancer?

What do you think could be done to help women to be tested for cervical cancer?

Please tell me about your competency in conducting the procedure of cervical cancer screening

APPENDIX 5: CLINIC AUDIT TOOL (CHECKLIST) ADOPTED FROM SIBIYA (2012)

CLINIC AUDIT TOOL FOR EACH CONSULTING ROOM

STANDARD: Adequate equipment and resources are available for the effective implementation of the cervical screening programme.

EQUIPMENT AND RESOURCES	YES/ N/A	NO/ N/A	QUANTITY/ N/A	COMMENTS INCLUDING ADEQUACY/CONDITION AND METHODS OF STERILISATION WHERE APPLICABLE
Number of consulting rooms				
Curtains/ Screens				
Drugs for treatment				
Cusco vaginal speculum				
Aylesbury spatulum				
Glass specimen slides				
Cytological fixative				
Cytology laboratory forms				
Water for lubricating speculum				
Paper hand towel for draping				
Angle poise lamp/ torch				
Couch				
Sheets/ Draw sheets				
Linen Protector				
Bucket with disinfectant				
Gloves				
Steriliser/Autoclave				

APPENDIX 6: QUESTIONNAIRE TO ASSESS WOMEN'S KNOWLEDGE, ATTITUDE AND PRACTICES PRE, DURING AND POST INTERVENTION.

Name: Temptation Chigova

Student Number: 2060616

Research title: Improving cervical cancer screening utilisation in Keetmanshoop Namibia: An Intervention study

Section A: Socio-demographic data

Instruction- Please tick in the appropriate box

	Sex	Female	codes	Skip	
1.1	Age				
1.2	Marital status	Single	1		
		Married	2		
		Divorced	3		
		Widow	4		
1.3	Educational level	Never went to school	1		
		Basic education	2		
		Elementary education	3		
		College diploma and above	4		
1.4	Religion	Catholic	1		
		orthodox	2		
		Protestant	3		
		Islam	4		
		Hindu	5		
		African tradition	6		
		Others	7		
1.5	Tribe	Nama- Damara	1		
		Oshiwambo	2		
		Caprivian	3		
		Kavango	4		
		Otjiherero	5		
		Colored	6		
		White Namibian	7		
		Tswana	8		
		Bushmen	9		
		Others	10		
1.6		Employed	1		

	Employment status	Unemployed	2	
1.7	Number of children	No child	1	
		1 child	2	
		2 to 4 children	3	
		>4 children	4	
1.8	Distance to the nearest health facility	Less than 5km	1	
		5 to 10 km	2	
		>10km	3	

2. Assessment of knowledge on cervical cancer and screening

Sequential number	Questions	Coding categories	Code	Skip
2.1	Have you ever heard of cervical cancer?	Yes	1	
		No	2	
2.2	What do you think cervical cancer is?			
2.3	Is there a way woman can be tested for this cervical cancer?	Yes	1	
		No	2	
2.4	Who should be tested or screened for cervical cancer?			
2.5	Do you know the name of the test used to test women for cervical cancer?	Yes	1	
		No	2	
2.6	If yes, state the name			
2.7	Where can a woman have this test done?	Any health facility, clinics	1	
		Only at hospital	2	
		Only at big hospital in Windhoek	3	
2.8	How often should one have this test done?	Once in life	1	
		Once every 3 years	2	
		I don't know	3	

3. Assessment of attitudes of cervical cancer screening

Sequential number	Question	Coding categories	Code	Skip
1.	Do you regard the pap smear important for you?	Agree	1	
		Disagree	2	
		Don't know	3	

2.	How comfortable are you to do the test?	Comfortable	1	
		Uncomfortable	2	
		Don't know	3	
3.	If you would be uncomfortable, what could be your reason?	Fear of pain	1	
		Invading privacy	2	
		Scared of outcome/results	3	
		Other reason	4	
		I don't know	5	

Assessment of practices of cervical cancer screening

	Have you been tested for cervical cancer	Yes	1
		No	2

APPENDIX 7: INFORMATION SHEET

Study title: Improving cervical cancer screening utilisation in Keetmanshoop Namibia: An intervention study

Reference Number:

Principal Researcher: Temptation Chigova

Address: House Number BM37-164, Keetmanshoop, Namibia

Contact Number: +264813420668

Introduction

Good day Sir / Madam,

My name is Temptation Chigova, a student at the University of the Witwatersrand studying towards a Doctor of Philosophy in Nursing Science. I am doing research on the development of an intervention program to increase cervical cancer screening in Keetmanshoop. Research is a process of looking for answers or getting more understanding about a particular problem. In this study I intend to explore the barriers to cervical cancer screening, design a program to increase screening, test it and assess the outcomes.

Invitation to participate

I am inviting you to participate in an interview where you will share your knowledge and experiences about cervical cancer, its screening, barriers to screening and what could be done to increase screening. You are invited to participate in this study because you are (choose applicable)

A woman aged 18 years or older and you stay in Keetmanshoop

A man 18 years and older living in Keetmanshoop

An enrolled/registered nurse working in this clinic for minimum of 3 months

Your participation in this study is entirely voluntary. You have full right to decline to the interview partly or totally without any effect on the care provided to you. In addition you are also free to withdraw from the study at any one point during the interview or study, without any penalty or loss of benefits that you may be entitled to.

What is involved in the study?

If you do consent to participate, the data collection will take place between October 2018 and June 2019. If you will participate in this research, you will be interviewed individually. Interviews will happen at an agreed venue which both you and I find comfortable and private. The interview is expected to take approximately 45 minutes. Your responses will help me to come up with genuine conclusions and recommendations that would potentially help Namibia Ministry of Health and health facilities to improve cervical cancer screening. Therefore, you will be encouraged to express your views freely. No names will be used for identification, instead sequential numbers will be used. If you agree to participate in this study and have the discussion audio recorded, I kindly request you to read and sign the attached Declarations of Consent to participate and audio recording.

Risks and Benefits

No physical risks are anticipated in this study. However, you may experience psychological stress due to the interview. In case of such, you will be referred to the counsellor Ms Linah Nikanor who agreed to offer counselling services when required. There may be no direct benefit to you for participating in this study. However, it is expected that the findings of this study will inform the Ministry of Health and Social Services and relevant stakeholders about barriers of screening and the outcomes of the intervention program. The findings from this study will be communicated to the senior medical officer and Primary Health Care manager of the Keetmanshoop District.

Reimbursements for “out of pocket” expenses.

I undertake to provide refreshments during the interview and no costs are anticipated to be incurred by you.

Who to contact if you have been harmed or have any concerns?

Permission to conduct this research has been granted by the Human Research Ethics Committee (HREC) of the University of Witwatersrand (approval attached as Appendix 20 and 21) as well as the Biomedical Research Ethics Committee (BREC) and Research Management Committee (RMC) of Namibia and will be conducted according to accepted and applicable national and international ethical guidelines and principles, including those of the International Declaration of Helsinki (2013). If you have any concerns about the research or feel that you have been harmed in any way by participating in this study, please contact my supervisor.

Prof Lize Maree

Head of Department –Nursing education

Email lize.maree@wits.ac.za

Tel 0114884272/4196

Fax 011 488 4195 4268 0865297385

7 York road, Parktown.2193

University of the Witwatersrand

OR

Dr. Clement Penny Chairperson of the HREC in Steve Biko Centre for Bioethics, PV Tobias Building (0117172301- or clement.penny@wits.ac.za)

Alternatively, here in Namibia you can contact Ms Hilma Nangombe - Chairperson of BREC and RMC at Ministry of Health and Social Services, Harvey Street, Windhoek Namibia at (hngombe@mhss.gov.na) or +264 61 272 286)

Confidentiality

I undertake to take all the necessary precautions to keep all personal information confidential. All paper-based data gathered from the research will be kept in a safe lockable cabinet while electronic data will be stored in a password locked computer whose access is restricted to me only. All data will be deleted two years post the study publication or six years after data collection if the study is not

published. I pledge to present the study findings based on actual facts and no false information shall be included.

If you are willing to participate in this study and have it audio recorded please read and sign the attached Declarations of Consent for participation and audio recording.

APPENDIX 8: DECLARATION BY PARTICIPANT FOR PARTICIPATING IN THE STUDY

By signing below, I agree to take part in the research study entitled:
Improving cervical cancer screening utilisation in Keetmanshoop Namibia: An intervention study

I declare that:

I have read the attached information sheet and it is written in a language with which I am comfortable with.

I have had an opportunity to ask and questions I had, and all my questions have been answered to my satisfaction.

I understand that taking part in this study is voluntary and I was not forced to participate.

I may opt to withdraw my participation in this study at any point and will not be penalised in any way whatsoever.

Signed at (place) On (date) 2018.

Signature of participant

APPENDIX 9: DECLARATION BY PARTICIPANT TO AUDIO RECORDING

By signing below, I to be audio recorded during the interview of the research entitled: Improving cervical cancer screening utilisation in Keetmanshoop Namibia: An intervention study

I declare that:

I have read the attached information sheet and it is written in a language with which I am comfortable with.

I have had an opportunity to ask and questions I had, and all my questions have been answered to my satisfaction.

I understand that taking part in this study is voluntary and I was not forced to participate.

I may opt to withdraw my participation in this study at any point and will not be penalised in any way whatsoever.

Signed at (place) On (date) 2018.

Signature of participant

ANNEXURE 10: APPLICATION FOR PERMISSION TO USE KEETMANSHOOP PRIMARY HEALTH CARE CLINICS AS STUDY SITES

Mrs T. CHIGOVA

P. BAG 1447

KEETMANSHOOP

20TH June 2018

THROUGH: THE SENIOR MEDICAL OFFICER (DR H.SABWA)

ATTENTION: Primary Health Care Supervisor (Ms R. Namukwambi)

Keetmanshoop Health District

P. BAG 2101

Keetmanshoop

Namibia

Dear Madam

RE: APPLICATION FOR AUTHORISATION TO CONDUCT RESEARCH FOR STUDY PURPOSE AT
KEETMANSHOOP PRIMARY HEALTH CARE CLINICS

I would like to apply for authorisation to conduct research for the purpose of study. The title of the study is Improving cervical cancer screening utilisation in Keetmanshoop Namibia: An intervention study. I am currently undertaking a PhD in Nursing Science with the University of Witwatersrand South Africa. The research is a requirement for the completing of this course. This will be a three phased study with an aim to explore the barriers to cervical cancer screening, design an intervention to increase screening and ultimately assess the outcome of the intervention. The study sites intended are all the three Keetmanshoop urban Primary Health Care clinics .Phase 1 a scoping review will be conducted to explore interventions that have been employed to increase cervical cancer screening utilisation in Africa and what were their outcomes. In phase 2 will individual in-depth interviews with women, men and nurses will be employed to identify the barriers to cervical cancer screening in Keetmanshoop. Additionally, structured observation using a checklist will be done in the three urban PHC clinics to assess clinic readiness in offering cervical cancer screening. The third and last phase will see designing of an intervention program to improve screening utilisation, implementation of the program and ultimately assess the outcome. The respondents' interviews will take approximately 45 minutes. I am currently based at Keetmanshoop Regional Health Training Centre as a lecturer for the Registered Nurse diploma programme.

The research proposal, the questionnaire and other relevant documents are attached for your information. The study will abide by all ethical considerations in working with the human subjects. Participation is purely voluntary, and subjects can withdraw at any point. Patients will not incur any harm or costs due to participation in this study. I will cover all costs involved in this research.

If you have any concerns about the research and you need to contact my research supervisor is ;

Prof Lize Maree

Head of Department –Nursing education

Email lize.maree@wits.ac.za

Tel 0114884272/4196

Fax 011 488 4195 4268 0865297385

7 York road, Parktown.2193

University of the Witwatersrand

Looking forward to your positive response

Yours faithfully

Mrs T. CHIGOVA

Lecturer Diploma Project Keetmanshoop Regional Health Training Centre

Ministry of Health and Social Services

Cell: 0813420668, Tel: 063-225572

e-mail:temptationchigova@gmail.com

APPENDIX 11 : CONDITIONAL PERMISSION TO USE PHC CLINICS AS STUDY SITES



REPUBLIC OF NAMIBIA

Ministry of Health and Social Services

Private Bag 2101
Keetmanshoop
Namibia

Keetmanshoop State Hospital
State hospital grounds
Keetmanshoop

Tel.: 00264-63-2209071
Fax: 00264-63-223981
Email: drsabwa@yahoo.co.uk

Enquiries: H.K. Sabwa

Ref. No:

Date: 28 June 2018

**THE CHAIRPERSON
HUMAN RESEARCH ETHICS COMMITTEE
UNIVERSITY OF WITWATERSRAND
JOHANNESBURG
SOUTH AFRICA**

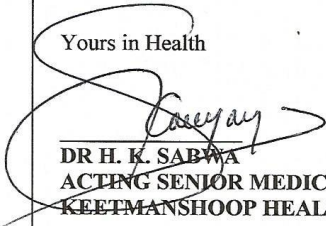
**REF: RESEARCH STUDY SITE PERMISSION FOR MRS TEMPTATION CHIGOVA
RESEARCH TOPIC- IMPROVING CERVICAL CANCER SCREENING UPTAKE
IN KEETMANSHOOP NAMIBIA: AN INTERVENTION STUDY.**

Dear Sir / madam

The above refers; The Keetmanshoop Health District is aware of the intentions of Mrs. T. Chigova to pursue the study entitled, **"Improving cervical cancer screening uptake in Keetmanshoop Namibia: An intervention study."** Keetmanshoop Health District has a problem of low screening of cervical cancer and therefore welcomes this prospective study.

The district management will grant permission to the Primary Health Care Clinics in Keetmanshoop Urban as study sites only on condition of an ethical approval by the Human Research Ethics Committee (HREC) at University of Witwatersrand as well as the Biomedical Research Ethics Committee (BREC) and Research Management Committee (RMC) of Namibia.

Yours in Health


**DR H. K. SABWA
ACTING SENIOR MEDICAL OFFICER
KEETMANSHOOP HEALTH DISTRICT**





REPUBLIC OF NAMIBIA

Ministry of Health and Social Services

Private Bag 2101
Keetmanshoop
Namibia

Enquiries: H.K. Sabwa

Keetmanshoop State Hospital
State hospital grounds
Keetmanshoop

Ref. No:

Tel.: 00264-63-2209071
Fax: 00264-63-223981
Email: drsabwa@yahoo.co.uk

Date: 28 June 2018

**THE CHAIRPERSON
HUMAN RESEARCH ETHICS COMMITTEE
UNIVERSITY OF WITWATERSRAND
JOHANNESBURG
SOUTH AFRICA**

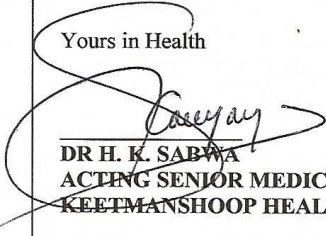
**REF: RESEARCH STUDY SITE PERMISSION FOR MRS TEMPTATION CHIGOVA
RESEARCH TOPIC- IMPROVING CERVICAL CANCER SCREENING UPTAKE
IN KEETMANSHOOP NAMIBIA: AN INTERVENTION STUDY.**

Dear Sir / madam

The above refers; The Keetmanshoop Health District is aware of the intentions of Mrs. T. Chigova to pursue the study entitled, **"Improving cervical cancer screening uptake in Keetmanshoop Namibia: An intervention study."** Keetmanshoop Health District has a problem of low screening of cervical cancer and therefore welcomes this prospective study.

The district management will grant permission to the Primary Health Care Clinics in Keetmanshoop Urban as study sites only on condition of an ethical approval by the Human Research Ethics Committee (HREC) at University of Witwatersrand as well as the Biomedical Research Ethics Committee (BREC) and Research Management Committee (RMC) of Namibia.

Yours in Health


**DR H. K. SABWA
ACTING SENIOR MEDICAL OFFICER
KEETMANSHOOP HEALTH DISTRICT**



APPENDIX 12 : APPROVAL BY THE NAMIBIA BIOMEDICAL RESEARCH ETHICS COMMITTEE



REPUBLIC OF NAMIBIA

Ministry of Health and Social Services

Private Bag 13198
Windhoek
Namibia

Ministerial Building
Harvey Street
Windhoek

Tel: 061 – 203 2537
Fax: 061 – 222558
E-mail: btjivambi@mhss.gov.na

OFFICE OF THE PERMANENT SECRETARY

Ref: 17/3/3 TC

Enquiries: Mr. B. Tjivambi

Date: 10 September 2018

Ms. Temptation Chigova
PO Box 1447
Keetmanshoop

Dear Ms. Chigova

Re: Improving cervical cancer screening utilisation in Keetmanshoop Urban Namibia: An intervention study

1. Reference is made to your application to conduct the above-mentioned study.
2. The proposal has been evaluated and found to have merit.
3. **Kindly be informed that permission to conduct the study has been granted under the following conditions:**
 - 3.1 The data to be collected must only be used for academic purpose;
 - 3.2 No other data should be collected other than the data stated in the proposal;
 - 3.3 Stipulated ethical considerations in the protocol related to the protection of Human Subjects should be observed and adhered to, any violation thereof will lead to termination of the study at any stage;

AB

- 3.4 A quarterly report to be submitted to the Ministry's Research Unit;
- 3.5 Preliminary findings to be submitted upon completion of the study;
- 3.6 Final report to be submitted upon completion of the study;
- 3.7 Separate permission should be sought from the Ministry for the publication of the findings.
4. All the cost implications that will result from this study will be the responsibility of the applicant and **not** of the MoHSS.

Yours sincerely,


MR. B.T. NANGOMBE
PERMANENT SECRETARY



"Health for All"

Appendix 13a: HEW Pre and Post Test Mark Sheet

Attendee Code	pre-test	post-test	difference
1	50	77	27
2	53	79.5	26.5
3	67	86	19
4	70	82	12
5	53	81.8	28.8
6	63	86	23
7	67	73	6
8	36	77	41
9	67	95	28
10	73	90.9	17.9
11	47	82	35
12	57	50	-7
13	55	86	31
14	60	77	17
15	53	68	15
16	83	95	12
17	53	59	6
18	77	95	18
19	70	100	30
20	57	100	43
21	63	95	32

APPENDIX 13b HEW PRE AND POST TEST ASSESSMENT

Your code Number (As per attendance register)

:

MINISTRY OF HEALTH AND SOCIAL SERVICES
KEETMANSHOOP DISTRICT – PRIMARY HEALTH
CARE DIVISION

HEALTH EXTENSION WORKERS – CERVICAL
CANCER TRAINING

Pre and post –test assessment form.

Question 1

1. Cervical cancer is the number ____ common cancer in women in Namibia.	Answer.....
a) One b) Two c) Third d) Fourth	
2. Cancer deaths are more common in ____.	Answer
a) Old women b) Young women and those with HIV c) Women with Diabetes d) Women with High blood pressure	
3. Which of the following is correct about cervical cancer cases in Namibia ____.	Answer
a) They are currently reducing b) They have remained the same over the past decade c) They are on the rise	251

Question 2

1. Cervical cancer is the number ____ common cancer in women in Namibia.	Answer.....
a) One b) Two c) Third d) Fourth	

2. Cancer deaths are more common in ____.	Answer
a) Old women b) Young women and those with HIV c) Women with Diabetes d) Women with High blood pressure	

3. Which of the following is correct about cervical cancer cases in Namibia ____.	Answer
a) They are currently reducing b) They have remained the same over the past decade c) They are on the rise d) There is no statistics about cervical cancer in Namibia	

4. Which of the following is true about HPV and HIV ____.	Answer
a) They are one and the same thing b) HIV slows down the rate at which HPV causes cervical cancer c) HIV fastens the rate at which HPV causes cervical cancer d) There is no effect	

5. Which of the following is correct about the cervix	Answer
a) it is the same as the vagina b) Another name for uterus c) Another name for the ovaries d) It is the narrow, lower third of the womb. (Mouth of the womb)	

6. Which of the following is a cause for cervical cancer?	Answer.....
a) High blood pressure b) Use of condoms c) Human Papilloma Virus (HPV) d) Malnutrition	

7. Which of the following is correct about the HPV?	Answer
a) it is transmitted by mosquitoes b) It is transmitted by sexual intercourse c) It can sufficiently be prevented by using condoms d) It is uncommon in women	

8. Cervical cancer develops through how many steps: ____.	Answer
a) 1 b) 2 c) 3 d) 4	

9. All of the following are risk factors for developing cervical cancer except: ____.	Answer
a) Family history b) A woman who Starts sexual activity late in life c) smoking d) Multiple partners	

10. All of the following are signs and symptoms of cervical cancer except?	Answer
--	--------------

a) Increased vaginal discharge b) Bleeding after intercourse c) Vaginal odour d) fracture of legs	
--	--

Question 3 Fill in the missing word. (1X10 =10)

1. Cervical cancer prevention is in how many levels
2. The first level called primary prevention is about preventing the woman from contracting
3. Second level is about for cervical cancer
4. The third level is about the cervical cancer disease when it has been diagnosed.
5. HPV is the most effective and reliable primary prevention technique
6. The test currently used in Keetmanshoop to test for cervical cancer is called
7. Is someone is found with cervical cancer, Drs will decide the appropriate treatment method. It can be; Surgery (operation) or Radiotherapy (burning with waves) or
8. In Keetmanshoop, where can a woman be tested for cervical cancer
9. Currently the clinics do the cervical cancer tests on which day of the week
10. The woman who is tested for cervical cancer should come back to collect her results after
11. HIV negative women who are aged between 25-49 years should have a Pap smear once in every years

12. When a nurse do Pap smear on a woman, they use a smooth
 to rub the mouth of the womb to collect cells which are
 send to the lab.

No//	Statement	Write whether True or False
1.	The nurses cut some piece of cervix for testing cervical cancer	
2.	Pap smear is only for people who are HIV positive	
3.	Pap smear is only for old women	
4.	Pap smear makes you pregnant	
5.	Pap smear can make you paralysed	
6.	It's done by nurses who just wants to see private parts of the women	
7.	It's more painful than labour or delivering a baby	
8.	Nurses can leave instruments in you	

Question 4

Say whether the following statements are True or False

The End

Mathew 5 vs 5 'blessed are the meek for they shall inherit the earth'

APPENDIX 14 HEW TRAINING EVALUATION

Health Extension Workers

Cervical Cancer Workshop

FINAL TRAINING EVALUATION

PURPOSE & INSTRUCTIONS: Thank you for participating in the cervical cancer workshop. Your feedback is very important to us and will help us to improve the curriculum, training materials, and training approach. You do not need to put your name on this evaluation – your responses are anonymous. Use the back of this form for additional comments if necessary.

Please complete the following table by ticking (v) the column of your choice for each item below:

Please rate the quality of the following:	Not Applicable	Poor	Fair	Good	Very Good	Excellent
Course Venue						
PowerPoint Slides						
Audio/Visual Equipment						
Participant Handbook						
Overall Course Curriculum						
Small group Exercises						
Large group Discussions						
Scenarios/Dilemmas						
Energizers/Icebreakers						
Course Facilitators						
Evaluations/Feedback Opportunities						

1A. If you have any comments related to Question 1 above, please note them here:

--

Please indicate for each module objective the degree to which you feel the objective was achieved by ticking (v) the appropriate column (one tick for each objective).

Objectives <i>By the end of this training, participants will be able to:</i>	Did not Achieve	Achieved Somewhat	Fully Achieved
Session 0 Course introductions.			
Course objectives			
Session 1. Introduction to cervical cancer in Namibia			
Comments on session 1:			
Session 2. What is cervix, cervical cancer, cause and signs and symptoms			
Comments on Session 2:			
Session 3 Prevention methods for cervical cancer			
Comments on Session 3:			
Session 4 Barriers to screening and strategies to improve			
Comments on session 4:			

Session 5 Counselling in cervical cancer			
Comments			
Session 6 The health education program and the way forward			
Comments on session 6:			

3. What part of the training will be **most** useful when educating women on cervical cancer? Please share why.
4. What part of the training will be the *least* useful for your work? Please describe why.
5. In the next three months, which skills/knowledge from this course will you be able to implement? Provide as many specifics as possible.
6. Which skill/ knowledge areas do you feel you need more training or assistance on? Be as specific as possible.
7. For future trainings, what topics areas would you like to be included in more detail or that were not covered in this course?
8. If you were given the task of redesigning this training, what would you change and why? Please be specific. Consider the following in your remarks:
 - **Content** provided (topics presented/discussed, theoretical knowledge vs. skill acquisition)
 - Training **methods** used
 - **Organization** of training (logistics, length/# days, location)

Any other comments?

.....

.....

.....

.....

Thank you for your feedback!

APPENDIX 15: ATTENDANCE REGISTER STAKEHOLDERS MEETING AND COMMUNITY BASED EDUCATIONAL PROGRAM LAUNCH (Extract page 1 of 5 pages)

ATTENDANCE REGISTER STAKEHOLDERS MEETING						
Date: 05 JUNE 2019		Venue: ST. FRANCIS DE SALES CENTER-TSEIBLAAGTE				
No//	Stakeholders Name and Surname	Name of organisation represented	Phone number	Email	Comments	Signature of stakeholders
1.	Hon. L. Basson	Govenor	081284061			
2.	B.M. Muntenda	Director	0811603721	barth.muntenda@gmail.com		
3.	Hilla Titus	Deputy Mayor	0815554965	hstahizimba@gmail.com		
4.	Lindi Hartung	Alcova/Kara	0814349956	lindi.hartung@gmail.com		
5.	FR. JOSEPH KUNJAPARAMBIL	ROMAN CATHOLIC CHURCH	0812938589	kpjmsfs@gmail.com		
6.	Gylvester Noljaera	Forward in Faith Church UNAM	0818167393			
7.	Justus Nankanda	Lecturer	0812105006	ndemurong@gmail.com		
8.	Helena Mhlope	UNAM Lecturer	0812725724	hmhlope@unam.na		
9.	ERNST JAST	CLLR	081780859	ernst.jast@gmail.com		
10.	Daniel Floor	UNAM	0812625252	04606d66@gmail.com		
11.	Ester N. Numbi	HA	081 88 1701	engnmet@unam.na		
12.	Elizabeth Kangoka	Unam	0812265496	ekangoka@unam.na		
13.	Dr A.T CHIGWA	NOTHSSS	0814138139	clatichigwa@gmail.com		

APPENDIX 16: NAMIBIAN NEWSPAPER ARTICLE

Cervical cancer death rate on the rise

• LUQMAN CLOETE

THE number of women dying from cervical cancer in Namibia is on the rise, with the disease claiming 135 lives in 2018.

//Karas governor Lucia Basson made this revelation at a cervical cancer awareness day at Keetmanshoop on Wednesday.

"According to our national register, cervical cancer is on the rise in our country, and it is the second-most prevalent cancer among women in Namibia," the governor stated.

Most of the women dying of the cancer were in the prime of their lives, between the ages of 30 and 49 years.

"The loss of a woman's life is always a tragedy," the governor remarked. Basson said she was informed that most women do not go

for cervical cancer tests, but that if the disease is diagnosed early, it can be treated successfully.

"The only way forward is to get tested," she urged, calling on health workers to educate women about the importance of cervical cancer screening.

The governor also encouraged business people, church leaders and community members to raise awareness of the importance of cervical cancer screening – a vital preventative test which can identify potentially harmful cells, and treat them before they develop into cancer.

She also urged men to get circumcised, saying the benefits of male circumcision include reducing the risk of contracting HIV and transmitting the human papilloma virus (HPV), which causes cancer in women.

According to Basson, the health ministry is working on getting the vaccine for the HPV to young girls to protect them from developing cervical cancer.

Private health facilities are offering the vaccine, while the government and partners are working on getting it for state patients.

Cervical cancer awareness coordinator, Tempty Chigowa stressed in a presentation at the event that cervical cancer screening in the Keetmanshoop district is "basically zero".

She said according to a recent survey, women in the district choose not to go for screening due to a lack of confidentiality, rude nurses, lack of education, long queues at clinics, and long distances to health facilities.

Chigowa added that the health dis-

trict has thus embarked on awareness campaign strategies, such as house-to-house visits, to sensitise women about cervical cancer to encourage them to go for testing.

She cited the lack of nurses trained in performing the cancer screenings, and the lack of equipment to perform the tests as some challenges highlighted by medical staff who were interviewed during the survey.

//Karas health director Bartholomeus Muntenda said the district will soon have the right equipment for cervical cancer screening, despite the current economic hardships in the country.

The director said the nurses' attitudes' satisfactory rating currently stands at 78%, and pledged that this will be improved.

– luqman@namibian.com.na

APPENDIX 17: NEW ERA NEWSPAPER ARTICLE

Cervical cancer claimed 135 lives in 2018: Basson

KEETMANSHOOP - In 2018 cervical cancer accounted for 135 deaths of women mostly aged between 30 and 49 in Namibia, the Governor of the //Karas Region, Lucia Basson, has said. Basson revealed these statistics during a stakeholders' engagement on cervical cancer here on Wednesday, involving the ministries of health and social services, sport, youth and national service;

information and communication technology; churches, businesses and community members. "It is high time we take responsibility of our health. This cancer can be treated successfully as long as it is found early and the only way is to get tested. The government has in place effective and affordable testing methods that lead to the early detection of cervical cancer," Basson said.

According to the national cancer register, cervical cancer is on the rise in Namibia and it is the second most common cancer among women in the country, said Basson. She added that the loss of a woman's life is always a tragedy and the impact of cervical cancer is devastating for the affected women, their families and communities. Basson stated that the health of the community does not rest on

the health ministry alone but on the community itself too. The governor urged healthcare workers, nurses, doctors and health extension workers to educate women and empower them and to do so to wholeheartedly serve the community with dignity and respect. Basson also called on business people, church leaders and community leaders to be ambassadors of crucial

messages and encourage women to take care of their bodies. "To the men, I say take care of your own health and do not leave the women in your life in this regard. It is your responsibility to encourage your sisters, girlfriend or wife to access reproductive health, including testing for cervical and breast cancer," she said. - *Namp*

APPENDIX 18: WOMEN'S ATTENDANCE SLIP TO THE COMMUNITY BASED EDUCATIONAL PROGRAM

Study title: Improving cervical cancer screening utilisation in Keetmanshoop Urban Namibia: An intervention study

I heard about cervical cancer and testing via at an educational program I attended on..... at

And I have made a decision to test for cervical cancer

APPENDIX 19: STAKEHOLDERS INVITATION LETTER TO THE LAUNCH OF THE COMMUNITY BASED EDUCATIONAL SESSION



REPUBLIC OF NAMIBIA
Ministry of Health and Social Services

Private Bag 2101
Keetmanshoop State Hospital
Keetmanshoop
Namibia

Tel: 063 – 2209000
Fax: 063 – 223981

Enquiries: Ms. T. Chigova/Ms. G. Scott

Date: 17 May 2019

RE: Cervical Cancer Awareness Launch

Dear

The Ministry of Health and Social Services, //Kharas Health Directorate will host a Cervical Cancer Awareness Launch on the 5th June 2019. Cervical Cancer is the second common cancer in women and the cases and death are on the rise in Namibia. One of the effective methods to prevent cervical cancer is testing. However, in Keetmanshoop most women have never been tested leaving them vulnerable to developing cervical cancer. It is against this background that the Keetmanshoop Health District intends to launch an awareness campaign on this disease. The awareness campaign within our district is expected to educate the community and empower women to take prevention measures including getting tested for cervical cancer. As a crucial stakeholder in the health of our community, your presence is kindly requested at this event.

The Awareness Campaign launch details are;

Date: *Wednesday the 5th June 2019.*

Time: *10 am- 12PM*

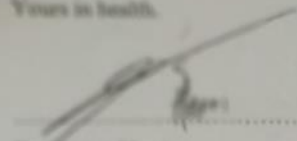
Venue: *St Francis de Sales Centre*

Key Note Address: Hon. Lucia Basson Governor of the //Kharas Region

Looking forward to your presence at this meeting. If you have any questions, please don't hesitate to contact us, Mrs. Temptation Chigova at 081 3420668 or Ms. G. Scott at 0811623247.

Thanks in advance

Yours in health,



Dr. Conon Harris

Acting Senior Medical Officer
Kawmanshoop Health District



APPENDIX 20: WITS HREC INTERVENTION PHASE APPROVAL



R14/49 Ms T Chigova

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL) CLEARANCE CERTIFICATE NO. M180717

NAME: Ms T Chigova
(Principal Investigator)
DEPARTMENT: School of Therapeutic Sciences
Department of Nursing Education
Medical School
University

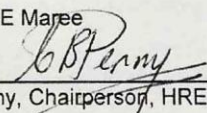
PROJECT TITLE: Improving cervical cancer screening utilisation in
Keetmanshoop urban Namibia: an intervention study

DATE CONSIDERED: 27/07/2018

DECISION: Approved unconditionally

CONDITIONS:

SUPERVISOR: Professor JE Maree

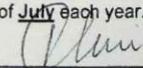
APPROVED BY: 
Dr CB Penny, Chairperson, HREC (Medical)

DATE OF APPROVAL: 12/10/2018

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

DECLARATION OF INVESTIGATORS

To be completed in duplicate and ONE COPY returned to the Research Office Secretary on 3rd floor, Phillip V Tobias Building, Parktown, University of the Witwatersrand, Johannesburg.
I/We fully understand the conditions under which I am/we are authorised to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated from the research protocol as approved, I/we undertake to resubmit to the Committee. I agree to submit a yearly progress report. When a funder requires annual re-certification, the application date will be one year after the date of the meeting when the study was initially reviewed. In this case, the study was initially reviewed in July and will therefore reports and re-certification will be due early in the month of July each year. Unreported changes to the application may invalidate the clearance given by the HREC (Medical).


Principal Investigator Signature

15/10/2018
Date

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

APPENDIX 21: WITS HREC APPROVAL FOR INTERVENTION PHASE

UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG

R1449 Ms T Chigova

**HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
CLEARANCE CERTIFICATE NO. M190585**

NAME: Ms T Chigova
(Principal Investigator)
DEPARTMENT: School of Therapeutic Sciences
Department of Nursing Education
Medical School
University

PROJECT TITLE: Improving cervical cancer screening utilization in
Kestmanshoop urban Namibia: an intervention study

DATE CONSIDERED: Ad hoc

DECISION: Approved unconditionally

CONDITIONS: Phase III approval (M180717 was Phase II)

SUPERVISOR: Professor L. Mares

APPROVED BY: 
Dr. CB Penny, Chairperson, HREC (Medical)

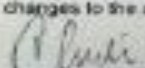
DATE OF APPROVAL: 2019/05/12

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

DECLARATION OF INVESTIGATORS

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

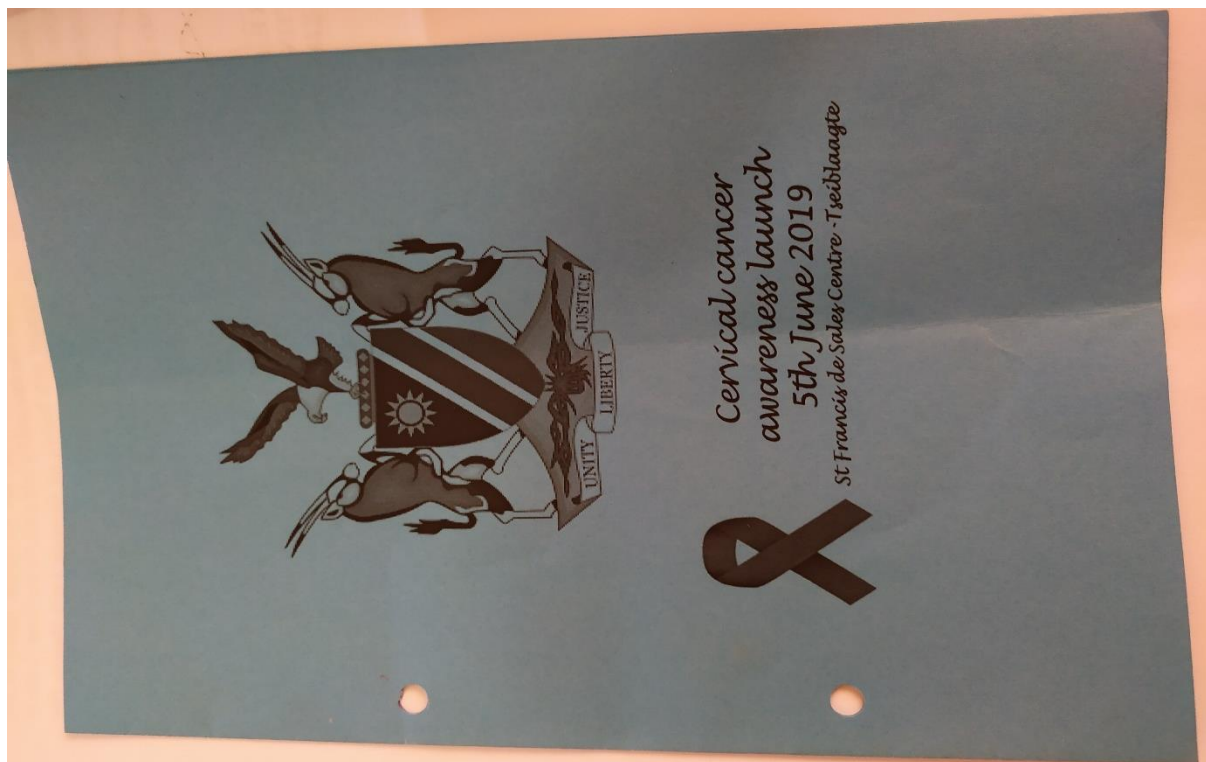
I/we fully understand the conditions under which I/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to submit details to the Committee.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


Principal Investigator Signature

13/06/2019
Date

PLEASE QUOTE THE CLEARANCE CERTIFICATE NUMBER IN ALL ENQUIRIES

APPENDIX 22: PROGRAM OF THE STAKEHOLDERS MEETING AND LAUNCH OF EDUCATIONAL PROGRAM



Stakeholders' Cervical Cancer Information Sharing Meeting and Awareness Launch		
Master of Ceremonies: Mrs S.T. Haufiku		
Time: 10H00-12H00		
No	Item	Responsible Person
1.	Arrival of guests	Ushers
2.	National and AU Anthems	All
3.	Opening prayer	Father Joseph
4.	Welcoming remarks and purpose of gathering	Her Worship Gaudentia Kröhne
5.	Presentation : Cervical cancer in Keetmanshoop	Sr. Temptly Chigova
6.	Discussion	Sr. Temptly Chigova
7.	Community member feedback	
8.	Chief Medical Officer	Dr. R. Kooper
9.	Desk of the Director (MoHSS)	Mr. B. Muntenda
10.	Key note Address by the Governor	H.E Hon Lucia Basson
11.	Vote of thanks	Ms Lindy Hartung
12.	Closing prayer	Pastor Sylvester Ndjavera
13.	Refreshments	Ushers

Testing prevents cervical cancer. The time to test is now!

NATIONAL ANTHEM
 Namibia, land of the brave
 Freedom fight we have won
 Glory to their bravery
 Whose blood waters our freedom

We give our love and loyalty
 Together in unity
 Contrasting beautiful Namibia

Namibia our country
 Beloved land of savannahs
 Hold high the banner of liberty

Namibia our Country
 Namibia Motherland
 We love thee

AFRICAN UNION ANTHEM
 Let us all unite and celebrate together
 The victories won for our liberation
 Let us dedicate ourselves to rise together
 To defend our liberty and unity

*O Sons and Daughters of Africa
 Flesh of the Sun and Flesh of the Sky
 Let us make Africa the Tree of Life*

APPENDIX 23: The content of the health educations presentations



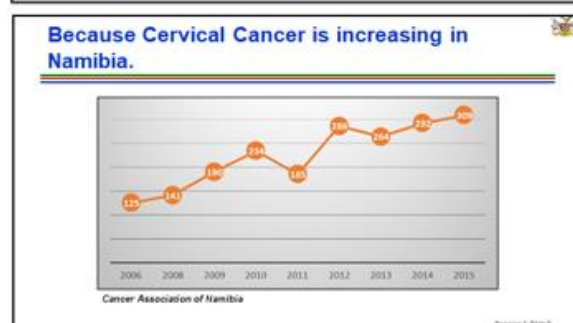
Cervical Cancer information

**Sr. Temptation Chigova
And Health Extension Workers**

Self –test (How much do I already know)

- Distribution of questionnaires (English / Afrikaans/ Oshiwambo you choose)
- Pens (please kindly return - will need them again)
- Black pen is for now before we start teaching
- Blue pen is for after the teaching

Session 1: Slide 5



Q 2 Is pre-cancer and cervical cancer the same ?

- **NO they are different**
- **Cervical Cancer** is when cells of the cervix (mouth of the womb) grow uncontrollably and fast unlike normal cells resulting in **tumours or growths**.
- **Cervical cancer** is caused by infection with a virus called **Human Papillomavirus, or HPV**.
- **Pre-cancer** is early changes in the cells that can lead to cancer if not treated. These abnormal cells are easy to treat, and pre-cancer is curable.

Session 1: Slide 7

After the session women should be able to answer

1. Why should women know about cervical cancer?
2. Is pre-cancer and cervical cancer the same?
3. What causes cervical cancer ?
4. What can put women at risk of developing cervical cancer?
5. What are the signs and symptoms of cervical cancer?
6. HOW can cervical cancer be prevented ?
7. WHO should be vaccinated?
8. WHO should be tested for cervical cancer?
9. WHERE and WHEN can I get tested?
10. What to expect when I go for VIA, cervical cancer testing?

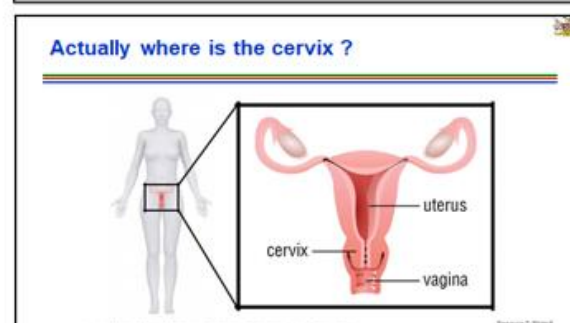
Session 1: Slide 8

1. Why should women know about cervical cancer?

- **Number 1 cause of cancer-related deaths in women in Namibia.**
- Causes unnecessary death among women
 - Especially among younger women (30-49 years)
 - Even higher death rate among HIV+ women

The majority of cervical cancer cases are both preventable and treatable – when identified early.

Session 1: Slide 9

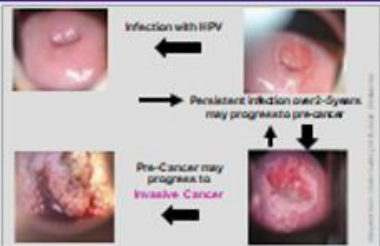


Q3. What causes cervical cancer ?

- Cervical cancer is caused by a virus called the **Human Papillomavirus (HPV)** which is sexually transmitted .
- Most women contract HPV at or soon after their first sexual encounter.
- Most people with HPV show no signs or symptoms
- The virus can go away on its own but in some it remains and start to cause pre-cancer.

Session 1: Slide 8

Major Steps in the Development of Cervical Cancer



Q4. What can put a woman at risk of developing cervical cancer ?

- Being HIV positive (risk is 4 times higher than HIV negative. All HIV positive women need to be tested).
- Having multiple sexual partners
- Smoking
- Early sexual activity at young age
- Having other STIs
- If you were pregnant and delivered children many times
- Family history

NB !! These are risks not necessarily causes.

Q5. How can cervical cancer be prevented?

A. Prevent contracting the virus

1. Abstinence, delay sexual activity
2. Condom use
3. Medical Male Circumcision.
4. **HPV vaccination** – available at the private Drs, will soon be in state but will start with young girls aged 9-13

B. Get tested and treated for cervical pre-cancer

C. Get treatment for cancer

Q6 : Who should be vaccinated for HPV

1. HPV vaccination benefits **young girls aged 9-13** before they start sexual activity.
2. **Conditional benefit** to women who have been sexually active, as they most likely already have the HPV because it is a common infection. (The vaccine is also expensive to most women)

Q7. What are the Signs and Symptoms of Cervical Cancer

Cervical cancer often has no symptoms until it is more advanced. When symptoms do occur, they can be non-specific, such as: **YOU CANT WAIT FOR SYMPTOMS !!**

- Increased vaginal discharge
- Vaginal odour
- Bleeding after intercourse
- Pain in the back, leg, pelvis (waist), abdomen
- Swelling in leg(s)

Q8 : Who should be tested for cervical cancer ?

Any woman who was or is sexually active

New method of VIA targets :

HIV Negative

25 years – 49 years

HIV Positive (REMEMBER HIV POSITIVE ARE AT HIGH RISK)

20 years – 49 years

Women older than 50 years who needs testing will test with pap smear

Q9. Where and when can I be tested ?

Where is it done in Keetmanshoop : Keetmanshoop clinic and at the hospital using new testing method called VIA. Private Drs use Pap smear

When is test done: The Tseiblaagte clinic on Fridays AND Hospital VIA room everyday (next to ART clinic) at Private you have to book with your Dr.

Who does the test : Trained nurse or Dr.

When do I get the result : New method called VIA you get your result instantly. At private result is after 2 weeks

Q10 . What to expect when I go for VIA ?

- The nurse will have a brief talk with you
- Given a gown / sheet to cover yourself. (It is best to go with a skirt or dress Not trousers)
- Nurse will perform breast exam
- Insert an instrument through your vagina so we can see the mouth of the womb (cervix)
- Then will put vinegar on the cervix for 1 minute.
- After 1 minute the nurse will examine your cervix and get result.
- Result can be either VIA negative, Positive or suspicious of cancer (share the Atlas for Pictures)

Remember

- In Namibia, cervical cancer rates are rising
- Only a few women have been tested for the disease.
- Cervical cancer is almost always caused by a virus called HPV which is sexually transmitted from men to women, and most women have the virus at one time.
- Prevention methods are preventing getting the virus – abstinence, safe sex, male circumcision, HPV vaccination
- Getting tested using VIA at the clinics and hospital and pap smear is an effective prevention method.

Session 1: Slide 17

Important 5 messages

1. Cervical cancer is a disease that can be prevented.
2. There are tests to detect early changes in the cervix, known as pre-cancers, that may lead to cancer if not treated.
3. There are safe and effective treatments for these early changes.
4. All HIV-negative women aged 25 to 50 should be screened for cervical cancer at least once, preferably every three to five years, depending on the test used. HIV-positive women should start screening at age 20.
5. There is a vaccine for girls that can help prevent cervical cancer

Session 1: Slide 18

This educational session is supported by:



Session 1: Slide 19

The End

Thank you very much for your time

Any questions

Post test - Did we learn something ?

Session 1: Slide 20

APPENDIX 24: GALLERY

NB Photographs with permission of the various people

1. Health Education session on Mother's Day 2019 at Roman Catholic OLPH church



2. Health extension workers education and training



3. Stakeholders meeting and launch of the community based educational program



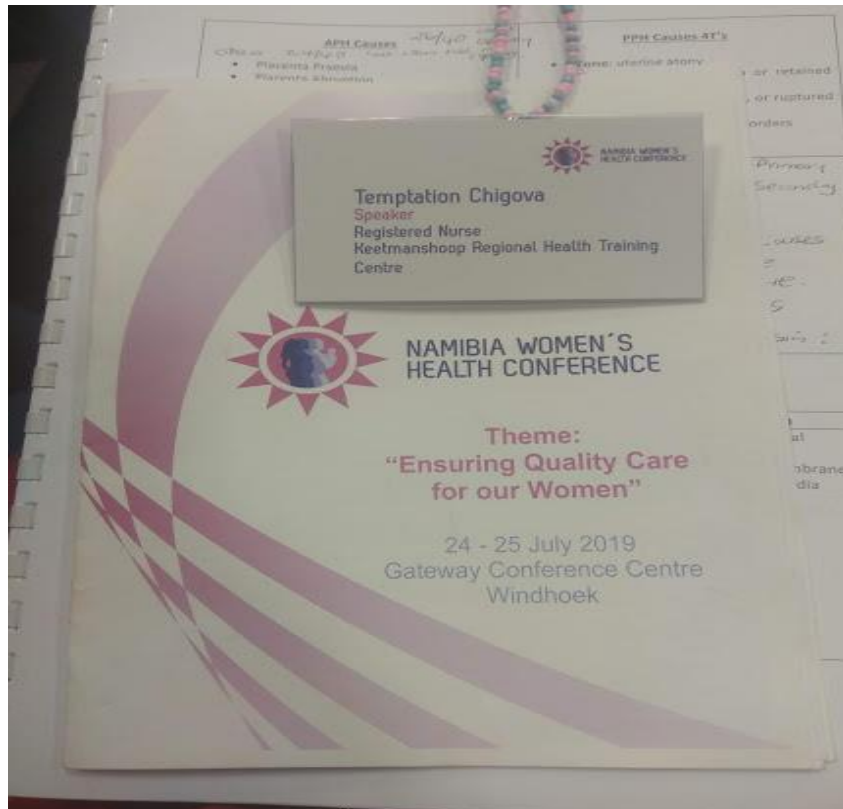


The researcher Temptation Chigova speaking at the launch of the educational program



Director of MoHSS addressing at the launch of the community based educational program

4. Presentation at the Namibia Women's health Conference July 2019



5. The researcher presenting at the Namibia Women's Health Conference July 2019



6. The researcher making announcement at the local radio about the educational sessions



7. The researcher conducting a community based educational session at one of the venues

