



**DETERMINANTS OF CERVICAL CANCER SCREENING UPTAKE AMONG
WOMEN OF CHILDBEARING AGE IN MANGOCHI DISTRICT MALAWI**

MSC IN REPRODUCTIVE HEALTH THESIS

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**UNIVERSITY OF MALAWI
KAMUZU COLLEGE OF NURSING**

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Msc in Reproductive Health Thesis

By

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Declaration

I, the undersigned, hereby declare that this thesis is my original work and has not been presented for any degree in any other university. I have acknowledged the use of other people's work. The thesis has 30,800 words.

Felistas Sungeni Mpachika

Full Legal Name

Signature

Date

Certificate of Approval

The undersigned hereby declare that this thesis is the original work of **Felistas Sungeni Mpachika** and whereby any additional information has been used it has been duly acknowledged. It is therefore submitted with our approval.

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Dedication

To my dear husband Dumisani, let us continue challenging our capabilities. Let this inspire us even more.

To all those working day and night fighting cervical cancer, your efforts are not in vain.

Acknowledgements

I thank God for the gift of life and His grace that keeps me going each day.

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Abstract

Cervical cancer (CC), a deadly disease, has a high burden and mortality at global and local level. Despite the burden, Malawi registers low uptake of cervical cancer screening (CCS). This study examined the determinants of uptake of cervical cancer screening among women of child bearing age in Mangochi district.

A quantitative cross-sectional study was conducted in five health facilities offering visual inspection using acetic acid (VIA). A total of 482 women between the ages of 18-49 were selected using a multi-stage sampling method. Data that were collected through a structured questionnaire were coded and analysed using SPSS version 22. Logistic regression model was used to identify factors associated with CCS.

Few respondents (13.1%) had ever been screened for CC. Those between 18-24 years were less likely to undergo CCS compared to those in 25-35 years category (AOR=0.38, 95% CI 0.19-0.77, $P = 0.007$). Respondents who had not received health education on CC were less likely to undergo CCS than those who had received (AOR=0.20, 95% CI 0.10-0.41, $P=0.000$). HIV positive respondents were more likely to screen than their HIV negative counterparts (AOR= 2.41, 95% CI 1.22-4.78, $P=0.012$). Respondents with high-level of knowledge on signs and symptoms of CC were more likely to undergo CCS than those with low-knowledge (AOR=2.91, 95% CI 1.51-5.63, $P=0.002$).

Cervical cancer is preventable and one strategy to prevent it is through timely screening. This study has established that age, religion, ethnicity, residence, HIV status and health education are among the determinants of CCS uptake. We therefore recommend that CCS should be offered to all WCBA in this era of HIV infection, that community based screening services should be encouraged to reach out to more women residing in rural areas, that health education should be offered in all strategic areas in health facilities to give out information to clients accessing other health services and that the integration of antiretroviral therapy (ART) and CCS clinics should be rolled out to most health facilities to offer CCS to HIV positive women.

Key words: Determinants, women of child bearing age, cervical cancer screening, uptake.

Table of Contents

BSc in Nursing (University of Malawi).....	iii
Declaration	i
Certificate of Approval.....	ii
Dedication	iii
Acknowledgements	iv
Abstract.....	v
Table of Contents	vi
List of Figures.....	x
List of Tables	xi
List of Appendices.....	xii
List of Abbreviations and Acronyms	xiii
Operational Definitions	xiv
Determinants :.....	xiv
Chapter 1	1
1.0 Introduction and Background	1
1.1 Introduction.....	1
1.2 Background	2
1.3 Study Significance.....	5
1.4 Problem Statement	5
1.5 Rationale for the Study.....	6
1.6 Objectives	6
1.6.1 Broad objective.	6
1.6.2 Specific objectives.	6
1.7 Research questions.....	7
Chapter 2.....	8
2.0 Conceptual Model and Literature Review	8
2.1 Introduction.....	8
2.2 Conceptual Model	8

2.2.1 Behavioural Model of Health Services Use (Ronald M. Andersen, 1995)	8
2.2.2 Contextual Predisposing Characteristics.....	10
2.2.3 Contextual Enabling Characteristics	11
2.2.4 Contextual Need Characteristics	11
2.2.5 Individual Predisposing Characteristics.....	12
2.2.6 Individual Enabling Characteristics	12
2.2.7 Individual Need Characteristics	12
2.2.8 Health Behaviours.....	13
2.2.9 Outcomes	13
2.3 Application of the Conceptual Model	14
2.4 Literature Review	16
2.4.1 Cervical Cancer Screening and Predisposing Factors	16
2.4.2 Health System Factors and Cervical Cancer Screening.....	20
2.4.3 Enabling Factors and Cervical Cancer Screening.....	22
2.4.4 Individual Need and Cervical Cancer Screening Uptake	22
2.5 Conclusion	24
Chapter 3	25
3.0 Research Methodology	25
3.1 Introduction.....	25
3.2 Study Design.....	25
3.3 Study population	25
3.4 Study Site	26
3.5 Sample size determination and sampling procedure.....	26
3.5.1 Inclusion criteria	29
3.5.2 Exclusion criteria	29
3.5.3 Recruitment process	29
3.6 Data Collection and Management	30

3.7 Data Validity and Reliability	31
3.8 Data management and Analysis	32
3.9 Ethical Considerations	32
3.10 Dissemination of the Results	33
3.11 Conclusion	33
Chapter 4.....	34
4.0 Results.....	34
4.1 Introduction.....	34
4.2 Socio-Demographic Characteristics of Respondents.....	34
4.3 Organizational Factors of Cervical Cancer Screening.....	35
4.4 Enabling and Need Factors of Cervical Cancer Screening Services	38
4.5 Socio-Demographic Determinants Associated with Uptake of Cervical Cancer Screening Services.....	39
4.6 Organizational Determinants Associated with Uptake of Cervical Cancer Screening Services	41
4.7 Need and Enabling Determinants Associated with Uptake of Cervical Cancer Screening Services.....	42
4.8 Conclusion	44
Chapter 5	45
5.0 Discussion of Findings	45
5.1 Introduction.....	45
5.2 Uptake of Cervical Cancer Screening.....	45
5.3 Socio-Demographic Determinants of Uptake of Cervical Cancer Screening.....	46
5.4 Organizational (Health System) Determinants of Uptake of Cervical Cancer Screening Services	52
5.5 Need and Enabling Determinants of Uptake of Cervical Cancer Screening Services.....	54

5.6 Conclusion	59
5.7 Limitations.....	59
5.8 Recommendations.....	60
5.8.1 Policy	60
5.8.3 Research.....	60
5.9 Study Conclusion	61
References.....	62
Appendices.....	69

List of Figures

Figure 2:1: Behavioural model of health services use by Ronald Andersen (Andersen et al 2012)	10
Figure 2:2 Variables under study adapted from Andersen et al 2012	16
Figure 4:1 Distribution of respondents by Distance from Health Facility	37
Figure 4:2 Distribution of respondents by Health Education	38
Figure 4:3 Distribution of respondents by willingness to be screened by male health workers.....	38

List of Tables

Table 3.1: Sample size per health facilities.....	28
Table 4.1: Distribution of respondents by socio-demographic characteristics	34
Table 4.2: Distribution of respondents by Organizational factors.....	36
Table 4.3 Distribution of respondents by enabling and need factors.....	39
Table 4.4: Socio-demographic determinants associated with uptake of cervical cancer screening services among respondents, Mangochi, Malawi.....	41
Table 4.5: Organizational determinants associated with uptake of cervical cancer screening services among respondent, Mangochi, Malawi.....	42
Table 4.6: Enabling and need determinants associated with uptake of cervical cancer screening services among respondents, Mangochi, Malawi.....	43

List of Appendices

Appendix 1: Map of Mangochi.....	69
Appendix 2: Approval to adapt and use data collection tool.....	70
Appendix 3: Consent form (English version)	71
Appendix 4: Consent form (Chichewa version)	73
Appendix 5: Consent form (Chiyao version).....	75
Appendix 6: Study questionnaire (English Version)	78
Appendix 7: Study questionnaire (Chichewa version)	84
Appendix 8: Study questionnaire (Chiyao version).....	91
Appendix 9: Certificate of ethics approval	97
Appendix 10: Data Analysis Plan	98

List of Abbreviations and Acronyms

AIDS	Acquired Immunodeficiency Syndrome
ART	Ante retro Viral Therapy
ASR	Age Standardized Rate
CHAM	Christian Health Association of Malawi
CECAP	Cervical Cancer Control Programme
HIV	Human Immunodeficiency Virus
HMIS	Health Management Information System
HPV	Human Papillomavirus
IARC	International Agency for Research on Cancer
LEEP	Loop Electrosurgical Excisional Procedure
LLETZ	Loop Excision of Transformation Zone
LMICs	Low-and-middle income countries
MoHP	Malawi Ministry of Health and Population
RHD	Reproductive Health Directorate
SRH	Sexual and Reproductive Health
STI	Sexually transmitted infections
SSA	Sub-Saharan Africa
SDGs	Sustainable Development Goals
VIA	Visual Inspection with Acetic Acid
WHO	World Health Organization

Operational Definitions

Determinants	: Factors which decisively affect the uptake of cervical cancer screening.
Cervical cancer	: A disease that is caused by the Human Papilloma Virus infection resulting in uncontrollable proliferation of cervical cells
Childbearing age	: Women of ages 18-49 years
Cervical cancer screening	: Presumptively identifying unrecognised precancerous and cancerous lesions on the cervix through Visual Inspection with Acetic acid (VIA).
Uptake	: Making use of available cervical cancer screening services
Boma	: Semi-urban area of a district where central administration activities and most public offices and services are found.

Chapter 1

1.0 Introduction and Background

1.1 Introduction

Cervical cancer is one of the preventable reproductive cancers that causes high morbidity and mortality in women. The Malawi National Cervical Cancer Control Strategy (2016-2020) defines cervical cancer as a “disease that results from failure of the mechanisms that regulate normal cell growth and cell death leading to uncontrollable proliferation of cervical cells” (MoH, 2016, p. 1). This cancer is caused by the Human Papilloma Virus (HPV) [mostly types 16 and 18], a sexually transmitted virus. Some of the risk factors to cervical cancer are HIV infection, smoking, early age at first sex, multiple deliveries, genetics and multiple sex partners (Berek, 2011). The disease progression in most HIV negative individuals is gradual and usually signs and symptoms appear at a late stage. It takes 10-20 years from infection with HPV to precancerous lesions and cervical cancer (WHO, 2013).

Cervical cancer prevention and treatment is effective when diagnosed early and managed effectively (WHO, 2014). The prevention has been grouped in three levels. Primary prevention involves human papilloma virus vaccination to girls who are sexually inactive (9-13 years old). Next is the secondary prevention which involves screening and treatment of precancerous lesions and the last level is the tertiary prevention which involves treatment of invasive cancer (WHO, 2014). The World Health Organisation (WHO) developed guidelines for screening and treatment of precancerous lesions to prevent progression to cervical cancer with a goal of reducing the incidence of cervical cancer and its related mortality (WHO, 2013).

The cervical precancerous lesions are best screened using cytology tests. However, these tests are expensive and are mostly not available in all levels of health services delivery and hence it is a challenge to access them. As an alternative, the WHO recommends the screen and treat strategies to make accessible the preventive services even to low income countries. Visual Inspection using Acetic Acid (VIA) is one of the cheap and effective means of screening for precancerous lesions. Prior to the screening, HPV test is to be done. In cases where human papilloma virus testing is a challenge, VIA alone is recommended then treatment using cryotherapy and/or Loop Electrosurgical Excision

Procedure (LEEP) should follow as part of the screen and treat program (WHO, 2014). In Malawi, the incidence of cervical cancer is one of the highest in the world, with a rate of 72.9 per 100,000 women (WHO, 2018). In spite of this high incidence rate, the cervical cancer screening rate is low. Only 30.6% of women in Malawi had been screened by the year 2016 (MoH, 2017). Some of the factors that have been isolated as challenges to this low uptake of the cervical cancer screening services are lack of knowledge among women on cervical cancer screening, unavailability of cervical cancer screening services in some health facilities, gender and age of the health workers providing the cervical cancer screening services among other factors (Chosamata et al., 2015; Hami et al., 2014; Kamphinda-Banda, 2010; Msyamboza et al., 2016). Basing on this background, the researcher conducted the study to assess the factors that significantly determine the uptake of cervical cancer screening services in Mangochi district as it is one of the districts burdened with cervical cancer.

Although the district is still facing problems in the cervical cancer programme, some strides have been made to improve operations. Cervical Cancer Control Programme (CECAP) in partnership with other Non-Governmental Organizations (NGO's) have been supporting the district in conducting cervical cancer screening training for health workers, procuring and providing equipment for screening (speculums, lamps), procuring of a cryotherapy machine and establishing additional cervical cancer screening clinics. At national level in 2016, 220 new health providers were trained and in total, the country had 154 cervical cancer screening sites and 60 treatment sites. Of the cervical cancer treatment sites, one is a Loop Electrosurgical Excision Procedure site, 16 are cold coagulation sites and 43 are cryotherapy sites (MoH, 2016).

1.2 Background

Over 1 million women worldwide are estimated to have cervical cancer, with most of the cases being undiagnosed (WHO, 2014). At the Global level, in 2018, 569,847 women were newly diagnosed of having cervical cancer and 311,365 women were estimated to have died of cervical cancer in the same year (WHO, 2018). The disease has a high burden in developing countries compared to the developed ones. For instance, in the United States of America, the cervical cancer incidence is reported to be at 6.5/100,000 women (WHO, 2018). Likewise, the cervical cancer incidence rate is also low in United Kingdom where 8.4 per 100,000 women are estimated to have the disease (WHO, 2018). Population-based screening programs have drastically led to the decrease in cervical

cancer rate in these developed countries of Europe and North America (Bray et al., 2018). In comparison, Tanzania has an incidence rate of cervical cancer of 59.1/100,000 women whilst Zambia's cervical cancer incidence rate is estimated at 66.4/100,000 women (WHO, 2018). The cervical cancer incidence and mortality rates are higher in most developing countries because of the high burden of HIV, lack of robust preventive health services and the public has poor knowledge of the disease hence low and delayed utilization of the cervical cancer services (Msyamboza et al., 2016).

Regionally, the burden of cervical cancer is equally high in Southern Africa where the cervical cancer rate is at 43.1 per 100 000 women annually, and the mortality is also very high at 20.0 per 100 000 women (WHO, 2018). To the contrary, the burden of cervical cancer is relatively low in Northern Africa. Annually, 7.2 per 100,000 are diagnosed with cervical cancer (WHO, 2018). These regional figures compared to Malawi's estimations really show how big the problem is in the country. In Malawi, cervical cancer is the number one leading cause of death among women (MOH, 2016). On the global and regional rank, Malawi has one of the highest cervical cancer rates with age standardized rate (ASR) of 72.9/100,000 women (WHO, 2018). It is estimated that 4,163 women develop cervical cancer and 2,879 die from the disease every year in Malawi (WHO, 2018).

Malawi started screening for cervical cancer in the early 1980's through a donor funded programme which phased out due to sustainability problems (Munthali et al., 2015). Later in 1999 a re-launch of the cervical cancer screening programme was introduced as a pilot program which was thereafter scaled up in 2002. Later on, the Ministry of Health (MoH) through the Reproductive Health Directorate (RHD) formulated the National Sexual and Reproductive Health and Rights (SRHR) policy to integrate cervical cancer as an SRHR priority area (Ministry of Health, 2009). In 2013, the Cervical Cancer Control Program (CECAP) started conducting a pilot study on the HPV vaccine and in 2016, the National Cervical Cancer Control Strategy (2016-2020) was developed to guide the implementation of cervical cancer control activities by CECAP and other stakeholders. By 2016, Malawi had 154 facilities offering cervical cancer screening services (MoH, 2017). Mangochi district had 14 facilities offering cervical cancer screening and they were government, CHAM and private owned.

The national cervical cancer control strategy also affirms that lack of awareness of the disease by the general public as well as health workers is a contributing factor towards the low uptake of services and hence the high prevalence and mortality. Nevertheless, evidence has shown that there are several factors affecting uptake of cervical cancer screening other than lack of knowledge. A study in Kenya found that out of 85.2% of women who were recommended by medical personnel to go for cervical cancer screening, only 46.3% did undertake the screening test (Njuguna et al., 2017). These findings are similar to a study done by Chosamata et al., (2015) in Blantyre, where 72.4% of the participants had heard of cervical cancer screening but only 13.2% had gone for cervical cancer screening. In Northern Ethiopia, a study by Bayu et al., (2015) established that 19.8% of age eligible women were ever screened for cervical cancer. Likewise a low uptake of cervical cancer screening was reported in Zimbabwe among rural women where only 9% of the respondents in a study had ever had cervical cancer screening (Mupepi et al., 2010). It was therefore important to establish the other determinants that facilitate the utilization of the cervical cancer screening services in order to implement a cervical cancer control programme that will improve the utilization and ensure early diagnosis and treatment.

Further focus on uptake showed that cervical cancer screening in Mangochi continues to face challenges just like at national level. At one cervical cancer screening clinic in the district in 2015, the providers could see 2 or 3 women with VIA positive result each day (Munthali, Ngwira, & Taulo, 2015). This was a pointer to the magnitude of the problem of cervical cancer in the district. Despite this realisation, cervical cancer screening remains a challenge. The district's cervical cancer annual report showed that only 0.2% of women of child bearing age were screened for cervical cancer in 2016 (Mangochi District Hospital, 2016; NSO, 2016). Similar studies on cervical cancer conducted in the southern region of Malawi revealed that age, multiple sex partners, lack of husband's approval for screening, lack of knowledge of the disease and screening services and distance to a facility were significantly associated with the uptake of cervical cancer screening services. Furthermore, some of these factors contributed to delays in accessing the screening services (Chadza et al., 2012; Chosamata et al., 2015; Kamphinda-Banda, 2010; Munthali et al., 2015). However, these findings could not be generalised to the population of women in Mangochi as their health care delivery setting is different from women of Zomba and Blantyre where most of these studies were conducted. This study

employed a rigorous sampling method (multistage sampling) unlike the aforementioned studies which some of them used purposive sampling hence generalization being a problem. In addition, none of the previous studies had utilized the behavioural model of health services use as a framework to guide the study. This study utilized this model which has specific individual characteristics which are vital in influencing the use of health services. In turn, this study provided additional knowledge on factors that are associated with uptake of cervical cancer screening services in the district as little was known.

1.3 Study Significance

The findings of this study will contribute to the available body of knowledge in the area of cervical cancer in Malawi and in turn inform cervical cancer program implementers in the district of the predictors that would improve uptake of cervical cancer screening services. It will also provide nursing and medical training institutions with current data on the areas to be focused on in addressing cervical cancer screening issues. Furthermore, the study will provide policy makers with current information on areas to be targeted in the development and implementation of cervical cancer guidelines and policies. Finally, the study will inform other researchers in the same area on factors that need to be further researched.

1.4 Problem Statement

Cervical cancer is the number one cause of mortality among the female reproductive cancers in Malawi (Ferlay et al, 2014). It is also one of the preventable cancers when early diagnosis and treatment is done. Malawi uses VIA, a WHO recommended cervical cancer screening strategy for developing countries. Despite this initiative, uptake of cervical cancer screening remains a challenge in most districts in Malawi including Mangochi. For instance, in the year 2015/2016, in Mangochi district, only 0.2% of women of child bearing age had gone for a cervical cancer screening test. The outcome of the VIA revealed that 5% had a positive result and 28.8% were suspected of having cervical cancer (Mangochi District Hospital, 2016). This snapshot of cervical cancer screening results showed that cervical cancer was a real problem in the district even though few women were using the service. However, little information was known on the factors that were significantly associated with this low uptake of the available cervical cancer screening services in the district. It was with this reason of poor uptake of cervical cancer screening versus the magnitude of the problem that the researcher conducted a study to examine the

determinants that influence the women of childbearing age to uptake the cervical cancer screening services available in the district.

1.5 Rationale for the Study

The cervical cancer screening program has been implemented in the district for more than five years. Throughout the implementation period, utilization of cervical cancer screening services has been low and lack of disease knowledge, unavailability of cervical cancer screening services and lack of awareness of the cervical cancer screening services had been identified as challenges. Over the past year, client mobilization activities and scaling up of health facilities providing cervical cancer screening had been conducted with support from non governmental organisations to improve knowledge and availability of the services but the uptake remained poor. This had therefore prompted the researcher to conduct this study to identify the determinants of cervical cancer screening uptake among women of child bearing age in Mangochi district. This in turn will build knowledge that could be used by program implementers in the district to improve the uptake, ensure good cervical cancer screening coverage, early identification and treatment, and hence reduced burden of cervical cancer in the district. This is in line with CECAP's strategic objective of raising awareness among the community on the burden of the disease and the availability of the preventive services for the targeted women to use (MoH, 2016).

1.6 Objectives

1.6.1 Broad objective.

To investigate the determinants of cervical cancer screening and their association with uptake of screening services among women of childbearing age in Mangochi district, Malawi.

1.6.2 Specific objectives.

1. To assess the socio-demographic determinants affecting uptake of cervical cancer screening.
2. To examine the organisational factors that determine the uptake of cervical cancer screening.
3. To determine the enabling and need factors affecting the uptake of cervical cancer screening services.
4. To assess the association between the determinants and the uptake of cervical cancer screening services.

1.7 Research questions

1. What are the socio-demographic determinants affecting uptake of cervical cancer screening?
2. What are the organizational factors that determine the uptake of cervical cancer screening?
3. What are the enabling and need factors affecting the uptake of cervical cancer screening services?
4. Are there any associations between the determinants and the uptake of cervical cancer screening services?

Chapter 2

2.0 Conceptual Model and Literature Review

2.1 Introduction

This chapter presents the conceptual model that was used to guide the study as well as the related literature that was reviewed in the area of cervical cancer screening. The Behavioural Model of Health Services Use by Ronald M. Andersen describes the factors that influence individuals to use the health services. This model was used because it fitted with the study topic and it demarcated factors from the environment and those that involve individuals, hence simplifying its application. The researcher selected few of the sub-concepts from this model in order to explain the phenomena under study and also gave a brief description of the model according to Andersen. The literature review presented in this chapter is from studies conducted at global, regional and national levels. The literature was searched from the following search engines; google scholar, PubMed, Medline, Cochrane, science direct and INASP. Using the Boolean search technique, the following words were used to search for the articles; “cervical cancer screening”, “uptake”, “Malawi”, “Sub Saharan Africa”, “global” and “behavioural model of health services use” and articles and literature from 2009 to 2019 were used in the review. The literature review section will have four themes which are; cervical cancer screening and predisposing factors, health system factors and cervical cancer screening, enabling factors and screening and individual need and cervical cancer screening. A number of studies have been done in this area, nevertheless, some findings are not consistent. Therefore, it was important to conduct this study to establish which variables affect the utilization of cervical cancer screening in Mangochi and similar settings.

2.2 Conceptual Model

2.2.1 Behavioural Model of Health Services Use (Ronald M. Andersen, 1995)

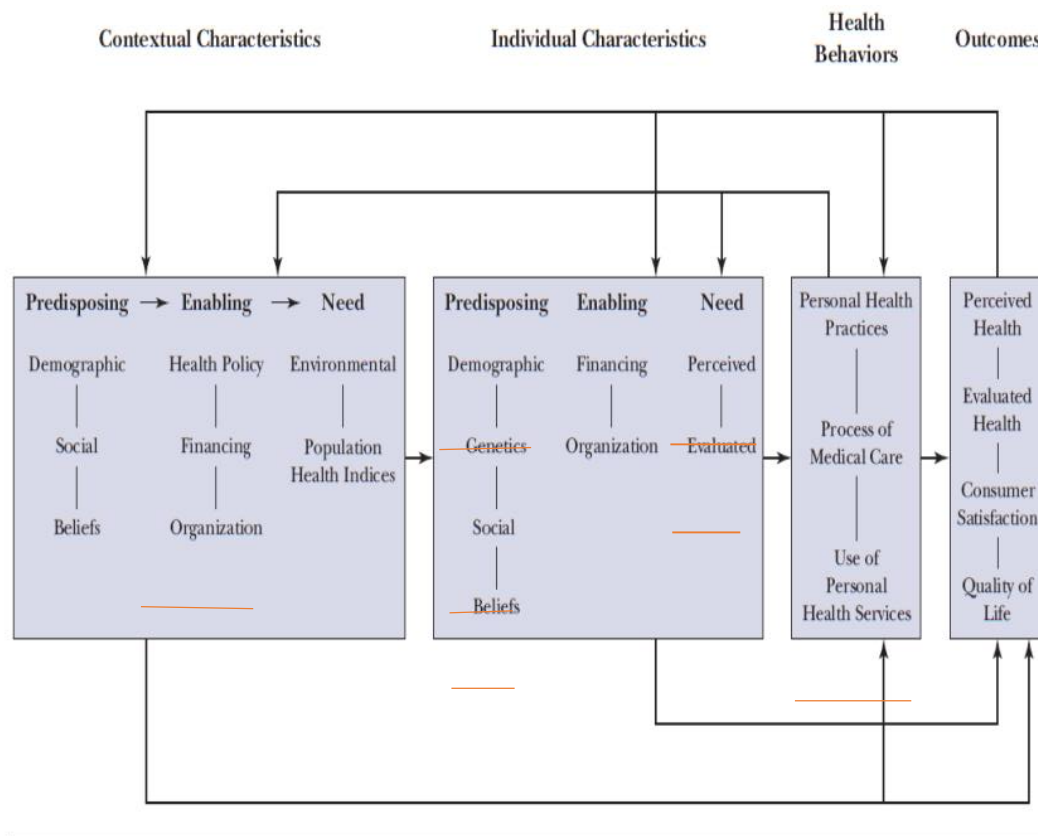
A behavioural model of health services use was used to explain the factors that influence the uptake of cervical cancer screening in women of child bearing age. The model was developed in 1968 by Ronald M. Andersen to “assist the understanding of why families use health services; to define and measure equitable access to health care and to assist in developing policies to promote equitable access” (Andersen, 1995). The purpose of the

model is to discover conditions that either facilitate or impede utilization. The model has been revised over the years with its focus shifting to individuals as the analysis point, and it has further added the interactions that individuals have as they receive the health services and outcomes of health as areas to be looked into. This study used the sixth revised version of the model which emphasizes that in order to improve access to care, there is need to focus on contextual and individual determinants that facilitate access.

The model indicates that health behaviours are influenced by both contextual and individual characteristics and within these characteristics are the three dynamics namely; predisposing factors, enabling factors and need. The ultimate focus of the model remains on health behaviour of individuals (especially their use of health services) and resulting outcomes regarding their health, satisfaction with services, and quality of life (Andersen, Davidson & Baumeister, 2012). Below is Figure 2.1 showing the model and the underlined sub concepts are the ones which this study used.

Figure 2:1

Behavioural model of health services use by Ronald Andersen (Andersen et al 2012)



4.2.2 Contextual Predisposing Characteristics

Demographic characteristics of a community include its age, gender, and marital status composition. Thus, a community populated primarily by older persons might well have a different mix of available health services and facilities from one in which the majority are younger parents and children.

Social characteristics at the contextual level describe how supportive or detrimental the communities where people live and work might be to their health and access to health services. These include educational level, ethnic and racial composition, measures of spatial segregation, employment level, and crime rate.

Beliefs refer to underlying community or organizational values and cultural norms and prevailing political perspectives regarding how health services should be organized, financed, and made accessible to the population.

2.2.3 Contextual Enabling Characteristics

There are three sub concepts under the enabling characteristics and these are health policy, financing and organization. Health policies are authoritative decisions made pertaining to health or influencing the pursuit of health. They can be public policies made in the legislative, executive, or judicial branch of government, at all levels from local to national. Policies in both the private and public sectors influence access, such as those made by executives of managed care organizations concerning product lines, pricing, marketing, or by accrediting agencies or quality assessment organizations.

Financing characteristics are described by an array of contextual measures that suggest resources potentially available to pay for health services, including per capita community income and wealth. Other financial characteristics are incentives to purchase or provide services, such as the relative price of medical care and other goods and services, and the method of compensating providers. Also included here are per capita expenditures for health services and the rate of health insurance coverage.

Organization at the contextual level includes the amount and distribution of health services facilities and personnel as well as how they are structured to offer services. Structure includes supply of services in the community, such as the ratios of physicians and hospital beds to population. Structure also includes how medical care is organized in a particular institution or delivery system where people receive care, as with office hours and location of service, provider mix, utilization and quality control, oversight, and outreach and education programs.

2.2.4 Contextual Need Characteristics

The need characteristics are put into two sub concepts; environmental and population health indices. Environmental need characteristics include health-related measures of the physical environment, among them the quality of housing, water, and air. Other measures suggesting the health of the environment are injury or death rate, such as rate of occupational injury and disease and related deaths, as well as death rates from motor vehicle accidents, homicides, and firearms.

Population health indices are more general indicators of community health that may or may not be associated with the physical environment. These indices include general and condition-specific rates of mortality (for example, infant mortality; age-adjusted mortality; and mortality rates for heart disease, cancer, stroke, and HIV); morbidity

(incidence of preventable childhood communicable diseases and AIDS, and prevalence of cancer, hypertension, and untreated dental caries); and disability (disability days due to acute conditions and limitation of activity due to chronic conditions).

2.2.5 Individual Predisposing Characteristics

The individual predisposing characteristics concept has four sub concepts. These are; demographic factors, genetics, social factors and beliefs. The demographic factors include sex and age of the individual. The genetics subconcept states that genetic susceptibility also potentially influences need of health services use by increasing disease incidence. On the other hand, social factors determine the status of a person in the community as well as his or her ability to cope with presenting problems and command resources to deal with those problems. In simple understanding, the social factors include education level, occupation type and ethnicity. Nevertheless, a wider view of social factors also focuses on an individual's interaction with family and friends, religion and other community organisations. In addition, individual predisposing characteristics also encompass one's health beliefs about health in general and health services that can influence the individual's subsequent perception of need and use of health services.

2.2.6 Individual Enabling Characteristics

The model has two sub concepts under enabling factors and these are financing and organization of health services. Financing of health services for the individual involves the income and wealth available to the individual to pay for services. Financing also includes the effective price of health care to the patient, determined by having insurance and cost-sharing requirements. Social support may also be considered an enabling variable. On the other hand, organization of health services for the individual describes whether or not the individual has a regular source of care or medical home and the nature of that source (private doctor, community clinic, or emergency room). It also includes means of transportation, reported travel time, and waiting time for care.

2.2.7 Individual Need Characteristics

Perceived need is how people view their own general health and functional status. Also included here is how people experience and emotionally respond to symptoms of illness, pain, and worry about their health condition. Perceptions about the importance and magnitude of a health problem or symptom lead to a decision to seek medical care (or not to do so). Perceived need is a social phenomenon that, when appropriately modelled,

should itself be largely explainable by the severity and discomfort of the symptoms, such as pain, predisposing and social characteristics (such as gender, age, ethnicity, or education) and health beliefs (health attitudes, knowledge about health care, and so on).

Evaluated need represents professional judgment and objective measurement about a patient's physical status and need for medical care (blood pressure readings, temperature, and blood cell count, as well as diagnoses and prognoses for particular conditions the patient experiences). Of course, evaluated need is not simply, or even primarily, a valid and reliable measure from biological science. It also has a social component and varies with the changing state of the art and science of medicine, clinical guidelines and protocols, and prevailing practice patterns, as well as the training and competency of the professional expert doing the assessment.

2.2.8 Health Behaviours

Health behaviours in this model are described as personal health practices, process of medical care and use of personal health services. Personal practices performed by the individual that influence health status include diet and nutrition, exercise, stress reduction, alcohol and tobacco use, self-care, and adherence to medical regimens. The process of medical care is the behaviour of providers interacting with patients in the process of care delivery. General process measures might relate to patient counselling and education, test ordering, prescribing patterns, and quality of provider-patient communication. Lastly, the use of personal health services is the essential component of health behaviours in a comprehensive model of access to care. The purpose of the original behavioural model was to predict health services use. Hospital services used in response to more serious problems and conditions would be primarily explained by need and demographic characteristics, while seeking hospital services due to less serious problems would more likely be explained by social conditions, health beliefs, enabling resources, and severity of symptoms. In this current study, the health services use (cervical cancer screening), was assumed to have been affected by demographic characteristics, organizational factors and enabling and need factors.

2.2.9 Outcomes

The model has four outcomes; perceived health, evaluated health, consumer satisfaction and quality of life. The patient's perceived health status is influenced by health behaviour, personal health services use, and individual characteristics, as well as the contextual

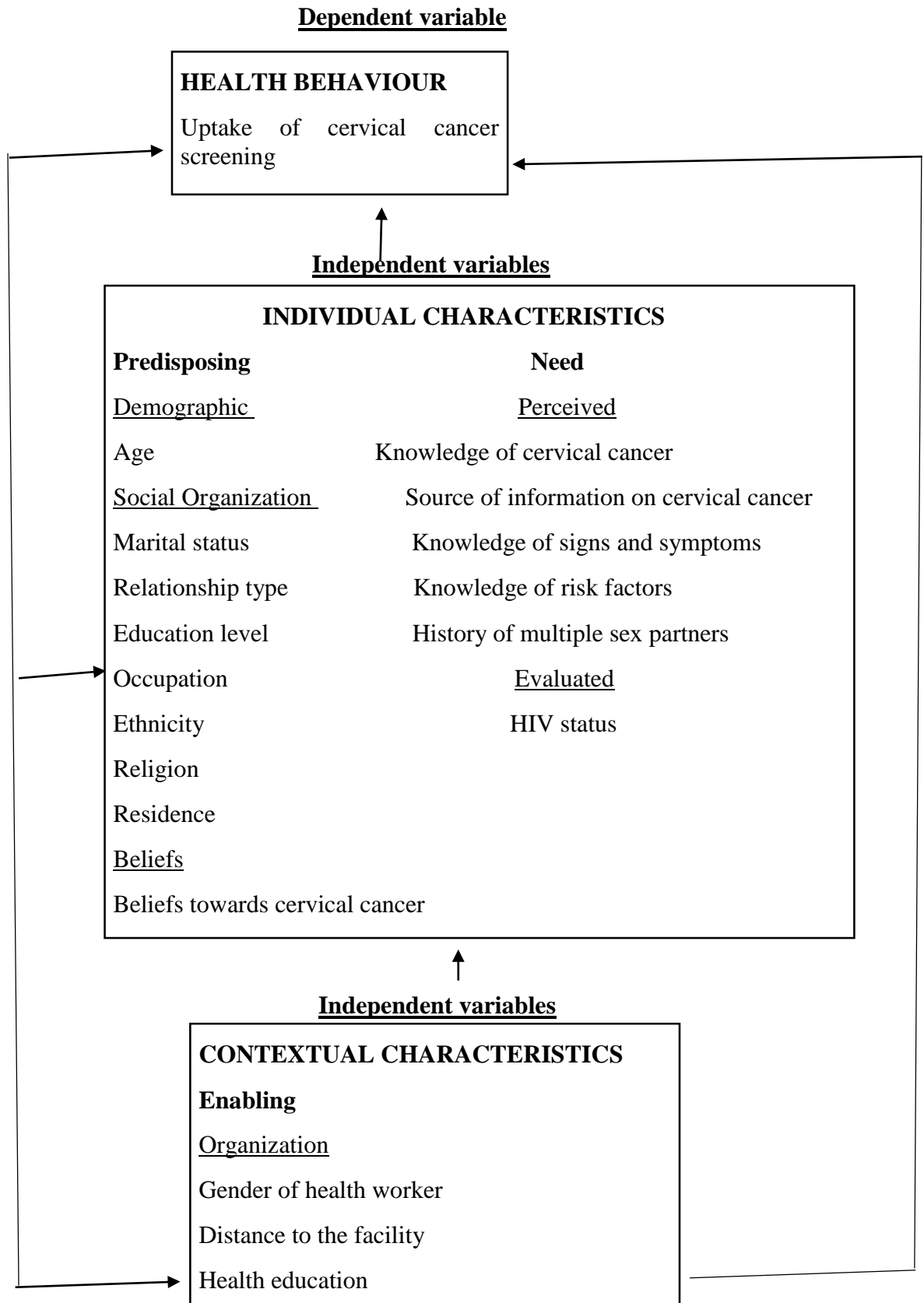
environment. Perceived health status indicates the extent to which a person can live a functional, comfortable, and pain-free existence. Outcome measures include reports of general perceived health status, activities of daily living, and disability. Evaluated health status is dependent on the judgment of the professional, on the basis of established clinical standards and state-of-the-art practices. Measures include biomarkers and tests of patient physiology and function as well as diagnosis and prognosis regarding their condition. Consumer satisfaction is how individuals perceive the health care they receive. It can be judged by patient ratings of travel time, waiting time, communication with providers, and technical care received.

2.3 Application of the Conceptual Model

This study used the concepts from contextual characteristics, thus the organization and the individual characteristics (predisposing factors and need) to examine the use of health services (cervical cancer screening). Sub concepts from the above characteristics were isolated to come up with variables that were studied. However, the sub concept of outcomes has not been used in this study. Its description above was done to assist in elaborating the conceptual framework in its totality as described by the author. For the specific variables see Figure 2.2. According to the conceptual framework, we can apply that the women of child bearing age would consider undergoing cervical cancer screening if they view cervical cancer as a serious health problem to them. That is, if screening has been prescribed or recommended by a health worker or if by age or HIV status the women view themselves to be vulnerable, they would consider going for cervical cancer screening. On the other hand, women of child bearing age will consider cervical cancer as being a less serious health problem and hence they will be influenced by the following among other factors for them to make a decision of undergoing CCS: the distance from their homes to the health facility offering CCS services, the health beliefs they have towards CCS, the gender of the health worker conducting the cervical cancer screening and their knowledge on cervical cancer.

Figure 2:2

Variables under study adapted from Andersen et al 2012



2.4 Literature Review

In other studies, the researchers presented the theoretical/conceptual frameworks guiding the studies, while others did not offer any. The framework that was mostly presented was the Health Belief Model (HBM) (Hami et al., 2014; Kamphinda-Banda, 2010; Nwobodo & Ba-Break, 2015). These studies have one common aspect in that they looked at perceptions of the participants towards cervical cancer screening and this was the reason for applying the HBM as it explains a person's intentions and decisions to take preventative actions based on the model's concepts. However, in this study, the researcher utilized the behavioural model of health services use to guide the study hence the themes of the literature review content.

2.4.1 Cervical Cancer Screening and Predisposing Factors

Some predisposing factors including social demographic factors have been linked with the uptake of cervical cancer screening services and some factors are significantly associated than others. In a study done by Soneji & Fukui in Latin America on socioeconomic determinants of cervical cancer screening, knowledge of Pap smear was associated with age, education attainment and a recent doctor's visit (Soneji & Fukui, 2013). Older and educated women who had a recent doctor's visit were more knowledgeable of Pap smear than their counterparts. Almost similar results were found in a study done in Kenya, with addition of religion, employment and region being significantly associated with use of any type of cervical cancer screening (Tiruneh et al., 2017). Christians of the Roman Catholic denomination, employed and urban living women had more knowledge compared to the other participants. Unlike the above studies, other studies in Africa have found that there is no significant association between age and cervical cancer screening (Ibekwe et al., 2010; Waiswa et al., 2017).

In Malawi, Chosamata et al (2015) in their cross sectional community based study done in Blantyre, showed that age and high level of knowledge in cervical cancer were significantly associated with utilization of services. In addition, there was a discrepancy on the percentage of women with knowledge of cervical cancer screening and those who actually utilized the cervical cancer screening service. 72.4% of the women had knowledge on cervical cancer screening but only 13.2 % had been screened for cervical cancer. In contrast, a study done in selected health facilities across Malawi found no association between the woman's age and cervical cancer screening (Maseko et al., 2014).

In addition, of the studies which were done in Malawi which the researcher had reviewed, only one had the age bracket of 18-49 in the study population. For instance, Chosamata et al., (2015) sampled women of ages 30-45; Hami et al (2014) studied women aged 42 and above; whilst Kamphinda-Banda (2010) collected data from women of 18-55 years of age. Apart from Kamphinda-Banda (2010) study, the other two studies left a big gap on women between ages 18-29 who are young and also sexually active and may be at an equally high risk of cervical cancer in Malawian context (considering a high HPV prevalence the nation has). Furthermore, all the above listed studies used non-probability sampling techniques to sample the participants. This was another reason why the researcher conducted a similar study as these results could not be generalised beyond the settings they were conducted. As for Maseko et al. (2014) study, the outcome variable for the study was on client satisfaction hence data collection was through exit interviews which were conducted on women who had already accessed the screening service, which was contrary to what this study intended to achieve. A literature search on studies done in other African countries on age of study participants showed slight differences on the participants' ages. For instance, two studies conducted in Ethiopia and Botswana both had women aged from 21 and above as their participants (Bayu et al., 2016; Ibekwe et al., 2010). Lyimo & Beran (2012) in their study in Tanzania had participants of ages 18 – 69, while in Kenya, Orang'o et al., (2016) included women aged 18 – 55 in their study population. Therefore, including the age variable in this study enabled the researcher to establish if age significantly affected the uptake of cervical cancer screening services hence which age category needs more support to improve utilization.

Other studies done in Blantyre have showed that there is no significant relationship between level of education and cervical cancer screening (Chosamata et al., 2015; Kamphinda-Banda, 2010; Maseko et al., 2014). Similar results were found in Uganda and Botswana that level of education was not significantly associated with cervical cancer screening, $\chi^2 = 11.80$, $p = 0.083$ and $\chi^2 = 2.421$, $p = 0.490$ respectively (Ibekwe et al., 2010; Waiswa et al., 2017). These results are different with what Hami et al (2014) found, that there was a statistical significance, that women with higher education were more likely to use cervical cancer services than those with lower education ($\chi^2 = 20.8$, $p = 0.001$). Similarly, Kokuro et al., (2017) in Ghana found that those women who had attained tertiary education level were more likely to screen for cervical cancer, whilst

those who had junior high level of education were less likely to go for cervical cancer screening ($\chi^2 = 15.76$, $P = 0.003$).

Conflicting results are found on the marital status and its association with cervical cancer screening. In a study in Blantyre on women aged 42 years and older, there was a statistically significant correlation between marital status and intention to go for cervical cancer screening, where married women were more likely to be screened for cervical cancer than single, divorced or widowed women ($\chi^2 = 18.5$, $P = 0.001$). (Hami et al., 2014). However, a previous study also done in Blantyre had contradicting results, more widowed (urban) and divorced (rural) women had cervical cancer screening test done than their single, married and cohabiting counterparts (Kamphinda-Banda, 2010). A study in Ghana also found a significant association between marital status and cervical cancer screening ($\chi^2 = 13.83$, $P = 0.001$) (Awodele et al., 2011). Contrary to these findings, Chosamata et al (2015), Maseko et al (2014) and Ibekwe et al (2010) found that there is no significant association of marital status and cervical cancer screening. The inclusion of this variable in this study helped to understand the women of Mangochi better because of the inconsistent results from studies done in Malawi.

Occupation was also another factor that was examined in this study. Employed women are able to socialise with other people apart from those from their community and this may give them an advantage to the information they may access. In Nigeria, in a qualitative study, employed women were less likely to go for cervical cancer screening since they spent most of their time at work. On the other hand, business and rural women were also having challenges in utilizing cervical cancer screening services because they spent most of their time at the market or in the fields and attempting to access the cervical cancer screening services in the afternoon was not possible as they were sent back by health workers (Nwobodo & Ba-Break, 2015). Malawian women in Mulanje district felt the same way that going for cervical cancer screening was time consuming and they preferred to do their daily activities at home than waste that time on a queue at the hospital (Fort et al., 2011). But looking at quantitative findings, employment status had different results. Two different studies conducted in Blantyre, Malawi and Mahalapye, Botswana showed that employment status was not associated with cervical cancer screening service utilization (Chosamata et al., 2015; Ibekwe et al., 2010). Both employed and unemployed women displayed low uptake of cervical cancer screening services behaviour. Contrary to this, Hami et al (2014) found that employed women used screening services more than

unemployed ones, and these results were significant with $\chi^2 = 5.39$ and $P = 0.021$. Likewise, Teame et al., (2019) in their study in Ethiopia found that employed women were four times more likely to go for cervical cancer screening than their counterparts who were housewives.

In understanding the predisposing factors further, it gives the realisation that ethnicity gives one a cultural background and at times health seeking behaviours stem from there as well. Assessing ethnicity and its relationship with cervical cancer screening will enable program implementers to create culturally tailored interventions to improve uptake of cervical cancer screening services. In United States of America, a study was conducted to assess the determinants of cervical and breast cancer screening in immigrant women. The results indicated that ethnicity was not significantly associated with cervical cancer screening even though Somali women were less likely to go for cervical cancer screening compared to breast examination. Ethnic background was thought to play a role as cervical cancer screening is an invasive and private procedure and most Somali women were sensitive to have the test done (Harcourt et al, 2014). From the literature that was reviewed from studies done in Malawi and other African countries, ethnicity has not been analysed and thus little information is known of this factor.

Urban and rural residents live different life styles and are exposed to different sources of information. Again, the availability of health services in urban areas is likely to be higher than in rural sites. One study done in the area of cervical cancer has found that there is no relationship between residential area and cervical cancer screening uptake. Both urban and rural residents had low utilization of the services (Ibekwe et al, 2010). In comparison, Mupepi et al (2011) found that place of residence was significantly associated with uptake of cervical cancer screening services. In their study done in Zimbabwe, the sample was from a rural area but residing in different types of villages. The women from resettlement villages (where health facilities and other social institutions are not fully established) were 86% less likely to access cervical cancer screening services than those women from traditional rural reserve villages (where health facilities were found at 10 Km radius). In Malawi, Chosamata et al (2015) found that among women living in Blantyre, urban women were more likely to go for cervical cancer screening than those from rural areas.

Contradicting evidence is found on the relationship of religion and uptake of cervical cancer screening services. In Kenya, it was found that among other socio-demographic

determinants, religion was found to be associated with uptake of cervical cancer screening services. Christians of Roman Catholic denomination were more likely to utilize the cervical cancer screening services than others (Tiruneh et al., 2017). However, a multivariate analysis showed that the association was not significant. Similar results were reported in Uganda, that there was no association between religion and uptake of cervical cancer screening services (Wanyenze et al., 2017). On the other hand, two studies done in Nigeria revealed that there was an association between religion and uptake of cervical cancer screening services. Awodele et al (2011) found that Christianity unlike Islam was significantly associated with uptake of a pap smear test ($\chi^2 = 14.83$, p-value = 0.003). Additionally, a qualitative study on barriers to cervical cancer screening which focused on religious and cultural factors in Nigeria found that half of the participating Muslim women were completely not aware of cervical cancer screening and only 13.6% of the Muslim women in the study (3 out of 24 women) had ever been screened for cervical cancer despite some having the knowledge. On the other hand, 59.3% of the Christian women in that study had ever undergone a cervical cancer screening test (Isa Modibbo et al, 2016). All the Muslim women in the study expressed that; the need for spousal support and permission before going for cervical cancer screening, need to be screened for cervical cancer by a female provider or male provider but in the presence of a female assistant, perceived discrimination by health providers due to their dressing (long loose gown and veil) when they visit the facility and concern over modesty are some of the barriers preventing them from utilising the cervical cancer screening services. Religion has also been studied in Malawi and so far, no association with uptake of cervical cancer screening services has been found (Chosamata et al., 2015; Fort et al., 2011; Hami et al., 2014; Kamphinda-Banda, 2010; Maseko et al., 2014). Of importance is the fact that Mangochi is an Islam predominant district and therefore the results of this study will fill this knowledge gap in helping to identify religion as a predictor of uptake of cervical cancer screening services.

2.4.2 Health System Factors and Cervical Cancer Screening

Health system factors have an impact on facilitating or impeding cervical cancer screening service use. Women are either motivated or demotivated by these health system factors. Health education or advice given by health workers has been found to be significantly associated with uptake of cervical cancer screening services in Kenya despite the fact that more women (85.2%) in a particular study were recommended for a

test but only a few (46.3%) underwent the test (Njuguna et al., 2017). In the qualitative arm of the same study, women expressed that age and gender of the service provider was a determining factor for them to go for the cervical cancer screening or not. The women opted for a matured female service provider than young or male service providers. Also in Ghana, most men expressed that they would not allow their women to go for cervical cancer screening if the health provider is male. Adding further that it was a taboo for another man to see their women's private parts except during child birth (Williams & Amoateng, 2012). According to Munthali et al (2015), the use of male service providers in cervical cancer screening clinics was a barrier in provision of services in Malawi. This information was provided by the health workers as they had noted that the clients preferred older female service providers. However, a study with married men in Phalombe, Malawi, found that most men (77%) had no problem with the gender of the health worker conducting the cervical cancer screening (Mthepheya, 2017). Men are decision makers in Malawian culture, their approval of both male and female service providers may ease the woman's decision making to undergo cervical cancer screening. Although the gender of the service provider is a factor, no significant association with uptake of cervical cancer screening services was found in a study done in Tanzania (Lyimo & Beran, 2012).

All the studies done in Malawi had similar findings on distance being a barrier to utilizing cervical cancer screening services (Chadza et al., 2012; Kamphinda-Banda, 2010; Munthali et al., 2015b). These studies found that cervical cancer screening uptake has been affected by lack of service provision in most facilities leading to long distances covered by women to access the services else where outside their health facility catchment area. These results concur with the CECAP 2016 annual report that there are inadequate health facilities offering cervical cancer screening and treatment services in Malawi and in addition, more health facilities are found in urban areas. Seven (7) districts were found to have no single health facility offering treatment services either due to lack of or a malfunctioning of a cryotherapy machine (MoH, 2016). This barrier is a shared problem in the sub Saharan Africa region where women in other countries also experience challenges in accessing services due to lack of facilities within their range offering cervical cancer screening services (Lim & Ojo, 2017; Ndejjo et al., 2017). In a study in Tanzania, distance was significantly associated with utilization of cervical cancer screening services (Lyimo & Beran, 2011). Of note, a study in Kenya found a marginal

positive association of distance and use of cervical cancer screening services (Tiruneh et al., 2017). This finding was backed up by the community's view that rural women have low expectations on health services; as such, long distance to a health facility is seldom considered as a barrier.

2.4.3 Enabling Factors and Cervical Cancer Screening

Enabling factors are those factors that when present, they enhance the utilization of the health services but when absent they impede the process. In the context of cervical cancer screening service uptake, availability of information sources, knowledge of cervical cancer, its risk factors and signs and symptoms are some of the factors that can be considered as enabling in nature.

Access to cervical cancer information is crucial in influencing women to go for cervical cancer screening. Information is made available to the general public through media sources like radio, television, newspaper, and internet or through health workers, schools and local gatherings. Media is thought to play a major role in providing information to the masses. For instance, a high screening prevalence has been reported in women who had media exposure in Kenya (Tiruneh et al., 2017). Similarly in Nigeria, in one of the studies, 67% of the participating women had heard of cervical cancer and out of these, 44.7% got the information through mass media (Idowu et al., 2016). Health workers are expected to be the source of information to the community they serve. However, lack of health education in health facilities where women frequently attend to access other services has led to lack of knowledge on cervical cancer among the women and hence poor utilization (Kamphinda-Banda, 2010). In Blantyre, less women (28.2%) knew that VIA is a screening method to detect cervical cancer prior to attending a clinic and only 23.2% were aware of the time for opening and closing the cervical cancer screening clinic. The women expressed that they first heard the cervical cancer information from health workers (35%), relations or neighbours (34%) and from the radio (30%). Men in Phalombe also indicated that radios were their main source of information followed by health workers (Mthepheya, 2017).

2.4.4 Individual Need and Cervical Cancer Screening Uptake

Individual need is related to how one views his health status and functionality as well as health professionals' judgement on health status and need for medical care. Perceived need largely influences how individuals display their health seeking behaviour and how

they adhere to treatment and care (Andersen et al, 2012). HIV status, history of multiple sex partners and beliefs towards cervical cancer are considered in this study as individual needs (both perceived and evaluated) that will influence a woman to go for a cervical cancer screening test. A study in Uganda on HIV infected women on the uptake and correlates of cervical cancer screening revealed that only 16.8% of the women perceived themselves as being at high risk of developing cervical cancer (Wanyenze et al., 2017). According to the behavioural model of health service use this entails that few women will likely seek cervical cancer screening services since one's judgement of personal health status influences the seeking behaviour.

Although the individual perceived benefits of cervical cancer screening may seem as an obvious factor to influence uptake of services, a study in Botswana showed that this was not a significant predictor of the health service use (OR=1.291, p=0.33) (Ibekwe et al, 2010). However, Wanyenze et al (2017) found that despite the women's negative expressions that the procedure is embarrassing and discomforting, 94.8% of women who had ever been screened for cervical cancer reported that they will still go for follow up cervical cancer screening visits.

According to Hami et al. (2014) more women (86.2%) did not perceive themselves as being at risk of developing cervical cancer. However, among those women who had undergone a Pap test in the previous year, there was a significant association with the likelihood of going for another cervical cancer screening test. This finding is contrary to what Ibekwe et al. (2010) found, that 43% of women who had ever been screened for cervical cancer reported higher perceived benefits than those who had never been screened for cervical cancer. Nevertheless, there was no significant association between perceived benefit and cervical cancer screening.

HIV infection has been associated with cervical cancer as being HIV positive increases the likelihood of an HPV infected individual developing cervical cancer (Awodele et al., 2011). According to Msyambozya et al. (2015), VIA positivity rate and suspect cancer prevalence is significantly higher in HIV positive women than in their HIV negative counterparts. The WHO recommends that HIV positive women should undergo VIA every year to ensure early detection and treatment (WHO, 2013). In one study in Uganda, less than half of the participants (43.7%) were able to state that cervical cancer screening has to be done yearly in HIV positive women and only 30.3% HIV positive women in the

study had utilized cervical cancer screening services (Wanyenze et al., 2017). Lack of knowledge among other factors could explain this low uptake among such a high risk group.

Having multiple sex partners puts the woman at risk of getting HPV infection and thus higher risk of developing cervical cancer (Awodele et al, 2011). Studies that have included this variable have found a significant association between having multiple sex partners and undertaking cervical cancer screening (Bayu et al. 2016; Chosamata et al. 2015; Kileo et al. 2015). However, a study in Kenya found contrary results, that there was no association between number of sex partners and uptake of cervical cancer screening (Orang'o et al, 2016).

2.5 Conclusion

Cervical cancer screening uptake is low in most African countries and the factors that influence the utilization vary a lot. Both contextual and individual factors have been seen to have an influence on how women utilize the cervical cancer screening services. In Malawi, some of the studies done have found that urban, educated and employed women have more knowledge of the disease and as such they are more likely to access services than the rural, less educated and unemployed women. Distance and gender of the health worker have also been cited as barriers in accessing cervical cancer screening services.

Chapter 3

3.0 Research Methodology

3.1 Introduction

This chapter will present the study design, study population, sample size and sampling method that was used, inclusion and exclusion criteria and the study site. The chapter will also describe how data was collected, managed and analysed. Finally, the chapter will also outline how ethical consideration was observed and how study results will be disseminated.

3.2 Study Design

The study followed a cross sectional study design and adopted a quantitative approach. A cross sectional study ensures that a phenomenon under study is captured as it is at that point in time, hence this allowed the researcher to assess the uptake rate of cervical cancer screening services in Mangochi. On the other hand, the quantitative approach enabled the researcher to make inferences of the factors that influence the uptake of cervical cancer screening services among women of reproductive age. According to the objectivists' approach of the epistemological perspective, a quantitative investigator can study a phenomenon independently without influencing it nor being influenced by it (Slevitch, 2011). This study followed the principles of conducting a quantitative research in order to objectively identify the sociodemographic, organizational, enabling and need factors associated with uptake of cervical cancer screening services.

3.3 Study population

Study participants were women in the child bearing age group (18- 49). This group had been targeted because they are at risk of having cervical cancer as they are a sexually active group. Since cervical cancer risk increases with increase in sexual activity and presence of multiple sex partners over lifetime, the researcher therefore included those women under the age of 20 as being at risk in this context. In order to capture the targeted sample, a facility based approach was adopted to find participants who were already accessing other out-patient department (OPD) health services in their health facilities. This approach enabled the researcher to solicit the factors that are associated with the low uptake of cervical cancer screening despite women of child bearing age visiting the health facilities in large numbers for other services. The sample was drawn from eligible women

accessing health services from five (5) health facilities. The total population of women of child bearing age in the whole district was 242,325 while the sub total population from these five health facilities was 42,635 women (NSO 2017/18 population projections).

3.4 Study Site

The study was conducted in Mangochi district in five health facilities namely Monkeybay community hospital, Mangochi district hospital, St. Martin's community hospital, Kapire health centre and Namwera health centre. The district covers an area of 6,273 square kilometres in the southern region of Malawi and it shares boundaries with Balaka, Machinga, Ntcheu, and Salima districts and also an international border with Mozambique. The majority of people in the district belong to the Yao ethnic group but Chichewa and Chiyao languages are commonly used across the district. Fishing, farming and small scale businesses are the main sources of income. The district had a total estimated population of 1,053,585 and out of that 242, 325 were women of childbearing age (NSO population projections, 2016/2017). The estimated population of the area under study was 185,371 with 23% (42,635) being women of childbearing age. The study sites had been chosen because the health facilities offered sexual and reproductive health services including cervical cancer screening. These health facilities therefore enabled the researcher to assess the determinants that influence the women of child bearing age to use the available cervical cancer screening services. See appendix 1 for map of Mangochi.

3.5 Sample size determination and sampling procedure

The minimum required sample size for this study was determined using single population proportional formula shown below:

To achieve the desired sample size, at the confidence level of 95%, the sample size was found using the Cochran formula 1977 (Bartlett, Kotrlik & Higgins, 2001). With the prevalence of cervical cancer screening in Malawi being at 30.6% (MoH, 2016) and the absolute precision calculated at 5%, the sample size was calculated to be 326 participants. But because of the cluster sampling design used, in order to obtain the same precision of 5%, a design effect of 1.4 (Rowe, Lama, Onikpo & Deming, 2002) and a non-response rate of 10% was used to calculate the required sample size. Therefore the sample size was calculated as 502 participants. Below is the method of calculation:

$$n = \frac{z(\alpha/2)^2 p(1-p)}{d^2}$$

Where: n = Sample size, $Z (\alpha/2)$ = confidence interval, P = proportion of cervical cancer screening service utilization (30.6%) (According to CECAP annual report, 2016), d = margin of error.

$$n = \frac{(1.96)^2(0.306)(0.694)}{(0.05)^2}$$

$$n = 326$$

Since the study followed multistage sampling method, to achieve precision, the above calculated sample size was multiplied by the design effect ($deff$) which was assumed to be at 1.4 (Rowe et al., 2002).

Multiplying this by 1.4 (design effect)

$$= 456.4$$

Adding 10%, a non-response rate

$$= 501.6$$

Therefore, the sample size was 502

The 502 participants were selected from the 5 facilities using the proportionate sample allocation to assign the number of participants to be drawn from each facility (Pedhazur & Schemelkin, 1991). This allowed samples from each cluster to be a representation of their population hence allowing the participants from facilities with large population to have an equal chance of participating as those participants from small population facilities. This improved the accuracy of the sample in estimating the true findings of the population.

The proportionate sample allocation used the formula below:

$$f = n/N$$

$$= 502/42635$$

$$= 0.0118$$

Multiplying this fraction with the population of each cluster gave the specific sample size population for each facility, see Table 3.1. However, there was a 96% response rate as only 482 participants completed answering the questions. Therefore the sample with complete data that was used in this study was 482 participants.

Table 3.1**Sample size per health facility**

Health facility	Catchment area total population	Proportionate sample size (Actual sample size)	Proportionate sample size (96% response rate)
Monkeybay community hospital	10,063	118	105
Mangochi district hospital	17,928	211	209
St. Martin's community hospital	7,768	91	91
Kapire health centre	2,934	35	30
Namwera health centre	3,942	47	47
TOTAL	42,635	502	482

The study employed a multistage sampling method to come up with the sample. The first stage was identifying the clusters. This method ensured that all participants had an equal chance of being selected to be in the study in a population where participants were diverse. The clusters were according to location of health facilities offering cervical cancer screening services in Mangochi district, thus, Chilipa zone, Boma zone, Monkeybay zone, Namwera zone and Makanjira zone (these zones had already been demarcated based on geographical location by the district health office). At that stage, the sampling frame was the health facility. One health facility was selected from each cluster (zone) through simple random sampling to come up with a total of 5 health facilities. Pieces of folded paper with names of the 14 health facilities offering cervical cancer screening services in the district namely; Mangochi district hospital, St. Martins community hospital, Monkeybay community hospital, Mulibwanji community hospital, Makanjira health centre (H/C), Koche H/C, Namwera H/C, Chilipa H/C, Kapire H/C, Namkumba H/C, Ntimabi H/C, Malombe H/C, Katuli H/C and As-salaam private clinic were put in a box (one cluster at a time) and randomly 5 pieces were picked on 5 different selections from the box to identify the 5 health facilities to be used in the study. The

randomly selected 5 facilities were Monkeybay community hospital, Mangochi district hospital, St. Martin's community hospital, Kapire health centre and Namwera health centre. Thereafter, there was selection of individual participants from the 5 health facilities. Individual selection used the simple random sampling method through balloting. At that stage the sampling frame was the individual participant.

3.5.1 Inclusion criteria

The following was the inclusion criteria; women of childbearing age from 18-49, those women who were accessing OPD health services from the 5 selected health facilities, women who were in a stable condition and accepted in writing to be part of the study.

3.5.2 Exclusion criteria

The following women were excluded from participating in the study; women who were less than 18 years of age, women who were older than 49 years of age, women who were accessing in-patient services from the 5 selected health facilities, women who were very sick and women who had refused to take part in the study.

3.5.3 Recruitment process

A brief description of the study was made each morning to clients at the 5 selected health facilities in the Maternal and Child Health (MCH) and OPD clinics to have the clients informed of a possibility of being approached to participate in the study. Female clients sitting on the queues waiting for consultation were then provided with numbers on a piece of paper to be used for random sampling. Nurses and clinicians working in these areas (who had prior orientation of the study) had similar numbers as those with clients put in a box where they randomly picked numbers and sampled the clients. Clients who did not meet the inclusion criteria were excluded from going to the recruitment point. Those who had met the inclusion criteria and were interested to take part in the study were assigned a support staff to escort them to a recruitment room at the end of the consultations. Clients who were at the far end of the consultation line, and their numbers had been selected during balloting, were first approached (by the researcher or research assistant) to be recruited into the study to minimize the time the clients spent for both consultation and study participation. In the recruitment room, the researcher or research assistant gave thorough information of the research and allowed the client to give an informed consent. Once consent was given, the client was recruited as a study participant.

3.6 Data Collection and Management

Data were collected through a survey method using a structured interview questionnaire for a period of 2 weeks. The study adapted an existing study tool which was used in a similar study in Uganda; “Uptake of Cervical Cancer Screening and Associated Factors among Women in Rural Uganda: A Cross Sectional Study” (Ndejjo et al., 2016). Permission to use this data collection tool had been granted, see appendix 2. Prior to the use of that data collection tool in the study, a pre-test was done at Koche health centre. The pre-testing process assisted in making corrections to ensure that the data collection tool was able to capture the required data. The following were the corrections that were made: section III was assessing prior knowledge on cervical cancer and screening. On the question of where the respondent heard of cervical cancer and screening, the response ‘mobile public address system’ was added. This was done because most women during pretest gave that answer. On section IV: beliefs towards CCS, the statement that ‘I am afraid the screening procedure might be painful, that is why I have not gone for screening’ was added. This was done because most respondents during the pretest stated that they had fear that the screening might be painful. In addition, on section V, the question asking about the respondents’ willingness to undergo screening if provided at no cost or affordable cost was omitted in the adapted tool. During the pre test, it was discovered that all health facilities in the district were offering CCS for free, hence this question was irrelevant. On the same section, the question on willingness to undergo CCS if provided by a male health worker was added during the pre test. Mangochi was observed to be an Islam dominated district where issues of modesty in dressing were being observed. The researcher therefore wanted to assess if such a factor as screening by a male health worker would affect the uptake of the service.

In the study, the dependent variable was uptake of cervical cancer screening. Participants were asked if they had ever been screened for cervical cancer and the response was binary (yes or no). For independent variables, the study assessed both categorical and continuous data. The participants were asked questions pertaining to age, marital status, relationship type, education level, occupation, ethnicity, religion, residence, history of multiple sex partners, gender of health worker, distance to the facility, provision of health education, knowledge of signs and symptoms of cervical cancer (vaginal bleeding, abnormal vaginal discharge, painful coitus), knowledge of cervical cancer risk factors (high parity, multiple sex partners, early sex debut, having HIV infection), HIV status, prior knowledge of

cervical cancer screening, source of knowledge of cervical cancer and beliefs towards cervical cancer (fear of pain during screening procedure, being at risk of having cervical cancer, curability of cervical cancer, importance of screening) (See appendix 6). The interviews took a maximum of 30 minutes. The questionnaires were checked for completeness before releasing the participant. Data were entered and stored in a labelled folder, in a password locked computer and was only accessed by the researcher, research assistant and supervisors. In addition data was stored in a well labelled folder in drop box (a cloud based storage system) so that in case the computer developed a fault data could be retrieved. Data in all storage folders was also well labelled for easy access and sharing with the supervisors. Data was shared electronically through emailing for easy use. The questionnaires were stored in a lockable drawer and will be destroyed after 3 years.

3.7 Data Validity and Reliability

To ensure content validity the researcher conducted a thorough literature review and consulted experts in the field of cervical cancer to check whether the questions under each variable fully covered all the content that they should. In addition, the researcher also engaged with cervical cancer programme experts to check if the concepts of the conceptual model used were indeed represented by the variables under study to ensure construct validity. Furthermore, to ensure internal validity, the researcher adapted and used an interview questionnaire, thus a data collection tool that had already been developed and used by another researcher. This data collection tool was from a study that had been published in a peer reviewed journal. Again, external validity was achieved through a rigorous sampling process that this study employed. Using a multistage sampling method ensured that the sample was indeed related to the population hence the findings could be generalized to the entire district and other districts with similar characteristics.

To ensure reliability, the study utilized a data collection tool which was adapted from Ndejjo et al (2016) study. Although it is not a standardised data collection tool, it was pretested and used in the initial study which was later peer reviewed and published. This alone is an indication that the initial researchers followed a rigorous process in developing the tool. The researcher did not come across any standardised or validated tool for data collection in cervical cancer screening uptake studies. However, following adapting the data collection tool, a pre-test was done at Koche health centre where 20 participants were asked to respond to the interview questions thereby checking and correcting any errors in

the data collection tool. The results from the pre-test were not used in the actual study. For instance, in the original data collection tool, on the section for respondent characteristics, the question on religion had responses of denominations like Catholic, SDA, and Pentecostal. However during the pre test and in the main study, the responses to this question were changed to Muslim and Christian.

3.8 Data management and Analysis

Statistical Package for Social Sciences (SPSS) IBM 22.0 version was used to enter, code, clean and analyse the data. Descriptive data analysis was done and results were presented in percentages and frequencies. Further analysis was done using binary logistic regression model where variables that were found to be significant at univariate analysis were further analysed at multivariate level to note if the association was still significant. Appendix 10 shows the data analysis plan where a description on how each variable that was analysed is given. The level of statistical significance was set at 95% Confidence level with a probability value of ≤ 0.05 .

3.9 Ethical Considerations

Ethical approval was obtained from College of Medicine Research and Ethics Committee (COMREC), certificate number P.04/19/2646 (see appendix 9) and a clearance was sought from Mangochi district health research committee and health facility in-charges (in all the five health facilities) before engaging with participants. Furthermore, information of the study was provided both verbally and written to interested participants for them to give an informed consent. The consent form was translated into local languages, Chichewa and Yao to ensure clarity and that participants understood the study content before consenting. Participants signed the consent form and those who did not know how to write, a fingerprint was required after giving them a verbal explanation. The researcher or research assistant also counter signed. The participants' names were not used on the interview questionnaires but instead, codes were used for anonymity (see appendix 3). To ensure privacy, the interviews were done in a separate room from consultations and only the interviewer and the participant were present during the process. Information was only collected at the point of consenting and there were no further encounters with the participants. The information gathered in this study was only accessible to the research team (the researcher, research assistants and supervisors) to maintain confidentiality and during the presentation of research findings, participants names were not used. The researcher and the research assistant (a registered

nurse/midwife) were the ones who conducted the interviews. . Prior to pre test, the research assistant had a one day training on the data collection tool. In addition, the research assistant was also involved during the pre test to familiarize with the tool. During data collection the participants were allowed to ask questions at any given point in time during the process. The study's results will help program implementers to focus their activities on those significant factors affecting uptake of cervical cancer screening hence improving the utilization of cervical cancer screening services and the health status of women in Mangochi. In this study there were no interventions that would have posed as a threat to the participants' lives. However, for those participants who had found this topic to be sensitive and were emotional during the data collection, the interviews were paused to allow the participant to recollect. Furthermore, the interviewer, where necessary, was briefly counselling the participants to ensure that their participation in the study was not emotionally a traumatic experience. Also, in the course of the study, at any given point, participants were free to pull out, as participation was voluntary and there were no repercussions.

3.10 Dissemination of the Results

The study findings will be disseminated at four levels. The researcher intends to provide an oral presentation of the findings in the 5 health facilities where the data was collected. Another dissemination will be provided at district level, to the district health research committee and all relevant stakeholders. Furthermore, the researcher will strive to disseminate the findings of this study at any available opportunity in a national research dissemination conference and finally, the researcher intends to publish the results of this study in a peer reviewed journal to make available data from Malawi to other global researchers in the field of cervical cancer. Copies of the dissertation will be submitted to the Kamuzu college of Nursing and University of Malawi libraries.

3.11 Conclusion

The chapter has presented the detailed methodology that was used in conducting this study. The respondents were recruited and data was collected from them on the same day and no further follow ups were done. An adapted data collection tool was used to collect the data. Data was analysed quantitatively using the SPSS software. The next chapter will present the study findings.

Chapter 4

4.0 Results

4.1 Introduction

This chapter presents the key findings of the study and has been guided by the specific objectives and the conceptual model. Descriptive statistics on socio-demographic characteristics of the respondents are presented first, followed by descriptive statistics on organizational factors, need and enabling factors. In addition, the chapter also contains findings of determinants associated with cervical cancer screening following a binary logistic regression analysis which involved both bivariate and multivariate analysis.

4.2 Socio-Demographic Characteristics of Respondents

The study had a 96.0% response rate, thus 482 out of the 502 women of child bearing age participated and responded to the administered questionnaire. Less than quarter of the total respondents, 63 (13.1%) had ever been screened for cervical cancer. The following are the socio-demographic characteristics that were collected and analysed: age, religion, level of education, ethnicity, marital status, relationship type, occupation and residence. As shown in table 4.1, the majority of the respondents, 208 (43.2 %) were of ages from 25 - 35. The mean age of the respondents was 27.0 years with a standard deviation of 7.3. Fifteenth (23.8 %) women aged 36 - 49 had gone for cervical cancer screening. Over half of the respondents, 318 (66%) were Muslims and 309 (64.1%) of the respondents belonged to the Yao ethnic group. Of note is the fact that the majority of those who had gone for cervical cancer screening according to religion, were Christians, 35 (55.6%). Most of the respondents, 313 (64.9%) had primary education as their highest education qualification. Over three quarters of the respondents, 418 (86.7%) were married of which 333 (79.7%) of the married respondents were in a monogamous relationship. 166 (34.4%) of the respondents were housewives and more than half of the respondents, 335 (69.5%) indicated that they lived in the village (Table 4.1).

Table 4.1**Distribution of respondents by socio-demographic characteristics**

Characteristics	N=482 n (%)	Ever screened N = 63 n (%)
Age group (years)		
18 -24	205 (42.5)	13 (20.6)
25 – 35	208 (43.2)	35 (55.6)
36 – 49	69 (14.3)	15 (23.8)
Religion		
Islam	318 (66.0)	28 (44.4)
Christianity	164 (34.0)	35 (55.6)
Level of Education		
None	87(18.0)	12(19.0)
Primary	313 (64.9)	37 (58.7)
Secondary	78 (16.2)	13 (20.6)
Tertiary	4 (0.8)	1 (1.6)
Ethnicity		
Yao	309 (64.1)	31 (49.2)
Chewa	75 (15.6)	5 (7.9)
Lomwe	48 (10.0)	14 (22.2)
Other	50 (10.4)	13 (20.6)
Marital status		
Married	418 (86.7)	53 (84.1)
Single	64 (13.3)	10 (15.9)
Widowed	8 (1.7)	4 (6.3)
Divorced/Separated	32 (6.6)	5 (7.9)
Relationship Type	N= 418	N = 53
Monogamous	333 (79.7)	44 (83.0)
Polygamous	85 (20.3)	9 (17.0)
Occupation		
Housewife	166 (34.4)	20 (31.7)
Business	128 (26.6)	15 (23.8)
Farming	127 (26.3)	20 (31.7)
Employed	61 (12.7)	8 (12.7)
Residence		
Village	335 (69.5)	43 (54.0)
Trading Centre	89 (18.5)	14 (22.2)
Semi-urban (Boma)	58 (12)	15 (23.8)

4.3 Organizational Factors of Cervical Cancer Screening

The organizational factors that were considered in this study were distance to health facility offering cervical cancer screening services, provision of health education on cervical cancer by health workers and willingness of respondents to be screened for cervical cancer by a male health worker. According to Table 4.2, over three quarters of the respondents, 383 (79.5%), lived within 1 – 10 kilometres from the health facility offering cervical cancer screening services. Most of the respondents, 270 (56%), had received health education on cervical cancer. Four hundred eighteen (86.7%) of all the

respondents were willing to be screened for cervical cancer by a male health worker (Table 4.2)

Table 4.2

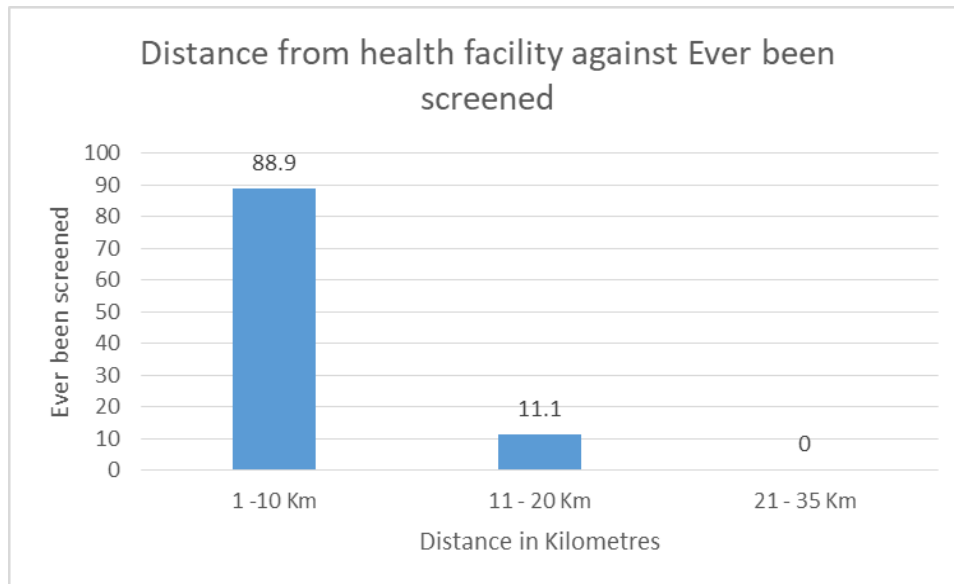
Distribution of respondents by Organizational factors

Factors	N=482 n (%)
Distance to health facility	
≤1 – 10 Km	383 (79.5)
11 – 20 Km	75(15.6)
21 -35 Km	24 (5)
Health education received on cervical cancer	
Yes	270 (56)
No	212 (44)
Willingness to be Screened by Male Health Worker	
Respondents willing to be screened	418 (86.7)
Respondents not willing to be screened	64 (13.3)

Analysis of those who had ever been screened for cervical cancer against the distance from their home to the health facility revealed that the majority 56 (88.9%) of the respondents who had ever been screened for cervical cancer lived within 1 -10 kilometres (Figure 4.1).

Figure 4:1

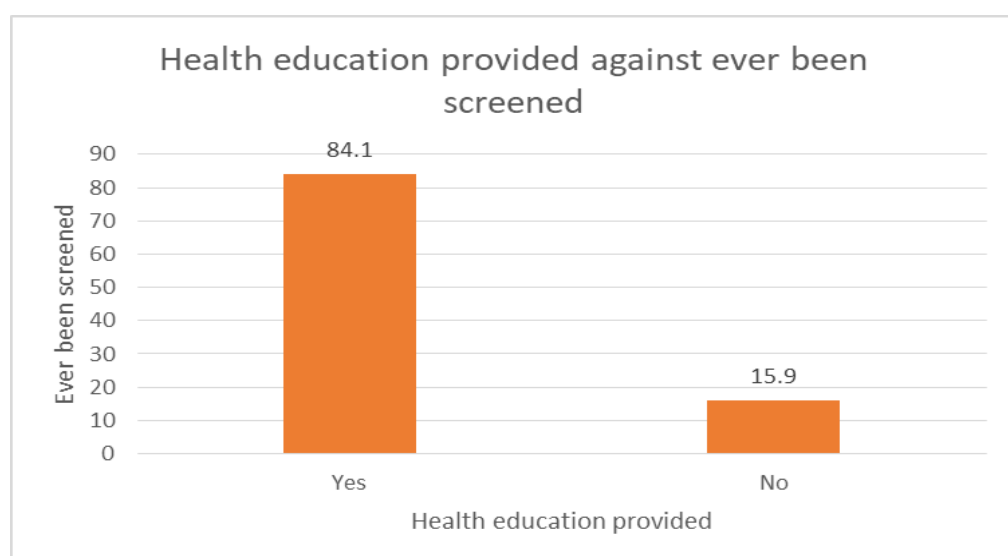
Distribution of respondents by Distance from Health Facility



In Figure 4.2 over three quarters of the respondents who had ever been screened for cervical cancer had received health education on cervical cancer, 53 (84.1%).

Figure 4:2

Distribution of respondents by Health Education



According to Figure 4.3, almost all those who had been screened for cervical cancer also showed willingness to be screened by a male health worker, 60 (95.2%).

Figure 4.3

Distribution of respondents by willingness to be screened by male health workers



4.4 Enabling and Need Factors of Cervical Cancer Screening Services

The following were the enabling and need factors that were collected and analysed in the study: number of sex partners in lifetime, individual's HIV status, knowledge of cervical cancer, source of information on cervical cancer, level of knowledge on signs and symptoms of cervical cancer, level of knowledge on risk factors of cervical cancer and beliefs towards cervical cancer. Of the total respondents, as shown in Table 4.3, 285 (59.1%) had two or more sex partners in their lifetime. Out of all the respondents who had ever been screened for cervical cancer (N= 63), 69.8% (n = 44) were those women with 2 or more sex partners in their lifetime. Most respondents, 353 (73.2%), were HIV negative. However, from the 63 respondents who had ever undergone cervical cancer screening, just over half, 33 (52.4%) were HIV positive respondents. Over half of the total respondents in the study, 261 (52.1%), had general knowledge of cervical cancer and almost all those who had ever been screened for cervical cancer (N = 63), 60 (95.2%) had knowledge of cervical cancer. Out of the sixty three respondents who had ever

undergone cervical cancer screening, forty four (73.3%) had stated that the health facility was their source of information on cervical cancer. Over half of the respondents who had ever been screened for cervical cancer (N =63), 36 (60.0%), had high level of knowledge on signs and symptoms of cervical cancer. Over three quarters of the respondents who had ever undergone cervical cancer screening (N =63), 50 (83.3%), had high level of knowledge on risk factors of cervical cancer. Most of the respondents, 272 (56.4%) had positive beliefs towards cervical cancer (Table 4.3).

Table 4.3

Distribution of respondents by enabling and need factors

Factors	N=482 n (%)	Ever been screened N =63 n(%)
Sex partners in lifetime		
≥2	285 (59.1)	44 (69.8)
≤1	197 (40.9)	19 (30.2)
HIV Status		
Negative	353 (73.2)	30 (47.6)
Positive	121 (25.1)	33 (52.4)
Unknown	8 (1.7)	0 (0.0)
Knowledge of cervical cancer		
Respondents with knowledge of cervical cancer	261 (54.1)	60 (95.2)
Respondents without knowledge of cervical cancer	221 (45.9)	3(4.8)
Source of Cervical Cancer Information	N = 261	N = 60
Health Facility	141 (54)	44 (73.3)
Radio	42 (16.1)	7 (11.7)
Friends/Family	54 (20.7)	5 (8.3)
Other	24(9.2)	4 (6.7)
Level of knowledge on signs and symptoms of cervical cancer	N = 261	N = 60
Respondents with low level of knowledge	169 (64.8)	24 (40.0)
Respondents with high level of knowledge	92 (35.2)	36 (60.0)
Level of knowledge on risk factors of cervical cancer	N = 261	N =60
Respondents with high level of knowledge	197 (75.5)	50 (83.3)
Respondents with low level of knowledge	64 (24.5)	10 (16.7)
Beliefs towards cervical cancer		
Respondents with positive beliefs	272 (56.4)	52 (82.5)
Respondents with negative beliefs	210 (43.6)	11 (17.5)

4.5 Socio-Demographic Determinants Associated with Uptake of Cervical Cancer Screening Services

In bivariate analysis, the following sociodemographic factors were found to be associated with uptake of cervical cancer screening services; age, religion, ethnicity and residence. According to Table 4.4, bivariate analysis showed that respondents aged 18 -24 were

66% less likely to undergo cervical cancer screening as compared to those aged 25 – 35 years (AOR = 0.34, 95% CI: 0.19-0.65). Whereas those who were Christians by religion were 2 times more likely to go for cervical cancer screening as compared to those of Islam religion (AOR = 2.81, 95% CI: 1.64-4.82). Those respondents who were Lomwes by ethnicity were found to have a positive association with uptake of cervical cancer screening (AOR = 3.69, 95% CI: 1.79-7.62). Likewise, place of residence was also found at bivariate analysis to have a positive association with ever undergoing a cervical cancer screening service (AOR = 3.09, 95% CI: 1.56-6.14). Further multivariate analysis showed similar statistically significant associations that age, religion, ethnicity and residence were significantly associated with uptake of cervical cancer screening services. In Table 4.4, respondents of the age group from 18 - 24 were 62% less likely to undergo cervical cancer screening compared to respondents of ages 25 - 35 (AOR= 0.38, 95% CI: 0.19-0.77). Those respondents who were Christians were almost 3 times more likely to undergo cervical cancer screening than their Muslim counterparts (AOR = 2.77, 95% CI: 1.23 – 6.22). Respondents of the Chewa ethnic group were 71% less likely to undergo cervical cancer screening than those respondents of the Yao ethnic group (AOR= 0.29, 95% CI: 0.09 – 0.95). Those respondents residing at the Boma (semi-urban area) were almost three times more likely to undergo cervical cancer screening as compared to those respondents residing in the village (AOR= 2.57, 95% CI: 1.19 - 5.55) (Table 4.4).

Table 4.4**Socio-demographic determinants associated with uptake of cervical cancer screening services among respondents, Mangochi, Malawi**

Factors	Unadjusted Odds Ratios (95% CI)	Adjusted Odds Ratios (95% CI)	P-value
Age group			
25 - 35 (Ref)	1.00	1.00	
18 – 24	0.34 (0.17 – 0.65)*	0.38 (0.19 – 0.77)*	0.007*
36 -49	1.37 (0.70 – 2.70)	1.48 (0.70 – 3.16)	0.307
Religion			
Islam (Ref)	1.00	1.00	
Christianity	2.81 (1.64 – 4.82)*	2.77 (1.23 – 6.22)*	0.014*
Ethnicity			
Yao (Ref)	1.00	1.00	
Chewa	0.64 (0.24 – 1.71)	0.29 (0.09 – 0.95)*	0.041*
Lomwe	3.69 (1.79 – 7.62)*	1.55 (0.60 – 4.01)	0.366
Other	3.15 (1.51 – 6.56)*	1.25 (0.47 – 3.32)	0.652
Marital Status			
Married (Ref)	1.00	1.00	
Single	0.30 (0.04 – 2.26)	0.51 (0.06 – 4.23)	0.531
Widowed	6.89 (1.67 – 28.37)*	3.95 (0.86 – 18.15)	0.077
Divorced/Separated	1.28 (0.47 – 3.46)	1.25 (0.45 – 3.73)	0.652
Residence			
Village (Ref)	1.00	1.00	
Trading centre	1.65 (0.84 – 3.24)	1.31 (0.63 – 2.72)	0.473
Boma	3.09 (1.56 – 6.14)*	2.57 (1.19 - 5.55)*	0.016*

*p<0.05

Multivariate analysis adjusted for age group, religion, ethnicity, marital status and area of residence.

Note: Level of education, relationship type and occupation were not statistically significant at bivariate analysis.

4.6 Organizational Determinants Associated with Uptake of Cervical Cancer Screening Services

The organizational factors that were analysed at bivariate level and showed significant association with uptake of cervical cancer screening services were provision of health education on cervical cancer and willingness of respondents to be screened by a male health worker. On multivariate analysis, only provision of health education was found to be significantly associated with uptake of cervical cancer screening services. In table 4.5 below respondents who had not received health education on cervical cancer were 80%

less likely to undergo cervical cancer screening as compared to their counterparts who had received health education on cervical cancer (AOR= 0.20, 95% CI: 0.10-0.41). Respondents who were not willing to be screened for cervical cancer by a male health worker were 71% less likely to be screened for cervical cancer as compared to their counterparts who were willing to be screened for cervical cancer by a male health worker. However, further multivariate analysis revealed that this association is not statistically significant (AOR = 0.30, 95% CI: 0.90 – 1.01) (Table 4.5).

Table 4.5

Organizational determinants associated with uptake of cervical cancer screening services among respondents, Mangochi, Malawi

Factors	Unadjusted Odds Ratios (95% CI)	Adjusted Odds Ratios (95% CI)	P-value
Health education received on cervical cancer			
Yes (Ref)	1.00	1.00	
No	0.20 (0.10 – 0.41)*	0.20 (0.10 – 0.41)*	0.000*
Willingness to be Screened by Male Health Worker			
Willing to be screened (Ref)	1.00	1.00	
Not willing to be screened	0.29 (0.89 – 0.97)*	0.30 (0.90 – 1.01)	0.051

*p<0.05

Multivariate analysis adjusted for health education of cervical cancer and willingness of respondents to be screened by a male provider.

Note: Distance to health facility was not statistically significant at bivariate analysis.

4.7 Need and Enabling Determinants Associated with Uptake of Cervical Cancer Screening Services

Bivariate analysis of need and enabling factors revealed that HIV status, knowledge of cervical cancer, source of information on cervical cancer, level of knowledge on signs and symptoms of cervical cancer and beliefs towards cervical cancer were associated with uptake of cervical cancer screening services. Following a multivariate analysis, HIV status, source of information on cervical cancer, level of knowledge on signs and symptoms of cervical cancer and beliefs towards cervical cancer were significantly associated with uptake of cervical cancer screening services. As shown in table 4.6, respondents who were HIV positive were almost three times more likely to undergo cervical cancer screening as compared to those respondents who were HIV negative

(AOR= 2.41, 95% CI: 1.22- 4.78). Respondents who got information on cervical cancer from family and friends were 69% less likely to undergo cervical cancer screening than the respondents who got information on cervical cancer from the health facility (AOR= 0.31, 95% CI: 0.11-0.87). Those respondents with high level of knowledge on signs and symptoms of cervical cancer were 2.91 times more likely to undergo cervical cancer screening as compared to those respondents with low level of knowledge on signs and symptoms of cervical cancer (AOR=2.91, 95% CI: 1.51-5.63). Respondents with negative beliefs towards cervical cancer were 61% less likely to undergo cervical cancer screening than their counterparts who had positive beliefs towards cervical cancer (AOR= 0.39, 95% CI: 0.18-0.87) (Table: 4.6).

Table 4.6

Enabling and need determinants associated with uptake of cervical cancer screening services among respondents, Mangochi, Malawi

Factors	Unadjusted Odds Ratios (95% CI)	Adjusted Odds Ratios (95% CI)	P-value
HIV status			
Negative (Ref)	1.00	1.00	
Positive	4.04 (2.34 – 6.98)*	2.41 (1.22 – 4.78)*	0.012*
Source of cervical cancer information			
Health facility (Ref)	1.00	1.00	
Radio	0.44 (0.18 – 1.07)	0.58 (0.23 – 1.47)	0.249
Friends/Family	0.23 (0.08 – 0.60)*	0.31 (0.11 – 0.87)*	0.026*
Other	0.44 (0.14 – 1.37)	0.76 (0.23 – 2.53)	0.659
Level of knowledge on signs and symptoms of cervical cancer			
Low knowledge (Ref)	1.00	1.00	
High knowledge	3.88 (2.13 – 7.09)*	2.91 (1.51 – 5.63)	0.002*
Beliefs towards cervical cancer			
Positive beliefs (Ref)	1.00	1.00	
Negative beliefs	0.23 (0.12 – 0.46)*	0.39 (0.18 – 0.87)*	0.022*

*p<0.05

Multivariate analysis adjusted for HIV status, source of cervical cancer information, level of knowledge on signs and symptoms of cervical cancer and beliefs towards cervical cancer.

Note: Sexual partners in lifetime, knowledge of age to screen for cervical cancer and level of knowledge on risk factors for cervical cancer were not statistically significant at bivariate analysis.

4.8 Conclusion

This chapter has presented the study findings on sociodemographic, organizational, need and enabling factors of cervical cancer. Furthermore, results have also been shown on how age, Christianity, ethnicity, marital status, residence, health education, HIV status, source of information on cervical cancer, level of knowledge on signs and symptoms of cervical cancer and beliefs towards cervical cancer are predictors of uptake of cervical cancer screening services. The next chapter discusses the findings of the study.

Chapter 5

5.0 Discussion of Findings

5.1 Introduction

This study was conducted to investigate the determinants of cervical cancer screening and its association with uptake of screening services among women of childbearing age. This was done to identify factors that are affecting uptake of cervical cancer screening services which, if addressed will lead to the improvement in the uptake of cervical cancer screening in Mangochi. The discussion in this chapter will focus on results of the study whilst being guided by the specific objectives as well as the conceptual model. The discussion will be presented under the following subheadings; uptake of cervical cancer screening, sociodemographic determinants of cervical cancer screening, organizational determinants of cervical cancer screening uptake and need and enabling determinants of cervical cancer screening uptake.

5.2 Uptake of Cervical Cancer Screening

Less than a quarter of the respondents in the study (13.1%) had ever been screened. This is very low when compared to the targeted women (80%) in the national CECAP strategy (MoH, 2016). The strategy recommends that 80% of women ages from 25 to 49 should be screened with VIA for the first time in the previous 12 months period. This low cervical cancer screening rate is very similar to several other studies done in Malawi and across Africa. One of the studies done in Blantyre, Malawi, by Chosamata et al., (2015) found 13.2% as the rate of uptake of cervical cancer screening. Bayu et al., (2016) in Ethiopia reported 19.8% as the uptake rate of cervical cancer screening in their study while in Kenya, Orang'o et al., (2016) and Tiruneh et al. (2017) found a low uptake of cervical cancer screening of 11% and 19.4% respectively. Likewise a low utilization of cervical cancer screening of up to 8.0% was reported in Nigeria (Idowu et al., (2016). In Zambia, the uptake of cervical cancer screening was reported to be 20.7% (Nyambe, Kampen, Baboo & Van Hal, 2019) while Tanzania reported a cervical cancer screening rate of 7.9% (Moshi, Bago, Ntwenya, Mpondo & Kibusi, 2019). Mozambique however, had the lowest cervical cancer screening rate of 3.4% among women aged 30 to 55 years (Brandão, et al., 2019). Different factors have been found to contribute to such low uptake of cervical cancer screening including lack of knowledge on cervical cancer,

unavailability of cervical cancer screening services, long distance travelled to health facilities to access cervical cancer screening services, lack of spousal support to utilise cervical cancer screening services and cost of cervical cancer screening services among others. In a study in Ethiopia where cervical cancer screening uptake was also found to be low, the women expressed that they felt being healthy hence they did not go for cervical cancer screening (Bante, Getie, Getu, Mulatu & Fenta, 2019). On the other hand, Aynalem, Anteneh & Enyew (2020) in Ethiopia attributed the low uptake of cervical cancer screening of 5.4% in their study to the difference in sample size with other studies, the difference in the age of study population and the difference in study area. The uptake of cervical cancer screening services are low in many African countries as cervical cancer screening is not considered as a routine checkup in most of these countries (Nwabichie et al., 2017). In our study, we attribute the low uptake of cervical cancer screening to lack of knowledge on cervical cancer and the setting where cervical cancer screening is offered. Most respondents had less knowledge of the signs and symptoms of cervical cancer which entails that their chances of undergoing screening having noticed a sign or symptom was reduced as compared to those who had that knowledge. Despite the women accessing other health services, screening for cervical cancer is a test mostly done when one is asymptomatic hence the need to offer it in community based structures like outreach clinics. In this study most women were village residents and it has shown that those respondents who were village residents were less likely to undergo cervical cancer screening compared to those residing within the Boma. Below is a discussion of factors significantly associated with this low uptake of cervical cancer screening in Mangochi district, Malawi.

5.3 Socio-Demographic Determinants of Uptake of Cervical Cancer Screening

The study showed that women of ages 18 -24 were the least in numbers to ever undergo cervical cancer screening where only 20.6% of those who had a cervical cancer screening done were from this age group. Furthermore, these women (18-24 year olds) were found to be less likely to undergo the cervical cancer screening when compared to slightly older women of 25-35 age group (AOR = 0.34, 95% CI: 0.17-0.65). The results in this study could be linked to the setting where these participants were found. Most young people are healthy and do not visit health facilities where information and services on cervical cancer are mostly provided. This result could also be attributed to the ministry of health age stipulation for those women that are of eligible age for cervical cancer screening.

According to the CECAP strategy, women 30-49 years are eligible for cervical cancer screening using VIA in Malawi. This age eligibility criteria in the national guidelines could prevent health workers from advocating, educating and offering cervical cancer screening to young women less than 30 years of age. Other studies in Malawi, Ethiopia and Kenya have also found a significant relationship between age and cervical cancer screening. Women of 41 - 45 years were 7 times more likely to go for cervical cancer screening as compared to women 35 – 40 years of age (Chosamata et al., 2015). Tiruneh et al., (2017) found that women 35 – 49 years of age were more likely to screen for cervical cancer with any test than young women of 15 – 24 years of age. Bente et al., (2019) in their study in Ethiopia also found that women of 35 - 49 age were 3.21 times more likely to screen for cervical cancer than women of 15 – 24 age group. Bente et al., (2019) in their study attributed this to the possibility of the older women getting more information on cervical cancer during antenatal care, labour and delivery and postnatal care which are thought to increase with increase in age and parity. In another study in Ethiopia by Aynalem et al., (2020), older women of 40 years and above were more likely to screen for cervical cancer than women of 30 – 39 age group. Aynalem et al., (2020) concluded that this finding was as a result of more contacts with health facilities that older women have and this in turn increases the the older women's probability of getting information about cervical cancer and screening hence the utilization. These results are however different from what other studies in Malawi and Africa found. According to Ibekwe et al., (2010), Kokuro, (2017), Maseko et al., (2014) and Waiswa et al., (2017), there was no statistical significance in their studies between age and ever being screened for cervical cancer. Therefore, it is important for cervical cancer program implementers to design programs that target adolescent girls and young women in places where they are mostly found in order to reach them with the cervical cancer information and services.

Muslims were in majority in this study population. However, those women who responded as being of the Christian faith were found to be significantly associated with high uptake of cervical cancer screening than women who belonged to the Islam religion (AOR = 2.81, 95% CI: 1.64-4.82). This finding is new knowledge when looking at determinants of cervical cancer screening uptake as other studies done in Malawi have not reported this. This result is similar to what was found in a study done in Nigeria amongst nurses in which Christianity was associated with uptake of Pap smear test ($\chi^2 = 14.83$, $P = 0.0003$) (Awodele et al., 2011). In another study, women who reported prayer

as the first health-seeking option whenever they fall sick were less likely to screen for cervical cancer (Orang'o et al., 2016). Nevertheless, contrary results have been found in several studies done in some parts of Africa and even in Malawi. There has been no significant association between religion and uptake of cervical cancer screening (Chosamata et al., 2015; Fort et al., 2011; Hami et al., 2014; Idowu et al., 2016; Kamphinda-Banda, 2010; Maseko et al., 2014; Ndejjo et al., 2017; Nyambe et al., 2019; Tiruneh et al., 2017; Wanyenze et al., 2017). Mangochi is highly populated with people who are Muslim faithfuls and there is need to further explore how religious values and teachings contribute to these study findings. For instance, a qualitative study done in Dubai on educated Muslim women revealed that Islam as a religion strongly encourages women to take care of their health even if it means exposing their bodies (like during the cervical cancer screening procedure) (Khan & Woolhead, 2015). The current study findings translate that the low uptake of cervical cancer screening is among the Muslim women who are also in majority in Mangochi district. Cervical cancer activities that would strategically target this group of women would in turn improve the utilization of cervical cancer screening services in the district. It is important therefore that services on cervical cancer should be intensified in locations where Islam is predominant in the district to deliberately target and influence the Muslim women to go for cervical cancer screening. Mosques and other Islamic religious gathering places could be potential areas where cervical cancer information could be shared to target the Muslim women.

Level of education as a sociodemographic characteristic has been found to have no significant association with uptake of cervical cancer screening in this study. The majority of the respondents in this study, (64.9%), had primary education as their highest education qualification. These results are similar to what other studies have found in Uganda, Botswana, Kenya and Malawi, that there is no association between level of education and uptake of cervical cancer screening (Chosamata et al., 2015; Ibekwe et al., 2010; Kamphinda-Banda, 2010; Maseko et al., 2014; Ndejjo et al., 2017; Njuguna et al., 2017; Tiruneh et al., 2017; Waiswa et al., 2017; Wanyenze et al., 2017). Contrary to this study finding, Hami et al., (2014) and Kokuro, (2017) found in their studies that women with higher education were more likely to screen for cervical cancer than those with lower education. In their study, Hami et al., (2014) described that having higher education level will give an advantage to the women to understand the health education, especially the aetiology of cervical cancer. They also argued that educated women would be able to read

brochures and other sources of information in addition to the health education offered in health facilities. Likewise, the study done in Ghana by Kokuro et al., (2017) found that those women who had attained tertiary education level were more likely to screen for cervical cancer, whilst those who had junior high level of education were less likely to go for cervical cancer screening ($\chi^2 = 15.76$, $P = 0.003$). Andersen's behavioural model on health services use states that individual predisposing social factors such as education determines a person's ability to command resources to deal with presented problem. In this study, most women had low level of education (primary or none) and their inability to demand or access screening could be attributed to that. We noted that the majority of the women (92.8%) who did not have knowledge of cervical cancer were those women with either primary education or no education at all. Cervical cancer program implementers should utilize informal means of sharing knowledge more on cervical cancer in order to reach out to those with low education levels as well.

Mangochi is predominantly of Yao ethnicity and the study likewise had more respondents (64.1%) of this ethnic group. Ethnicity was found to be statistically associated with uptake of cervical cancer screening. Respondents of the Chewa ethnic group were less likely to undergo cervical cancer screening as compared to those of the Yao ethnic group. The conceptual model of health service use entails that health seeking behaviours often stem from an individual's ethnic or cultural background as this forms a basis for values. This study finding is similar to what Harcourt et al., (2014) found in their study done in America on immigrant women which showed an association between ethnicity and uptake of cervical cancer screening. In their study, Somali women were found to be less likely to go for cervical cancer screening citing privacy as a deterring factor. In similar studies done in other parts of Africa and Malawi that the researcher reviewed, none has assessed the association between ethnicity and uptake of cervical cancer screening services. This study finding therefore is new knowledge in the identification of predictors of cervical cancer screening. There is need to further explore this factor by studying a sample with proportionally mixed ethnicity to fully understand the association.

Marital status has been found to have no association with uptake of cervical cancer screening in this study. Similar results have been found in some studies done in Malawi, Nigeria and Botswana where there was no significant association between marital status and going for cervical cancer screening (Chosamata et al., 2015; Ibekwe et al., 2010; Idowu et al., 2016; Maseko et al., 2014) In comparison, other studies done in Malawi,

Nigeria, Ethiopia and Ghana have found an association between marital status and cervical cancer screening (Awodele et al., 2011; Aynalem et al., 2020; Hami et al., 2014; Kokuro, 2017). In the Malawi and Ghana studies they had found that married women were more likely to be screened than single, divorced, separated or widowed women. The married women of Ghana were thought to be of the reproductive age hence being more susceptible to cervical cancer thus prompting them to go for screening than the older married women. In the Ethiopian study, single, divorced and widowed women were found to be more likely to screen for cervical cancer as compared to married women. The single women were thought to be more educated thereby having high knowledge of cervical cancer screening whilst the divorced and widowed women were thought to be more likely aged and had an increased risk hence the women had more interest in visiting the health facilities. In our study, widowed women are the sole decision makers including on health seeking practices. This could contribute to the women's ability to make decisions over their health on uptake of cervical cancer screening services. A study in Tanzania also found that women who did not involve their spouse in making health decisions were more than 3 times likely to screen for cervical cancer than those who involved their spouses (Kileo et al., 2015). In their study Kileo et al., (2015) expressed that domestic gender relations had a role in influencing utilization of cervical cancer screening services.

Relationship status, whether polygamous or monogamous was found to have no association with cervical cancer screening uptake in this study. This finding is similar to what Ndejjo et al., (2017) found in Uganda. None of the studies done in Malawi that the researcher had reviewed had this as a variable. Being in a polygamous marriage increases the risk for cervical cancer as the number of sexual partners that the spouse has is also increased. In this study, a good number of respondents (20.3%) were in a polygamous marriage and this may expose the women to HPV infection as a result of increased number of sexual partners involved.

The study found that there is no relationship between occupation and use of cervical cancer screening services. Chosamata et al., (2015), Ibekwe et al., (2010) and Ndejjo et al., (2017) in their studies also found no association between occupation and uptake of cervical cancer screening. However, Hami et al., (2014), Kokuro, (2017), Teame et al., (2019) and Tiruneh et al., (2017) found that occupation had an association with use of cervical cancer screening services. In their studies, women who were employed used the cervical cancer screening services more than those women who were unemployed. In the

study done in Ethiopia, the respondents' current occupation, thus private and government employees were four and three times more likely to utilize the cervical cancer screening than those who were house wives respectively (AOR = 3.85 95%CI: 1.87, 7.92 and AOR = 3.17 95%CI: 1.31, 7.66) (Teame et al., 2019). In their study they concluded that employed women were more likely to screen for cervical cancer because they were exposed to cervical cancer information among the employees. Likewise (Mupepi et al., 2011) in their study found that market vendors were less likely to go for screening than peasant farmers. The market vendors explained that time was a barrier as they were always busy at the market and had no time to go to the health facility and seek cervical cancer screening services.

In the study, respondents were asked whether they resided at the Boma, village or trading centre. Boma is described in this study as a semi-urban area of a district where central administrative activities, public offices and services are found. The majority of the respondents were village residents despite some of them utilizing the district hospital at the Boma. Analysis of residence as a predictor of cervical cancer screening uptake showed that there was a significant association. Boma residents were more likely to be screened for cervical cancer than village residents. This could be attributed to the availability of routine cervical cancer screening clinic on daily basis at the main district hospital and routine cervical cancer screening clinic on Tuesday and Thursday at the maternity wing that increased the opportunity for those willing to be screened to have a chance of accessing the service. Likewise, a study done in Kenya also reported that availability of voluntary cervical cancer screening centres and mass media awareness campaigns were some of the factors that increased the uptake of cervical cancer screening among women in their study (Mbaka, Waihenya, Oisebe & Lihana, 2018). Boma residents could also have had more information on cervical cancer since during cervical cancer screening campaigns, a mobile public address vehicle would go around the Boma to mobilise and sensitize the masses. Moshi et al., (2019) support this notion. In their study in Tanzania, women residing in urban areas were found to be more likely to be knowledgeable about cervical cancer than their counterparts who lived in the rural areas. They had affirmed that women in the urban areas had more access to health information through media and they had easy access to the health facility. Ndejjo et al., (2017) also found a similar result in that respondents living in urban and semi-urban were associated with having undergone cervical cancer screening. In their study, respondents residing in

rural areas stated that some of the barriers they encountered in accessing cervical cancer screening services were long distances to health facilities offering the service and transport challenges (availability and cost of transport). Another significant finding on residence and uptake of cervical cancer screening was found in a study done in Zimbabwe where residents of resettlement villages were less likely to go for screening than those residing in traditional rural villages (Mupepi et al., 2011). Those in resettlement villages had no health facilities within the village whilst those in traditional rural areas had health facilities within the village. However, Tiruneh et al., (2017) found that place of residence had no significant association with uptake of cervical cancer screening. It is important that cervical cancer program implementers in Mangochi should intensify information giving and service provision to women residing in villages to improve the uptake of cervical cancer screening services in the district.

5.4 Organizational (Health System) Determinants of Uptake of Cervical Cancer Screening Services

Distance to the health facility was assessed and the majority of the respondents reported that they lived within a distance of not more than 10 kilometres from the health facility. Analysis on distance as a predictor of cervical cancer screening uptake found no relationship. Contrary to this were findings of studies in Kenya and Tanzania. Distance was found to be significantly associated with being screened for cervical cancer, with those living within a shorter distance to the health facility being screened more than those living far (Lyimo & Beran, 2012; Tiruneh et al., 2017). Several studies have reported that distance is a barrier to utilization of cervical cancer services (Chadza et al., 2012; Kamphinda-Banda, 2010; Lim & Ojo, 2017; Munthali et al., 2015; Ndejjo et al., 2017). In a study done in Zomba and Queen Elizabeth Central hospitals in Malawi, women reported that distance affected them in accessing the cervical cancer services. The women complained that they had to walk long distances to seek care (Chadza et al., 2012). Kamphinda-Banda (2010) noted that long distance coupled with low socio-economic status hinders the women from using cervical cancer screening services as they can not afford transport cost in places where health facilities are far. Likewise, Lim & Ojo (2017) cited that proximity to a health facility that offers cervical cancer screening services was a factor that inhibited the uptake of cervical cancer screening. Munthali et al., (2015) added that in districts where cervical cancer screening is only offered at the hospital level, women are referred for screening from the lower level facilities and the long distances

prevent them from accessing the services. The results of this current study could be attributed to the fact that the respondents were found at the health facility already accessing other services. In addition, the respondents were not asked if they think distance is a barrier rather they were asked of the area they were coming from and then the distance was entered into the database using already calculated distances. The researcher assumes that if the respondents were asked if distance was a barrier to them in uptaking cervical cancer screening services, they would have reported differently. Again, only facilities offering cervical cancer screening services were used as study sites, thus, other women whose health facilities are not offering the cervical cancer services would still report distance as a barrier as they would need to travel to other health facilities to access the cervical cancer screening services. Future research needs to look at other potential barriers to uptake of cervical cancer screening like transport cost, out of pocket fees and long distance.

Over half of the respondents stated that they got health education on cervical cancer from the health workers. This factor was found to be significantly associated with ever being screened for cervical cancer. The respondents who did not receive health education were less likely to undergo cervical cancer screening than those who had received the health education on cervical cancer. Both Kenyan and Ethiopian studies also found similar results (Bente, et al., 2019, Njuguna et al., 2017). In the Ethiopian study, it was concluded that women were more responsive to the health education provided and also that during health education, health workers had an opportunity to address negative attitudes about cervical cancer hence women were encouraged to go for screening. Health education is considered paramount in the provision of cervical cancer services. Cervical cancer program implementers should strategically target health facility users in other clinics such as family planning, postnatal, Ante retro Viral Therapy clinic, sexually transmitted infections clinic, Out Patient Department (OPD) and Under five and provide information as this has shown to increase the likelihood of the clients undergoing a cervical cancer screening test.

In the study, gender of the health worker conducting the cervical cancer screening procedure was assessed by asking the respondents if they would be willing to be screened for cervical cancer by a male health worker. Most of the women (86.7%) were willing to be screened for cervical cancer by a male health worker. This is different from what Munthali et al., (2015) found, that male health workers offering cervical cancer screening

were a barrier to the women uptaking the cervical cancer screening service. A study in Kenya also reported similar findings to what Munthali et al., had found. In the Kenyan study, women preferred older mature female nurses to screen them for cervical cancer citing that it was normal to be asked to undress by a female health worker than a male worker as one would feel victimised (Njuguna et al., 2017). Further analysis of the relationship between uptake of cervical screening and willingness to be screened for cervical cancer by a male health worker in this study showed no significant association. In a similar study in Tanzania, similar results were also reported. Gender of the health worker was not significantly associated with uptaking cervical cancer screening (Lyimo & Beran, 2012). This finding is of importance as issues of religion and modesty were thought to be a barrier to uptaking of cervical screening. This finding also suggests that cervical cancer service provision should not only be limited to female providers as women (clients) are open to be attended to by any provider regardless of gender. In a study on perspectives of cervical cancer screening in Dubai, the women narrated that Islam religion does not stop the women from being attended to by a male doctor (Khan & Woolhead, 2015). Another study done in the United States of America on association between religion-related factors and cervical cancer screening among Muslims found that modesty was not significantly associated with utilizing the screening services (Padela et al., 2014). However, further studies with a large sample size need to be done to confirm this finding as there was a marginal statistically insignificant result following odds ratio analysis (AOR, 0.30 (0.90 -1.01) P = 0.051).

5.5 Need and Enabling Determinants of Uptake of Cervical Cancer Screening Services

Sexual partners in lifetime was not significantly associated with uptake of cervical cancer screening. This is similar to what was found in a study in Kenya in which there was no significant association between number of lifetime sexual partners and uptake of cervical cancer screening (Orang'o et al., 2016). However, other studies done in Malawi, Tanzania and Ethiopia found contrary results (Bayu et al., 2016; Chosamata et al., 2015; Kileo et al., 2015). Chosamata et al., (2015) reported that women who had 2 or more sexual partners were 2 times more likely to screen for cervical cancer than their counterparts with 1 or less sexual partners. Likewise, Bayu et al., (2016) found that women who had a recent history of multiple sexual partners were 1.6 times more likely to undergo cervical cancer screening than those who had no recent history of multiple

sexual partners. Kileo et al., (2015) also reported that women who had more than one lifetime sexual partner were 2 times more likely to screen for cervical cancer than their fellow women with 1 or no lifetime sexual partner. In their study they further found that those women with many lifetime sexual partners perceived themselves as being at a higher risk than the others, hence they utilised the cervical cancer screening services. The more the number of the sexual partners a woman has, the higher the risk of exposure to HPV and the higher the risk of cervical cancer (Awodele et al., 2011). On the other hand, the risk of HIV infection increases with the number of lifetime sexual partners that one has. And having HIV infection also increases the likelihood of developing cervical cancer from an HPV infection. According to the Malawi demographic health survey of 2015/2016, HIV prevalence in women with one lifetime sexual partner is 5.7% whereas in those with 10 or more lifetime sexual partners the HIV prevalence is at 35.4% (MDHS, 2016). In this current study it was found that 59.1 % of the respondents had 2 or more lifetime sexual partners. Cervical cancer program implementers in Mangochi should intensify health education on risk factors so that women with multiple sexual partners should get adequate knowledge of the disease hence make informed decision to go for cervical cancer screening.

Out of the total 482 respondents, 25.1% reported to have HIV infection. This finding is very high when compared to the national HIV prevalence which is at 10.8% among women of ages 15 to 49 (MDHS, 2016). Further analysis shows that of all the respondents who had ever been screened for cervical cancer (N= 63), over half of them (52.4%) were HIV positive. This study established that respondents who were HIV positive were significantly associated with uptake of cervical cancer screening. Some studies have also found a similar significant result (Bayu et al., 2016; Orang'o et al., 2016). Bayu et al., (2016) found that women who had tested HIV positive were 5.6 times likely to screen for cervical cancer than those who had tested HIV negative. In a study done by Orang'o et al., (2016), patients who were living with HIV were almost 2 times more likely to screen for cervical cancer than the other patients who were HIV negative. However, it was also noted in that study that not all women who had acknowledged to be HIV positive had ever been screened for cervical cancer. Having HIV increases the risk of one developing cervical cancer if infected with HPV and cervical cancer is classified as an AIDS defining illness. Msyamboza et al., (2016) also found that more HIV positive women if screened for cervical cancer were more likely to be found VIA positive and suspect cancer than

HIV negative women. Similarly, Horo et al., (2012) in their study found that the frequency of getting a positive visual inspection in HIV positive women was significantly higher than in HIV negative women. Service provision in cervical cancer clinics should be private and confidential as there is stigma attached. People associate cervical cancer positivity with being HIV positive as cervical cancer is also caused by a sexually transmitted infection (Orang'o et al., 2016). Most respondents at Mangochi district hospital were exposed to information on the link between HIV and cervical cancer as health education and screening is offered on daily basis to all HIV positive clients accessing services at the ART clinic. The national CECAP strategy also recommends that 80% of women on ART should be screened for cervical cancer (MoH, 2016). This finding is also good feedback to the integration of HIV and cervical cancer services program as this will potentially improve uptake of cervical cancer screening if scaled up across the district.

Knowledge on cervical cancer was also assessed. Close to half of the respondents (45.9%) had no knowledge of the disease. The study found that there was no significant association between knowledge on cervical cancer and having ever been screened for cervical cancer. However, Chosamata et al., (2015) and Hami et al., (2014) found a significant association that women with knowledge on cervical cancer were more likely to screen for cervical cancer than those without knowledge of the disease. Chosamata et al., (2015) found that women with knowledge on cervical cancer were 17 times more likely to screen for cervical cancer than those without cervical cancer knowledge. Likewise, studies done in Ethiopia and Kenya found similar significant results (Bayu et al., 2016; Lyimo & Beran, 2012). In the study done by Bayu et al., (2016), women who had general knowledge on cervical cancer screening were two times more likely to screen for cervical cancer than the women who did not have the knowledge of cervical cancer screening. Just like the study in Kenya, Lyimo & Beran (2012) in their study in Ethiopia found that women who had knowledge of cervical cancer were 9 times more likely to screen for cervical cancer than those who had no knowledge of the disease. In their study they realised that having full information of the disease enabled the women to make informed choices on cervical cancer screening. However, general knowledge on cervical cancer on its own is not adequate. This current study found that despite more respondents having had knowledge of cervical cancer, only few (13.1%) had ever been screened for cervical cancer. Health workers therefore should consistently ensure that health education on cervical cancer is

comprehensive enough to motivate the women to uptake the cervical cancer screening services.

The majority in the study participants stated that their source of information on cervical cancer was from the health facilities. Further analysis also found that those respondents who got the information from family and friends were less likely to screen for cervical cancer than those who got the information on cervical cancer from the health facility. Similar findings were shared in a Namibian study where respondents who got information on cervical cancer from the health facilities were more likely to undergo cervical cancer screening (Kangmennaang et al., 2015). Likewise, Bante et al., (2019) found that women who were informed by health professionals about cervical cancer were 6 times more likely to undergo cervical cancer screening compared to those who were not informed (AOR = 6.65, 95% CI: 3.64 – 12.15). A Health Information National Trend Survey (HINTS) in the United States of America reported that utilization of health care providers for health information was associated with engaging in health behaviours like cancer screening (Redmond, Baer, Clark, Lipsitz & Hicks, 2010). This current study finding shows how important it is for the health workers to provide information on cervical cancer to women at every opportunity they present themselves to the health facility. Clients trust information they get from health workers more than what they get from friends or family.

Over a quarter of the respondents had high level of knowledge on the signs and symptoms of cervical cancer. Having high level of knowledge on signs and symptoms of cervical cancer was significantly associated with ever being screened for cervical cancer. Chosamata et al., (2015) had found similar significant results in a study done in Malawi. It is therefore important to strengthen health education and other cervical cancer information dissemination strategies so that more women should be reached and in turn they will likely go for a cervical cancer screening test. A Kenyan study by Orang'o et al., also found significant results although they were contradictory to the findings of this study. In their study, women who did not know that bleeding after sex is a sign of cervical cancer had increased chances of accepting a cervical cancer screening test than those who knew (Orang'o et al., 2016). In the Kenyan study, women reported that there was stigma attached to screening for cervical cancer as it was known to be a disease caused by a sexually transmitted virus. This is the reason why women who had no knowledge of the signs and symptoms of cervical cancer were going for the screening. Although most women in the study had low level of knowledge on the signs and symptoms of cervical

cancer, the study still found level of knowledge on signs and symptoms of cervical cancer to be a predictor of uptake of cervical cancer screening. This entails that health education or information giving on cervical cancer should be detailed, covering all areas including signs and symptoms of cervical cancer as being more knowledgeable can result into going for a cervical cancer screening test.

This study found a significant relationship between beliefs towards cervical cancer and uptake of cervical cancer screening. Respondents who had negative beliefs towards cervical cancer were less likely to ever be screened for cervical cancer than those with positive beliefs towards cervical cancer. In this study, among other questions, women were asked if they perceived themselves as being at risk of developing cervical cancer to determine their belief towards the disease. These results are similar to what Bayu et al., (2016) found in their study in Ethiopia. Women who perceive themselves as being susceptible to develop cervical cancer were 2 times more likely to screen for cervical cancer than their counterparts who did not perceive themselves as being susceptible. The behavioural model of health services use states that for one to undertake a personal health practice like cervical cancer screening in this context, the practice is influenced by a perceived need. A perceived need is described as how people view their own general health and function status. That perceived need is what influences the decision of whether one should seek medical care or not. Respondents with negative beliefs towards cervical cancer screening are those who had not perceived the need for the screening hence there is less likelihood for them to undergo a cervical cancer screening test. A study in Malaysia reported that women who had fear of pain were less likely to screen for cervical cancer using a pap test (Nwabichie et al., 2017). Likewise in this study, respondents who feared that the cervical cancer screening procedure might be painful and those who disagreed that cervical cancer is treatable when detected at an early stage were the ones who were less likely to go for cervical cancer screening. In a study done in Northwest Ethiopia, it was found that women with a good attitude towards cervical cancer screening were 3 times more likely to screen than their counterparts with a bad attitude towards cervical cancer screening (Aynalem et al., 2020). In the Ethiopian study, they attributed this finding to the women's self initiative to know about cervical cancer risk factors and benefits of its screening. In another Ethiopian study, participants who believed that cervical cancer screening will prevent them from developing cervical cancer were found to be more likely to undergo cervical cancer screening than their counterparts with an

opposite belief (Bante et al., 2019). However, contrary results were found in a study in Botswana. There was no significant association between uptake of cervical cancer screening and beliefs towards cervical cancer (Ibekwe et al., 2010). Of all the respondents in this study who had ever been screened for cervical cancer, 82.5% were found to have positive beliefs towards cervical cancer. It is imperative that health workers involved in cervical cancer health education should also focus on clearing misconceptions, myths and negative beliefs that clients have as this has shown to be a predictor of uptake of cervical cancer screening services.

5.6 Conclusion

The study has shown that there is low uptake of cervical cancer screening in the district and that there is an association between the uptake of cervical cancer screening and the determinants. Among the sociodemographic factors that were studied, only age, religion, ethnicity and place of residence were significantly associated with the uptake of cervical cancer screening. In addition, receiving health education on cervical cancer increased the likelihood of a woman going for a cervical cancer screening. Notably, HIV status, source of information on cervical cancer, level of knowledge on signs and symptoms of cervical cancer and beliefs towards cervical cancer were the need and enabling determinants associated with uptake of cervical cancer screening.

5.7 Limitations

The study had female respondents of ages 18 to 49 only and this may limit the use of the results as women from 50 years and above were not included although they are also at risk of the disease. In addition, the study excluded participants younger than 18 years despite being within the child bearing age group. This may limit the findings and also its use among the women of 15 to 17 age group. Again, the recruited respondents were those women who were already found in the sampled health facilities. These women's views may be different from the women who were in the community and were not part of this study, hence the results should be interpreted and be applied with caution. The cross sectional study design is also in itself a limiting factor to conduct the causal-effect analysis on the associated factors. However, the study sample was large enough and was sampled from all zones of the district and therefore it was a fair representation of the population of women of child bearing age in Mangochi.

5.8 Recommendations

The recommendations from this study have been made from policy, clinical practice and research points of view.

5.8.1 Policy

We recommend that the policy/strategy guiding cervical cancer control in Malawi should consider adjusting the age eligible for screening, from 30-49 years to all women of reproductive age group in this era of HIV infection. The policy should also create a favourable environment for implementation of cervical cancer programs targeting key populations with multiple sex partners as evidence has revealed that women with multiple sex partners are more likely to screen for cervical cancer, hence this can improve the uptake of cervical cancer screening in the country. In addition, policy makers should clearly stipulate the roles of religious leaders in cervical cancer control as the study has found that religion is a predictor of uptake of cervical cancer screening. Finally, we recommend that MOH should accelerate the integration of ART/HIV care with cervical cancer screening clinics.

5.8.2 Clinical practice

We recommend that messages and information on cervical cancer screening should also target young people in youth friendly health services clinics, youth clubs, schools and other places where young people meet as results have shown that they are less likely to screen. Also, cervical cancer information and service provision should target Muslim women in places they gather. The district should scale up cervical cancer screening provision in all ART clinics to improve uptake of cervical cancer screening services. The outreach clinics that are conducted in the district should incorporate cervical cancer screening services to reach out to rural women. Again, we recommend that health education on cervical cancer should be provided in all strategic areas like family planning, antenatal, postnatal, OPD, STI, under five and gynaecologic clinics.

5.8.3 Research

The study recommends that further research should be conducted on young people (15-19 year olds) on factors that affect utilization of cervical cancer screening services. Another qualitative study should be carried out on influence of religion and ethnicity on uptake of cervical cancer screening to further understand these two factors. A similar

study to this one may also be conducted with a community based setting to get a clear understanding of the identified determinants.

5.9 Study Conclusion

This was a quantitative study that looked at determinants of uptake of cervical cancer screening among women of child bearing age in Mangochi. The sociodemographic determinants of cervical cancer screening uptake that were studied were age, marital status, education level, occupation, ethnicity, religion and residence. Besides the sociodemographic factors, the study also assessed the following organizational factors that affect uptake of cervical cancer screening; gender of health worker, distance to the facility, and provision of health education. Furthermore, knowledge of signs and symptoms of cervical cancer, knowledge of cervical cancer risk factors, prior knowledge of cervical cancer screening, individual's HIV status, history of multiple sexual partners and beliefs towards cervical cancer were the enabling and need factors that were studied to find how they affect cervical cancer screening uptake. The study results have shown that the predictors of uptake of screening in the district include age of the woman, ethnicity, place of residence, religion, the level of knowledge on signs and symptoms of cervical cancer, beliefs towards cervical cancer, HIV status and source of cervical cancer knowledge.

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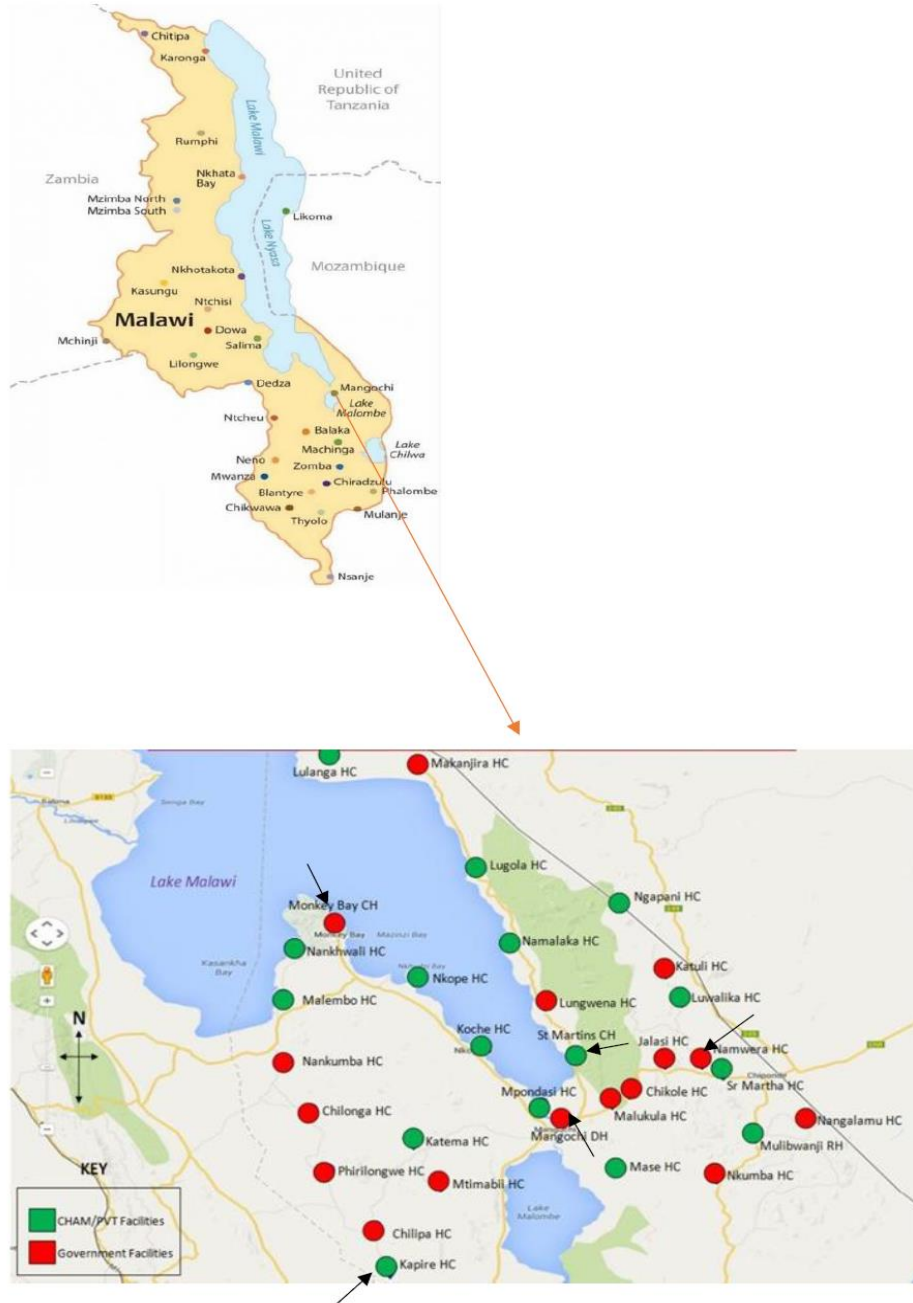
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Appendices

Appendix 1: Map of Mangochi

Map of Mangochi District



Appendix 2

Approval to adapt and use data collection tool

<rndejjo@musph.ac.ug>  Wed, Jun 13, 2018 at 8:29 PM

To: felistas mpachika <mpachika2017felistas@kcn.unima.mw>
Cc: eglaser <eglaser@kcn.unima.mw>, Ellen Chirwa <embweza@kcn.unima.mw>

[Reply](#) | [Reply to all](#) | [Forward](#) | [Print](#) | [Delete](#) | [Show original](#)

Dear Felistas,

Find attached the tool that we used in our study. Please remember to correctly reference it as per the article details below.

Ndejjo, R., Mukama, T., Musabyimana, A., & Musoke, D. (2016). Uptake of cervical cancer screening and associated factors among women in rural Uganda: a cross sectional study. *PLoS One*, 11(2), e0149696.

Please note that the tool is not standardized and thus feel free to adjust it accordingly.

Best wishes with your studies.

Rawlance

[- Show quoted text -](#)

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Rawlance	Ndejjo
Department of Disease Control and Environmental Health,	
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Twitter: @Rawleng	



Cervical cancer survey Questionnaire Uganda_english.pdf
96K [View as HTML](#) [Scan and download](#)

Appendix 3: Consent form (English version)

Permission to Conduct a Study on Determinants of Uptake of Cervical Cancer Screening Among Women of Childbearing Age in Mangochi District, Malawi

Introduction

I am (representing) Felistas Mpachika from Kamuzu College of Nursing, Blantyre, Malawi, Cell phone 0888 678 702, email address felistasmpachika@gmail.com.

You are being requested to participate in this study. The purpose of this study is to determine the factors that are associated with uptake of cervical cancer screening among women of reproductive age here in Mangochi.

Study procedure

You have been identified to participate in this study and your consent is required. You will be asked questions about your socio-demographic data, your knowledge on cervical cancer screening, availability of cervical cancer screening services at the facility you access care and the organisation of the cervical cancer screening services, factors that will facilitate your utilization of cervical cancer screening like transportation and support from partner and finally what you perceive or what a health worker has informed you as a prerequisite for you to go for cervical cancer screening. There will be no interventions in this study and no samples will be collected. Interviews will be done once for 30 minutes and no further encounters will be required.

Rights of the patient

Entry into the study is entirely voluntary and no repercussions will follow if you choose not to participate. In the course of the study, at any given point, you are free to pull out and this will not affect the services that you receive from this facility. In case you are not happy with the data collection process and/or you have questions about the rights of the participants, you may contact the secretary for Mangochi district research committee at 0995 419 322.

Benefits and risks

The study's results will help program implementers to focus their activities on those significant factors affecting uptake of cervical cancer screening hence improving the utilization and the health status of women in Mangochi. There are no monetary benefits to you as an individual participating in this study. No risks are associated with this

research. However, if you are a cancer survivor or someone close to you has been affected by cervical cancer, this topic may be emotional.

Confidentiality

Your names will not be used on the interview questionnaire, instead, codes will be used for anonymity. The information gathered in this study will only be accessible to the research team only (the researcher, research assistants and supervisors) and your identity will not be revealed during presentation of the findings of this research.

Consent statement

I have been informed of the study to assess the determinants of cervical cancer screening in women of reproductive age in Mangochi Malawi.

The purpose and nature of the study, the benefits and risks have all been explained to me and that there are no monetary benefits in this study. I was also informed that the information given will be kept confidential and that my participation in this study is entirely voluntary and no consequences will result if I refuse to participate or withdraw from the study.

I hereby give my informed consent to participate in this study.

.....

...

Participant's signature or thumb print

Date

.....

Name of investigator/ Signature

Date

.....

...

Research assistant name/Signature

Date

Appendix 4: Consent form (Chichewa version)

Kafukufuku wofufuza zinthu zimene zimapangitsa amayi a msikhu wobereka kupita kukayezetsa khansa ya khomo la chiberekero m'boma la Mangochi ku Malawi

Malonje

Dzina langa ndine (ndikuyimilira) Felistas Mpachika wophunzira sukulu yawu kachenjede ku Kamuzu College of Nursing m'boma la Blantyre, ku Malawi konkuno. Foni nambala yanga ndi 0888 67 702 ndipo kalata ya pamakina a intaneti tumizani ku felistasmpachika@gmail.com.

Inu mukupemphedwa kulowa nawo mu kafukufuku. Cholinga cha kafukufukuyi ndi chofuna kudziwa zinthu zomwe zimapangitsa komanso kugwilizana ndikapitidwe ka amayi kumalo oyezetsela khansa ya khomo la chiberekero m'boma lino la Mangochi.

Ndondomeko ya kafukufuku

Inu mwasankhidwa kuti mulowe nawo mu kafukufuku ndipo tikupempha nawo chilolezo chanu. Mu kafukufukuyi muzafunsidwa mafunso okhudza za mbiri yamoyo wanu komanso komwe mumakhala, za zomwe mumadziwa pankhani yoyezetsa khansa ya khomo la chibelekeroyi, ngati chipatala cha mdera lanu amayeza khansa ya khomo la chibelekeroyi, mmene dongosolo lokhudza kuyezetsa khansa ya khomo la chibelekeroyi limayendera ku chipatala chakwanucho komanso zinthu zina zomwe zingakuthandizileni kuti mukayezetse khansa ya khomo la chibelekeroyi monga mayendedwe, chilimbikitso kuchokela kwa amuna anu ngakhale kupemphedwa ndi ogwila ntchito ku chipatala kuti muyezetse. Mu kafukufukuyi mulibe kulandira thandizo lililonse lapadera kapena lowonjezera ndipo sipazakhala kupimidwa kulikonse. Kucheza kwathu pa nthawi yomwe mukuyankha mafunso athu sikupyola theka la ola (30 minitsi) ndipo tikatero simupemphedwanso kuti tizakumanenso.

Ufulu wa oloa mu kafukufuku

Kulowa mu kafukufukuyi ndi kosakakamiza mukuyenela kulowa mwakufuna kwanu ndipo ngati simunakonde kulowa nawo, sizipangitsa kusintha kulikonse pa chithandizo chomwe mumalandila pachipatala pano. Muli ndi ufulu wotha kusintha maganizo anu a kutenga nawo mbali ngakhale mutavomereza kale kutero, ngakhale kusintha zina mutakambirana kale. Mulinso ndi ufulu wokana kuyankha mafunso ena aliwonse amene simukumasuka nawo komanso kufunsitsa pamene simukumvetsa bwino. Ngati

simunakondweletsedwe ndi mmene kafukufukuyi akuyendela kapena muli ndi mafunso kumbali yokhuza ufulu wanu wamu kafukufuku, imbani foni kwa mlembi wa komiti ya kafukufuku m'boma la Mangochi pa nambala iyi; 0995 419 322.

Ubwino ndi kuipa

Zotsatila za kafukufukuyi zizathandiza onse ogwila nawo ntchito ya matenda a khansa ya khomo la chibelekeru kukonza ndondomeko zoyenela zothandiza kuti amayi ambiri m'Mangochi muno kuti athe kuyezetsa khansayi ndipo pakutelo zizathandiza amayiwo kuti akhale ndi umoyo wabwino. Sipazakhala kulandila ndalama chifukwa choti mwalowa nawo mu kafukufuku. Mukuziwitsidwanso kuti kafukufukuyi alibe kuipa kulikonse. Ngakhale izi zili chonchi, ngati inu kapena m'bale wanu anakhudzidwapo ndikhansa yakhomo la chibelekeru, zokambilanazi zitha kubweletsanso kukhumudwa.

Kusunga chinsinsi

Maina anu sadzagwilitsidwa ntchito papela la mafunsoli, mmalo mwake tizalembapo nambala chabe ndi cholinga choti zoyankha zanu zisadziwike kuti zachokela kwainu. Mayankho onse amene mutipatse tizawasunga mosamala ndipo oloedwa kuona ndi mkulu wa kafukufuku, womuthandila wake komanso woyang'anila kafukufuku yense ndipo maina anu sazatsindikizidwa muzotsalatila za kafukufukuyi.

Chilolezo

Ndadziwitsidwa za kafukufuku yemwe akufuna kudziwa zinthu zomwe zimapangitsa amayi a msinkhu obereka kupita kumalo oyezetsela khansa ya khomo la chiberekelo m'boma lino la Mangochi ku Malawi.

Ndafotokozeledwanso cholinga, ndondomeko komanso ubwino ndi kuipa kwa kafukufukuyi. Andidziwitsanso kuti mayankho anga azakhala achinsinsi. Ndauzidwa kuti ndikuyenela kulowa mwakufuna kwanga osati kukakamizidwa ayi komanso ndili ndi ufulu kukana kapena kutuluka ndipo sipazakhala zotsatila zilizonse.

Pakutelo ine ndikutsimikiza kuti ndamvetsetsa ndondomeko yonse ndipo ndikupeleka chilolezo kuti nditenga nawo mbali mu kafukufukuyu.

.....
Posayina kapena kudinda wolowa kafukufuku Tsiku
.....
Posayina wofufuza Tsiku
.....
Posayina wothandizila wofufuza Tsiku

Appendix 5: Consent form (Chiyao version)

Kafukufuku jwakuwungunya yindu yayikusatendesya achimmaseto wamisingu jakuweleka kuja kulinjisa khansa ja mlango wachiwelecheru m'boma ja Mangochi ku Malawi.

Malonje

Lina langu une ni (wakuyimila) Felistas Mpachika jwakulijiganya sukulu ja ukachenjede ku Kamuzu College of Nursing m'boma ja Blantyre, ku Malawi pekuno. Foni nambala jangu ni 0888 67 702 soni chikalata yapamakina ga intaneti atumisye pa: felistasmpachika@gmail.com.

Akuwendedwa kuyinjira nawo mu kafukufuku. Chakulinga cha kafukufuku ni kusosa kumanyilila yindu yayikusatendesya nambo soni kamulana kwa kajaulidwe kwakwawula kumalo kwakulinjisila khansa ja mlango wachiwelecheru ka chimmaseto wa msingu wakuweleka m'boma jino ja Mangochi.

Ndondomeko ja kafukufuku

Wawo asagulidwe kuti ajinjile nawo mu kafukufuku ni ligongo ali tikuwenda chilolezo chawo. Mukafukufuku chachiwusidwa mawusyo gawayana ni mbiri ja umi wawo kwakutamila ni yindu yakuyimanya pangani jakulinjisa khansa ja mlango wachiwelecheru, naga chipatala chakumangwayo akusalingaga khansaji, ndondomeko jakusyajendesera pakulinga kuchipatala chakumangwawocho ni yindu yakwakamusya kuja kulinjisa monga kajende kawo pakwaula kuchipatala, chilimbikisyo chakutotyela kwa wankwawo, nambo soni kuwendedwa niwakamula masengo kuchipatala kuti akalinjise khansaji. Mukafukufuku mwangali kupochera chikamuchisyo cha ntundu uli onse wapadera kapena kuwonjechesya iliyonse soni ngapatama kulinjidwa kuli kose. Pa ndawi jakambirana jetu nikuwanga mawusyo kwawo ngakupitilira mbindi sate (30 minisi) soni kumalisa pele ngawendedwa soni kuti tusimane soni.

Ukoto wa wakuyinjila mu kafukufuku.

Kuyinjila mu kafukufuku kwangakakamisa akuyenera kuyinjila mwakusaka kwawo naga ngakusaka kuyinjila nawo, ngayitendesya kusinda yiliyonse pachikamuchisyo chakusapochela pa chipatala pano. Akwete ukoto wakusinda nganisyo syawo pakujigala nawo mbali ata muno ali wajitichisye kala nambo soni tuli takambilene kala yine ni yine. Akwete sono ukoto wakana kuwanga mawusyo gane gali gose gangakugopoka nago nambo soni kuwuchisya pangakupikanichisya chenepo. Naga nginakondwa

nimwakwendela kafukufukuji kapena wana mawusyo kumbali jakwaya kafukufukuji akwete ukoto wakuyimba foni m'boma ja Mangochi pa nambala aji; 0995 419 322.

Umbone ni Kusakala

Yakuyichisya ya kafukufukuji chiyichikamuchisya wosope wakamula masengo ga kwaya chirwere cha khansa ja mlango wachiwelechero kulinganya ndondomeko jakuyenela jakamuchisya achimmaseto wejinji m`Mangochi muno kuti akombole kuja kulinjisya khansaji pakutenda yelo chiyichikamusya achimmasetowa kutama ni umi wambone. Ngasipawa kupochela mbiya ligongo lakuti ajinjile nawo mukafukufukuji iyayi. Akumanyisidwa soni kuti kafukufukuji pangali kusakala kulikose. Ata muno ayi ili iyoyo mwine wawo kapena m`bale jwawo wakwayidwe ni khansaji, yakambilanayi mpaka iyichisye kumudwa kwine kwakwe kwawawojo.

Kusunga yinsinsi

Mena gawo ngasigakamuchisidwa masengo pa chi pepala cha mawusyochi, m`malo mwakwe tuchilemba nambala chabe ni chakulinga chakuti majanjo gawo gakamanyika kuti gakutotyela kwa wawojo. Majanjo gosope gatatupe apa tuchisunga mwakusamala soni wakundidwa kugalola ni wakulungwa wa kafukufukuji, wakamuchisya wawo ni wakulolera kafukufukuji basi. Mena gawo ngasigakalembedwa pakulemba yakuyichisya kafukufukuji.

Chilolezo

Manyisidwe ya kafukufukuji jakusaka kumanyilira yindu yakutendesya achimmaseto wa mmasingu jakuweleka kwawula kumalo gakulinjisila khansa ja mlango wa chiwelechero jakusaka kuti atendwedwe m'boma ajino ja Mangochi ku Malawi.

Salilidwe chakulinga, ndondomeko nambo soni umbone wakwe wa yakuungunyayi. Amanyisye soni kuti majango gangu gosope gachitama ga chinsinsi. Asalire soni kuti ngunjila mkuungunyamu mwakusosa kwangu soni ngwete ufulu wakana kapena kopoka mwakusosa kwangu soni ngasipawa yifukwa iliyose yakuyichisya pele.

Ligongo mbikanichisye ndondomeko josope ni ngupeleka chilolezo chakuti chinjigale nawo mbali muyakuwungunyayi.

.....
Pakusiyinila kapena kudinda wakuyinjira mkafukufukuji Lisiku

.....
Pakusayinila wakamuchisya kuungunya Lisiku

Appendix 6: Study questionnaire (English Version)

DETERMINANTS OF UPTAKE OF CERVICAL CANCER SCREENING AMONG WOMEN OF CHILDBEARING AGE IN MANGOCHI DISTRICT, MALAWI

Study questionnaire

Section I: Interview parameters

1.1 ID number: _____

1.2 Date of interview: |__|__|__|

1.3 Name of Interviewer: _____

1.4 District: _____

1.5 Cluster: _____

1.6 Health Facility: _____

1.7 Start time: _____

Write 99 in case respondent refuses to answer

Section II: Socio-demographic characteristics

2.1 Age in years	2.2 Religion	2.3 Highest level of education	2.4 Ethnicity	2.5 Marital status
	1.Muslim 2.Christian	1.None 2.Primary 3.Secondary 4.Tertiary	1.Yao 2.Chewa 3.Lomwe 4.Tumbuka 5.Ngoni	1.Single 2.Married 3.Widowed 4.Divorced/separated
	1 2	1 2 3 4	1 2 3 4 5	1 2 3 4

2.6 Relationship type	2.7 Occupation	2.8 Residence
1.Monogamous 2.Polygamous	1.Farming 2.Business 3.Housewife 4.Civil servant 5.NGO employee 6.Piece work	1.Village 2.Trading centre 3.Boma
1 2	1 2 3 4 5 6	1 2 3

2.9 How many sexual partners have you had in your life time?

2.10 How many sexual partners have you had in the past 12 months?

2.11 What is your HIV status? (*Please verify in health passport if available*)

1. Negative
2. Positive
3. Unknown

Section III:

Prior knowledge about cervical cancer and screening

3.1 Have you ever **heard** about cervical cancer?

If NO, go to next section

1. Yes
2. No

3.2 Where did you hear about cervical cancer from?

(PROBE and Tick all that apply)

1. Radio
2. Television
3. Posters
4. Health facility
5. Friend/family member
6. Newspapers / magazines
7. School/learning institution

8. Mobile public address system

3.3 At what age should a woman start screening for cervical cancer?

1. _____ years
2. Don't know

3.4 How frequently should someone be screened for cervical cancer if...?

(Either indicate age)

HIV status	Years
HIV positive	
HIV negative	

3.5 What are some of the symptoms of cervical cancer that you know?

(PROBE and TICK all that apply)

1. Vaginal bleeding
2. Post-coital bleeding
3. Painful coitus
4. Foul smelling vaginal discharge
5. Lower abdominal pain
6. Malignancies

3.6 Which of the following are risk factors for cervical cancer? **Record number**

Factor	No (1)	Yes (2)	Don't know (3)
1. Having multiple sexual partners	[]	[]	[]
2. History of sexually transmitted diseases	[]	[]	[]
3. Human immunodeficiency virus (HIV)	[]	[]	[]
4. Early onset of sexual activity	[]	[]	[]
5. Family history of cervical cancer	[]	[]	[]
6. Having uncircumcised male partner	[]	[]	[]
7. High parity	[]	[]	[]

Section IV: Beliefs towards cervical cancer and screening

Interviewer to read each of the factors to the respondents and then ticks the box corresponding with the response given

To what extent do you agree or disagree with the following statements?

Statement: Strongly Disagree [1] Disagree [2] Neutral [3] Agree [4] Strongly Agree [5]

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I am at risk of getting cervical cancer					
Cervical cancer screening is important					
Cervical cancer is curable if diagnosed early					
Am afraid the screening procedure might be painful that is why I have not gone for screening					

Section V: Access to cervical cancer screening

5.1 If you need health care for women health conditions, where do you get it from?

1. Government health facility
2. Private health facility
3. Pharmacy / drug shop
4. Traditional practitioner

5.2 What is the biggest problem for you to get health care for women health conditions?

(Probe and tick only one response)

1. I have no problem []
2. Provider is far []
3. No money for transport []

- 4. No money for service []
- 5. Do not have time []
- 6. Privacy / confidentiality concerns []
- 7. Don't know where services are []

5.3 Have you ever been recommended for cervical cancer screening by a health worker?

- 1. Yes
- 2. No

5.4 Have you ever been screened for cervical cancer?

If YES, go to question 5.7

- 1. Yes
- 2. No

5.5 If no why?

(PROBE and Tick one that best apply)

GO TO 5.7

- 1. High costs []
- 2. I do not have time []
- 3. Fear of pain during procedure []
- 4. Health facility far away []
- 5. Am not at risk []
- 6. Fear of the outcome of the test []
- 7. Not aware of the service []

5.6 Why were you screened for cervical cancer?

(PROBE and Tick one that best apply)

- 1. Did it voluntarily []
- 2. Had certain signs and symptoms []
- 3. Request from health worker []

5.7 How long is it from your home to the nearest health facility mentioned above? **Use the estimated distances per village to health facility.**

(Record distance in km; Write 999 for don't know)

_____km

5.8 Would you be willing to undergo cervical cancer screening if it were provided for free? **(Ask if the answer to 5.5 is high cost)**

1. Yes

2. No

5.9 Would you be willing to undergo cervical cancer screening if it were provided at an affordable cost to you? (**Ask if the answer to 5.5 is high cost**)

1. Yes

2. No

5.10 Would you be willing to undergo cervical cancer screening if it were also provided by male health workers?

1. Yes

2. No

5.11 What do you think can be done to increase utilization of cervical cancer services in your community?

(PROBE and TICK one that best apply)

1. Nearby facilities to offer screening services []

2. More female providers []

3. Free services []

4. Create awareness about cervical cancer []

5. Outreach services []

*****Thank you for your time*****

End time: _____

Interview result codes

1. Completed

2. Partly completed- give reason

Appendix 7: Study questionnaire (Chichewa version)

KAFUKUFUKU WOFUFUZA ZINTHU ZIMENE ZIMAPANGITSA AMAYI A MSIKHU WOBEREKA KUPITA KUKAYEZETSA KHANSA YA KHOMO LA CHIBEREKERO M'BOMA LA MANGOCHI KUMMALAWI

Questionnaire – Chichewa version

Mafunso amu kafukufuku

Gawo loyamba: Zina zokhudza mafunso

1.1 Nambala ya pepala la mafunso: _____

1.2 Tsiku lofunsa: ____/____/____

1.3 Dzina la ofunsa: _____

1.4 Boma: _____

1.5 Chigawo: _____

1.6 Chipatala: _____

1.7 Nthawi yoyambila: _____

Lembani 99 pamalo omwe ofunsidwa akana kuyankha funso

Gawo la chiwiri: Mbiri

2.1 Kodi muli ndi zaka zingati zakubadwa?	2.2 Kodi ndinu a chipembed zo chanji?	2.3 Kodi sukulu munaphunzila kulekela pati?	2.4 Ndinu mtundu wanji wa anthu?	2.5 Kodi muli pa banja?
	1.Chisilamu 2.Chikhristu	1.Sindinapiteko 2.Pulayimale 3.Sekondale 4.Ukachenjede	1.Ayao 2.Achewa 3.Alomwe 4.Atumbuka 5.Angoni	1. Wosakwatiwa 2. Wokwatiwa 3. Wamasiye 4. Banja linatha
	1 2	1 2 3 4	1 2 3 4 5	1 2 3 4

2.6 Kodi muli pabanja ndi mamuna m'modzi kapena mitala?	2.7 Kodi mumagwila ntchito yanji?	2.8 Kodi mumakhalira kuti?
1. Mamuna m'modzi 2. Mitala	1. Ulimi 2. Bizinesi/Malonda 3. Mayi wapakhomo 4. Ntchito ya m'boma 5. Ntchito ya bungwe lomwe si la boma 6. Maganyu	1. Dera la kumudzi 2. Dera la pa trading centre 3. Dera la pa boma
1 2	1 2 3 4 5 6	1 2 3

2.9 Kodi mwakhalako ndi amuna angati ogonana nawo m'moyo wanu onse

2.10 Kodi mwakhalako ndi amuna angati ogonana nawo mu miyezi 12 yapitayi?

2.11 Kodi zotsatila zanu zakuyezetsa magazi ngati muli ndi kachilombo ka HIV ndizotani? (*Chonde tsimikizani powona mu bukhu lawo lakuchipatala ngati lilipo*)

1. Ndiliba kachilombo
2. Ndili ndi kachilombo
3. Sindikudziwa

Gawo lachitatu: Zomwe mumadziwa zokhudza khansa yak homo la chibelekeru ndi kuyezetsa khansayi

3.1 Kodi munamvapo zokhundza a khansa ya khomo la chibelekeru?

(Ngati ndi AYI, pitani ku gawo lachinayi)

1. Eya
2. Ayi

3.2 Kodi munamvela kuti zokhudza khansa yakhomo la chibelekero?

(Funsitsitsani ndipo chongani zonse zomwe zayankhidwa)

1. Pa wayilesi
2. Pa Kanema/televishoni
3. Zolembe zokhomedwa
4. Kuchipatala
5. Kwa anzanga/abale anga
6. Munyuzipepala/ magazini
7. Kusukulu
8. Pa galimoto yolengeza/yamkuza mawu

3.3 Kodi munthu wa mkazi akuyenela kuyamba kuyezetsa khansa yakhomo lachibelekero akakwana zaka zingati?

1. _____ zaka
2. Sindikudziwa
- a. Kodi munthu wa mkazi akuyenela kuyezetsa khansa yakhomo lachibelekero munthawi yotalikilana bwanji ngati...

(Lembani zaka)

Zotsatira zakuyezetsa HIV	Zaka
Ali ndi kachilombo	
Alibe kachilombo	

3.5 Kodi zina mwa zizindikiro za khansa yakhomo la chibelekero zomwe mukuzidziwa ndi ziti?

(FUNSITSITSANI ndipo CHONGANI zonse zomwe zayankhidwa)

2. Kutuluka magari pamapeto ogonana
3. Kumva kupweteka pogonana
4. Kutulutsa chikazi cha fungo loipa
5. Kupweteka m'mimba
6. Zotupa/ mabala osapola
7. Sindikudziwa

3.6 Kodi ndi zinthu ziti pa zomwe zili m'munsimu zomwe zingabweletse chiopsyezo cha khansa yakhomo la chibelekero? ***Lembani nambala***

Zinthu	Eya (1)	Ayi (2)
1. Kukhala ndi amuna ambiri ogonana nawo	[]	[]
2. Ngati munadwalapo matenda opatsilana pogonana	[]	[]
3. Kukhala ndi kachilombo ka HIV	[]	[]
4. Kuyamba mchitidwe ogonana muli achichepere	[]	[]
5. Ngati wina waku banja kwanu anadwalapo khansa yakhomo la chibelekero	[]	[]
6. Kukhala ndi mamuna yemwe sanapangidwe mdulidwe	[]	[]
7. Kubeleka maulendo ochuluka	[]	[]

Gawo lachinayi: Zikhulupiliro zokhudza khansa ya khomo la chibelekero ndi kuyezetsa Wofunsa

Wofunsa mafunso amuweregere oyankha chinthu chilichonse kenaka alembe nambala molingana ndi yankho lomwe lipelekedwe

Kodi mukulekela pati kuvomeleza kapena kutsutsana ndi mfundo zomwe zalembedwa apazi?

Mfundo: Kutsutsa mwa mphamvu [1] Kutsutsa [2] Sindikutsutsa komanso sindikuvomeleza [3] Kuvomeleza [4] Kuvomeleza mwa mphamvu [5]

Mfundo	Kutsutsa Mwa mphamvu	Kutsutsa	Sindikutsutsa komanso sindikuvomeleza	Kuvomeleza	Kuvomeleza mwa mphamvu
4.1 Ndili pa chiopsyezo chotenga khansa yakhomo la chibelekero					
4.2 Kuyezetsa khansa yakhomo la chibelekero ndi kofunikira					

4.3 Mwayi wochiza khansa yakhomo la chibelekeru uliko bwino pamene matendawa azindikilidwa mwachangu					
4.4 Ndili ndi mantha ndu uluru womwe ndikaumve pamene azikandiyesa ndi chifukwa chake sindinapiteko koyezetsa					

Gawo lachisanu: Kupezeka kwa koyezela khansa yakhomo la chibelekeru

5.1 Kodi mukafuna chithandizo chaku chipatala pankhani ya mavuto a umoyo okhudza amayi mumapeza kuti?

1. Kuchipatala cha boma
2. Kuchipatala cholipila (Pulayiveti)
3. Kuchipatala cha tchalitchi
4. Kusitolo yogulitsilako mankhwala

5.2 Kodi vuto lalikulu kwambiri kuti mupeze chithandizo chaku chipatala pankhani ya mavuto a umoyo okhudza amayi ndi liti? (*Funsitsani ndikuchonga yankho limodzi lokha*)

1. Ndilibe vuto []
2. Opeleka chithandizo ali kutali []
3. Ndilibe ndalama ya mayendedwe []
4. Ndilibe ndalama yolipilira ndikalandira chithandizo []
5. Ndilibe nthawi []
6. Nkhawa kumbali yondisungila chinsisi []
7. Sindikudziwa komwe chithandizo chimapekedwa []

5.3 Kodi munayamba mwauzidwapo ndi ogwila ntchito kuchipatala kuti mukuyenela kukayezetsa khansa yakhomo la chibelekeru?

1. Eya

2. Ayi

5.4 Kodi munayamba mwayezetsako khansa yakhomo la chibelekero?

Ngati ndi EYA, pitani kufunso 5.7

1. Eya

2. Ayi

5.5 Ngati ndi ayi, chifukwa chiyani?

(Funsitsani ndi kuchonga mayankho onse ogwilizana) GO TO 5.7

1. Mtengo ndi okwera []

2. Ndiliba nthawi []

3. Ndimaopa uluru womwe ndingaumve panthawi yondiyeza []

4. Chipatala chili kutali []

5. Sindili pachipsyezo []

6. Ndimaopa zotsatila zakundiyeza []

7. Sindikudziwa za chithandizo choyezachi []

5.6 Chifukwa chani munayezedwapo khansa yakhomo la chibelekero? **(Funsitsani ndikuchonga mayankho onse ogwilizana)**

1. Ndinayezetsa mwakufuna kwanga []

2. Ndinali ndi zizindikiro zina []

3. Ndinapemphedwa kutero ndi ogwila ntchito kuchipatala []

5.7 Kodi ndi mtunda wautali bwanji kuchoka kunyumba kwanu kufika ku chipatala chino? **Gwiritsani ntchito mlingo wa mtunda oyelekeza mudzi kufika ku chipatala.**

(Lembani mtunda mu ma km; Lembani 999 ngati sakudziwa)

_____km

5.8 Kodi mungakonde kupita koyezetsa khansa yakhomo la chibelekero chithandizo choyeza chitamapekedwa mwa ulere **(Funsani funso ili ngati yankho la funso 5.25 linali loti mtengo wolipilitsa ndi wokwela)**

1. Eya

2. Ayi

5.9 Kodi mungakonde kupita koyezetsa khansa yakhomo la chibelekero ngati chithandizo choyezetsa chitamapekedwa pamtengo woti mutha kukwanitsa? **(Funsani funso ili ngati yankho la funso 5.25 linali loti mtengo wolipilitsa ndi wokwela)**

1. Eya

2. Ayi

5.10 Kodi mungakonde kupita koyezetsa khansa yakhomo la chibelekeru ngati chithandizo choyezetsa chitapelekedwanso ndi ogwila ntchito kuchipatala achimuna?

1. Eya

2. Ayi

5.11 Kodi mukuganiza kuti tingapange chani kuti kagwilitsidwe ntchito ka chithandizo choyezetsa khansa yakhomo la chibelekeru kupite patsogolo mu dera lanu lino?

(FUNSANI ndi KUCHONGA mfundo zonse zogwilizana)

1. Zipatala zakufupi zizipeleka thandizo loyeza nkansa yakhomo lachibelekeru []

2. Kukhale ogwira ntchito achizimayi ambiri []

3. Aziyeza mwaule []

4. Muwadziwitse anthu zokhudza khansa yakhomo la chibelekeru []

5. Oyeza azibwela kumudzi kuzapeleka chithandizo []

*****Zikomo potipatsa nthawi yanu*****

Nthawi yomalizila: _____

Nambala ya zotsatila pa mafunso

1. Tamaliza

2. Tamaliza koma mbali ina yatsala - pelekani
chifukwa_____

Appendix 8: Study questionnaire (Chiyao version)

**KAFUKUFUKU DYAKUWUNGUNYA YINDU YAYIKUSATENDESYA
WANYA MAMA WA MISINGU JAKUWELEKA KWAWULA
KUKULINJISYA KHASA JA MLANGO WA CHIWELECHERO, M'BOMA
LA MANGOCHI KU MALAWI.**

Questionnaire – Chiyao version

Mausyo ga mkafukufuju

Chigawo cha ndanda: Yine yakuyichisya pa mawusyoga.

1.1 Nambala ja chipepala cha mawusyo: _____

1.2 Lisiku lakuwusya: |__|__|02/2019

1.3 Lina la wa kuwusya: _____

1.4 Boma: _____

1.5 Chigawo: _____

1.6 Chipatala: _____

1.7Ndawi jakutandila: _____

Alembe 99 malo gakanile wakuwusidwa kwanga liusyo

Chigawo chawiri: Mbiri jawo

2.1 Mkwete yaka yilingwa yakupagwa?	2.2 Ana akupopelaga kwapi?	2.3 Ana walijigenye sukulu mpaka papi?	2.4 Wawo ntundu chi wa wandu?	2.5 Ana ali pe wasya?
	1.Chisilamu 2.Chikhristu	1.Nganinjaluje 2.Pulayimale 3.Sekondale 4.Ukachenjede	1.Ayao 2.Achewa 3.Alomwe 4.Atumbuka 5.Angoni	1.Wangalombela 2.Walombele 3.Wamasije 4.Ulombela Wamasile
	1 2	1 2 3 4	1 2 3 4 5	1 2 3 4

2.6 Ana ali pe wasya ni walume wawo basi kapena walume wa mitala?	2.7 Ana akusakamula masengo chi?	2.8 Ana mkutamila kwapi?
1. Walume wawo basi 2. Wamitala	1. Gakulima 2. Gamalonda 3. Mama wapamlango 4. Masengo ga Boma 5. Masengo ga mabungwe gangawa ga Boma 6. Maganyu	1. Dera ja kumusijo 2. Dera ja pa trading centre jo 3. Dera ja pa boma jo.
1 2	1 2 3 4 5 6	1 2 3

2.9 Ana atemi na chalume walingwa wagonana nawo pa wumi wawo wosope?

2.10 Ana atemi na chalume walingwa wagonana nawo pa miyesyi likumi nijiwili jipiteji

2.11 Ana yakuyichisya kulinjisa mwyasyi jawo ja kalombo ka HIV yaliji uli? (***Chonde alore muchipaso chawo chaku chipatala naga walembeli***)

1. Jwangali kalombo ka HIV
2. Jwana kalombo ka HIV
3. Ngangumanyilira

Chigawo chatatu: Yindu yinkumanyilira pa ngani ja khansa ja mlango wachiwelecheru ni yakulinjisa khansaji.

3.1 Ana wapikene ya ngani ja khansa ja mlango wachiwelecheru?

(**Naga iyayi, ajaule chigawo chanceche**)

1. Elo
2. Iyayi

3.2 Ana wapikanile kwapi ya ngani jakwaya khansa ja mlango wachiwelerecheru?

(Awuchisye nachonge yosope yajanjile)

1. Pa wayilesi
2. Pa Kanema/televishoni
3. Yakulemba yakomedwa
4. Kuchipatala
5. Kwa jangu/kwa wa chibale wangu
6. Mmanyuzi/ mmabuku
7. Kusukulu
8. Mobile public address system

3.3 Ana munthu jwankongwe atandileje yaka ilingwa kuja kulinjiswa khansa ja mlango wachiwelechero?

1. _____ yaka
2. Ngangumanyilira

3.4 Ana mundu akuyembechera kulinjiswa khansa ja mlango wa chiwelechero pa ndawi jakutalikangana uli?

1. Pali pamasile miyesi _____ (alembe 00 naga ajanjile kupunda mwesi umo)
2. Ngangumanyilira

3.5 Ana yine mwayilosyo ya khansa ja mlango wachiwelerechero yinkuyimanyilira ni yapi?

(AWUSYE CHENENE nachonje yosope yajanjileyo)

2. Kopoka mwyasyi pa mapeto ga gonana.
3. Kupikana kupweteka pa gonana.
4. Kopoka chikongwe cha liungo lakununga kwabasi.
5. Kupweteka mmatumbo.
6. Yakuyimba/Mawanga gangapola.

3.6 Ana ni yindu yapi yayali pasipa yakuti mpaka yitendesye yakogoya yakutendesya khansa ja mlango wachiwelechero? **Alembe numbala**

	Yindu (1)	Iyayi (2)
1. Kutama nachalume wajinji wagonana nawo.	[]	[]

- | | | |
|---|-----|-----|
| 2. Naga warwasile chirwere chakupelegana pagonana | [] | [] |
| 3. Kutama ni kalombo ka HIV | [] | [] |
| 4. Kutanda yagonana mundu ali jwa nnandi | [] | [] |
| 5. Naga mundu jwine kuliwasya lawo jarwasile khansa ja mlango wa chiwelecherero | [] | [] |
| 6. Kutama ni walume wangatenda jando. | [] | [] |
| 7. Kuweleka kwejinji. | [] | [] |

Chigawo Chanceche: Ikulupi yakwaya khansa ja mlango wa chiwelecherero ni kulinjisa.

Wakuwusya mawusyo wawalanjile wakwanga mawusyo chindu chili chose kaneka alembe nambala malingana ni majanjo gapechedwego.

Ana akukanira papi kuyitichisya kapena kanira mfundo silembedwe pasipa?

Mfundo: Kanira mwamachili kwene [1] Kanira [2] Ngingukanira nambo soni nginguyitika [3] Nguvitika [4] Nguvitika mwamachili [5]

- | | |
|--|-----|
| 4.1 Nili pa chijogoyo chakujigala khansa ja mlango wa chiwelecherero. | [] |
| 4.2 Kulinjisa khansa ja mlango wa chiwelecherero kwakusoseka | [] |
| 4.3 Upile wakuposya khansa ja mlango wa chiwelecherero upali naga jili jimanyiche mwamsanga. | [] |
| 4.4 Jwana woga ni ululu wachingawupikane pachakandinjeje niligongo lakwe ngingwaula kukulinjisa. | [] |

Chigawo cha Nsanu: Malo kakuja kulinjisa khansa ja mlango wa chiwelecherero.

5.1 Ana akusachisimana kwapi chikamuchisyo cha kuchipatala pa mavuto gakwaya wumi wachimmaseto?

1. Kuchipatala cha boma
2. Kuchipatala chakulipila (Pulayiveti)
3. Kuchipatala cha tchalitchi
4. Kusitolo jakusumisya mtela

5.2 Ana vuto lalikulungwa kwejinji kuti apate chikamuchisyo cha wumi wa chimmaseto la kuchipatala ndi lwapi pelepa? (*Awusye ndi kuchonga chijango chimo basi*)

- | | |
|--|-----|
| 1. Jangali vuto | [] |
| 2. Wakupeleka chikamuchisyo ali kutali | [] |
| 3. Jwangali mbiya syakuyendera | [] |

4. Jwangali mbiya syakulipira nili mbochere chikamuchisyo []
5. Jwangali ndawi []
6. Kudandaula kumbali jakusunjila chinsisi changu []
7. Ngingukumanyilira kwakupochera chikamuchisyo []

5.3 Ana pakwete pasalilidwe ni wakamula masengo kucipatala kuti alinjisye khansa ja mlango wa chiwelechero?

1. Elo
2. Iyayi

5.4 Ana pakwete palinjisye khansa ja mlango wa chiwelechero?

Naga Elo, ajaule paliwusyo 5.7

1. Elo
2. Iyayi

5.5 Naga Iyayi, ligongo chichi?

(Awusye nikuchonga majanjo ga kamulana gosope) GO TO 5.17

1. Yakudula []
2. Jwangali ndawi []
3. Ngogopa kupikana kupweteka pa ndawi ja kuninga []
4. Chipatala chili kutali []
5. Nganimba pa chijogoyo chilichosye []
6. Ngugopa kumanyilira yakuyichisya []
7. Ngingumanyilira ya chikamuchisyo cha kulinjisya []

5.6 Ana ligongo chichi walinjile khansa ja mlango wachiwelechero? **(Awusye ni kuchonga majango gosope gakamulana)**

1. Nalinjisye mwakusosa kwangu []
2. Nakwete ilosyo []
3. Wambendile kuti ndende iyoyo wakamula masengo kuchipatala []

5.7 Ana pakutalika uli kutochera kunyumba kwawo mpaka kuyika kuchipatala achino? **Akamulichisye masengo mlingo wagamba ganichisya kutochela kunyumba mpaka kuchipatala.**

(Alembe kutalikaku mma km; Alembe 999 naga wakuwusidwa Ngakumanyilira) _____ km

5.8 Ana mpaka yanonyele kuja kulinjisya khansa ja mlango wa chiwelechero naga chikamuchisyo china nkupegwa mwa lulele? **(Awusye liwusyo ali naga chijanjo cha liwusyo 5.25 laliji ntengo wakulinjisila wakudula)**

1. Elo
2. Iyayi

5.9 Ana mpaka yanonyele kwawula kulinjisa khansa ja mlango wa chiwelecherero, chikamuchisyo chakulinjisa china nkupegwa pa ntengo wakuti mpaka akombole kulipira? (**Awusye liwusyo ali naga chijango cha liwusyo 5.25 laliji lakuti mtengo wakulipilisa wakewo wakudula**)

1. Elo
2. Iyayi

5.10 Ana mpaka yanonyele kuja kulinjisa khansa ja mlango wachiwelecherero, chikamuchisyocho chakulinjisyacho china mkupegwa kuchipatala na achimmasyetope?

1. Elo
2. Iyayi

5.11 Ana akuganisa kuti mpaka tutende uli kuti kamulichisa masengo ga chitandizo chakulinjisa khansa ja mlango wa chiwelecherowu ujawule patsogolo kudela jenu jino?

(AWUSYE ni CHONGA yosope yakamulana)

- | | |
|---|-----|
| 1. Yipatala yiwe yambone | [] |
| 2. Kutame wakamula masengo wammaseto wajinji | [] |
| 3. Yiwe yakutuluka ntengo | [] |
| 4. Wamanyisye wandu yakwaya khansa ja mlango wachiwelecherero | [] |
| 5. Outreach | [] |

*****Sikomo pakutupa ndawi jawo*****

Ndawi jakumalichisa: _____

Nambala ja kuyichisa pa mawusyogo

1. Tumalisyisye
2. Tumalisyisye nambo mbali jine jisigele- apeleche yifukwa yakwe-

Appendix 9: Certificate of ethics approval



Appendix 10: Data Analysis Plan

Protocol Number	P.04/19/2646	Study Name	Determinants of cervical cancer screening uptake among women of childbearing age in Mangochi district Malawi
Date of plan	14/08/19	Principal Investigator	Felistas Sungeni Mpachika-Mfipa
Person conducting analysis	Felistas Sungeni Mpachika-Mfipa	Telephone	N/A
		Mobile No.	+265(0)888 278702
		Email	mpachika2017felistas@kcunima.mw felistasmpachika@gmail.com
Analysis team members	Dr. Abgail Kazembe Mr. Lazaro		
Background to the study and analysis			
Cervical cancer is the number one cause of mortality among the female reproductive cancers in Malawi. It is also one of the preventable cancers when early diagnosis and treatment is done. Despite the availability of screening tests, uptake of cervical cancer screening remains a challenge in most districts in Malawi including Mangochi. However, little information is known on the factors that are significantly associated with this low uptake. It is with this reason of poor uptake of cervical cancer screening versus the magnitude of the problem that the researcher conducted a study to examine the determinants that influences the women of childbearing age to uptake the cervical cancer screening services available in the district.			
Number of study participants	482	Duration of study	June to July, 2019
Study research questions	5. What are the socio-demographic determinants affecting uptake of cervical cancer screening? 6. What are the organizational factors that determines the uptake of cervical cancer screening?		

	<ol style="list-style-type: none"> What are the enabling and need factors affecting the uptake of cervical cancer screening services? Are there any associations between the determinants and the uptake of cervical cancer screening services?
Endpoints or Outcomes of interest	<ol style="list-style-type: none"> Socio-demographic determinants affecting uptake of cervical cancer screening. Organizational determinants associated with the uptake of cervical cancer screening. Enabling and need factors determining the uptake of cervical cancer screening. Proportion of women who have undergone cervical cancer screening.
Data details	
Study type	Quantitative Cross-Sectional Study
Dataset used	SPSS
Analysis package	IBM SPSS Statistics 20
Study population	42,635
Inclusion/exclusion criteria for participants	<p><u>Inclusion Criteria:</u></p> <ol style="list-style-type: none"> Women of childbearing age from 18-49 who were accessing OPD health services from the 5 selected facilities. Women who were in a stable condition. Women who had accepted in writing to be part of the study. <p><u>Exclusion Criteria:</u></p> <ol style="list-style-type: none"> Women who were less than 18 years of age. Women who were older than 49 years of age. Women who were very sick or were accessing in-patient services from the 5 selected facilities. Women who had refused to be part of the study.
Explanatory variables	<p><u>(a). Socio-demographic data:</u></p> <p><u>(i). Continuous variable:</u></p> <ol style="list-style-type: none"> Age

	<p><u>(ii). Categorical variables:</u></p> <ol style="list-style-type: none"> 1. Religion 2. Level of education 3. Ethnicity 4. Marital status 5. Relationship type 6. Occupation 7. Residence <p><u>(b). Organizational factors:</u></p> <p><u>(i). Continuous variable:</u></p> <ol style="list-style-type: none"> 1. Distance to health facility <p><u>(ii). Categorical variables:</u></p> <ol style="list-style-type: none"> 1. Health education 2. Gender of health worker <p><u>(c) Enabling and need factors</u></p> <p><u>(i). Continuous variable:</u></p> <ol style="list-style-type: none"> 1. Number of lifetime sexual partners <p><u>(ii). Categorical variables</u></p> <ol style="list-style-type: none"> 1. HIV status 2. Knowledge of cervical cancer 3. Source of information on cervical cancer and screening 4. Level of knowledge on signs and symptoms of cervical cancer 5. Level of knowledge on risk factors of cervical cancer 6. Beliefs towards cervical cancer
Outcome measures	<ol style="list-style-type: none"> 1) Binary measures of ever screened of cervical cancer (Yes = 1, No = 0)

Approach to dealing with missing data	Missing data/non-responses was not included in the analyses.
Analytical Strategy	
<ol style="list-style-type: none"> 1. Descriptive statistics of: <ol style="list-style-type: none"> i. Frequencies ii. Percentages 2. Binary Logistic Regression: Bivariate analyses were separately performed for socio-demographic, organizational, need and enabling factors to compare with binary outcomes (1= screened for cervical cancer, 0 = not screened for cervical cancer). All the factors that were statistically significant from bivariate analyses were further analyzed with chi-square tests to validate their significance. Then, multivariate analyses was performed on those significant socio-demographic, organizational, need and enabling factors. Finally, the adjusted odds ratios (AORs) together with their corresponding confidence intervals were interpreted to determine the associations between socio-demographic, organizational, need and enabling factors with cervical cancer screening the among respondents. 3. Knowledge Score (Dulla et al., 2017; Nwabichie et al., 2018): Levels of knowledge on signs and symptoms of cervical cancer were measured as a binary variable (1= high knowledge and 0= low knowledge). A scoring system known as knowledge score to assess the level of knowledge was developed. To score full points respondents were required to show knowledge of all the five signs and symptoms in this study: post coital bleeding (1 point), foul smelling vaginal discharge (1 point), painful sex (1 point), lower abdominal pains (1) and abdominal mass (1 point). The total score was 5 points. Thereafter, a mean score of 0.63 was calculated. Thus, respondents with scores above the mean score were considered to have high knowledge whereas those below it were considered to have low knowledge regarding signs and symptoms of cervical cancer. Likewise, levels of knowledge on risk factors of cervical cancer were measured as a binary outcome (1= high knowledge and 0= low knowledge). To score full points respondents were required to show knowledge of all the seven risk factors in this study: multiple sexual partners (1 point), STI history (1 point), HIV positive status (1 point), early sexual debut (1), positive family history of cervical cancer (1), uncircumcised sexual partner (1) and high parity (1 point). The total score was 7 points. A mean score 	

of 5.64 was then calculated. Thus, respondents with scores above the mean score were considered to have high knowledge whereas those below it were considered to have low knowledge on risk factors of cervical cancer.

4. Belief score (Dulla et al., 2017; Nwabichie et al., 2018): Beliefs towards cervical cancer were categorized as positive or negative and were measured as a binary variable (1= positive belief and 0= negative belief). A scoring system known as belief score to assess the level of belief was devised. To score full points respondents were required to show positive belief towards all four beliefs in this study (those respondents who were not sure when asked of these beliefs were considered as having negative belief): am I at risk of getting cervical cancer (1), cervical cancer screening is important (1), cervical cancer is curable if diagnosed early (1) and I fear pain during the screening procedure and that has prevented me from going for screening (1). The total score was 4 points. Then, a mean score of 2.63 was calculated. Thus, respondents with scores above the mean score were considered to have positive belief whereas those below it were considered to have negative belief towards cervical cancer.

Analysis of Dissemination Strategy

The study findings will be shared with the 5 health facilities where the data was collected, the Mangochi district health research committee and all relevant stakeholders at district level and at any available opportunity in a national research dissemination conference. The results will also be published in a peer reviewed journal and some copies will be submitted to the Kamuzu college of Nursing and College of Medicine libraries.

Interpretation

The results of the study were discussed according to the specific objectives of the study and also in relation to the study's conceptual model, the behavioral model of health services use. Furthermore, the literature that was reviewed on cervical cancer screening and determinants like predisposing factors, health system factors, enabling and need factors will be used in discussing the study findings.