SELINUS UNIVERSITY
OF SCIENCES AND LITERATURE

AN EVALUATION OF STRATEGIES PUT IN PLACE TO MITIGATE CERVICAL CANCER IN WOMEN. A CASE OF BOTSWANA

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A DISSERTATION

Presented to the Department of
Public Health
program at Selinus University

Faculty of Natural Health Science
in fulfillment of the requirements
for the degree of **Doctor of Philosophy**
in Public Health

2022

DECLARATION

I declare this thesis is hereby submitted by me (Saramma Wilson) for a Doctor of Philosophy (Ph.D.) at **SELINUS UNIVERSITY** of Scienceand Literature. It is my own independent work and has not previously been submitted by me to ot another university faculty for the award of any degree. It is original except where references were made.

ACKNOLEDGEMENT

I am sincerely thankful to the Almighty God who has blessed me through this major task of writing this thesis. My gratitude goes to Him for granting me the finance, physical health. strength and energy -to complete the thesis. I am grateful to the Ministry of Health and Wellness (MOHW) Health Research and Development committee (HRDC) for their tremendous guidance has given for me constructing this project. I specially thank to National Cervical Cancer Prevention Control Program (NCCPP) co-ordination Ms. Ramipi for giving me a direction to the right channel and focusing of the study. I am grateful to late Prof. Stanley Modesto for planning and execution of the study at the initial stages. I am sincerely thankful to Dr, Tinaye Mmusi her valuable guidance in proposal writing as well as well as further help on study results. Her time accorded me for the direction of writing this thesis. I am very grateful to her for completing this thesis as per university requirement. I am thankful to all those who contributed towards the success of this thesis.

ABSTARCT

This study evaluated the effectiveness of the current cervical cancer prevention control and treatment strategy (VIA) of 'see and treat' approach that existed in the primary care center of Botswana. The 'see and treat' approach was implemented as part of National Cervical Cancer Prevention Control Program (NCCPP) by Botswana Ministry of Health and wellness (MOHW). It was introduced in Botswana clinics in 2014-2016 to replace pap smear screening as it wouldn't give the results quickly. Therefore, NCCPP proposed a single day visit program called 'see and treat approach' for pre cancer lesion of the cervix, followed by an immediate treatment for pre cervical lesion called *cryotherapy*.

The study took place in The Republic of Botswana, in the capital city of Gaborone. The research settings were two clinics in the Gaborone DHMT (District Health Management Team); Broadhurst Traditional Area Clinic named as (BTA) and Nkoyaphiri clinic at Mogoditshane block 9 Gaborone. This study was exploratory research, the research design used in this study was both qualitative and quantitative approach. The instruments applied in qualitative part was structured and unstructured interviews, observation, and document reviews. The observation was involved on health workers service delivery and punctuality on VIA screening . Clinical documents related to cervical cancer screening and treatments reviewed. The questionnaires were given to the women patients who attended at the cervical cancer unit of the research clinics. It was sought women's view on 'see and treat' (VIA) program.

The qualitative part of the data was analyzed by content analysis. In this process, words, themes and concepts etc. were given by interviewee (health worker) that related to research themes and objectives. The quantitative part of data was analyzed by using Statistical Package for Social Sciences (SPSS). Descriptive statistics such as percentages and frequencies were determined for

each variable. Here also the analysis of the data was focused on research objectives and recorded them accordingly. Apart from statement questionnaires, patients personal characteristics data were also included in the in the questionnaires. According to the demographic data, a very few women had visited the clinic from rural area; majority of the women's family belonged to nearby Gaborone, within 10-40km away from the clinic. Most of women have completed secondary education and a few had university level of education. Patients socioeconomic status were also analyzed. The study results indicated that majority of the women were belonged to low- and middle-income families.

This study examined health workers dedication to VIA screening. It was revealed that health workers were dedicated to this program and motivate the women to go for cervical cancer screening. The observation on clinical records showed that health workers were followed NCCPP guideline of VIA program. The women were aware of cervical cancer screening program at the clinics. They seemed to have not much knowledge about the underlying principles of screening as well as how screening would benefit to the women. Hence, they may not emphasize the importance of cervical cancer screening.

The main barriers on cervical cancer screening were shown that unavailability of VIA program nearby their clinic. The women were belief with female screeners, and they also expressed views on procedures related to screening diagnosis. They were afraid of the speculum placed at their cervical region which remained as a misconception or a cultural belief.

The results on strategies that put in place to diminish the effects of cervical cancer related illness. the women suggested that implement VIA program in in more clinics, especially in rural areas too. It was revealed that the staff were inadequate. So, the women patients supported idea of improving staff at the cervical cancer unit. It was further indicated that cervical cancer unit did not have

enough space, even patients did not have a waiting room. The women finally revealed that community level of awareness was not going on well about cervical cancer screening.; hence the women patient encouraged health promotion about screening at community level. Finally, it has shown that girls and women should go for cervical cancer screening regularly at their early stage. Based on the study results, it can be concluded that the current cervical cancer prevention control strategy (VIA program) is effective. Women used the available facilities of the clinics with their maximum level irrespective of the shortfall.

ACRONYMS AND ABBREVIATIONS

ART	Anti Retro Viral Therapy
ACIP	Advisory Committee on Immunization Practices
BAIS	Botswana HIV/AIDS Impact Survey
BNCR-	Botswana National Cancer Registry
CAB	Cancer association Botswana
CDC	Centre for Disease Control and prevention
CIN	Cervical Intraepithelial Neoplasia
DHMT	District Health Management t Teams
DUIP	Division of Unintentional Injury Prevention
FELTP-	Epidemiology and Laboratory Training Program
FTC	Entrecitabine
GAP	Global AIDS Program
HIV	Human Immuno Deficiency Virus
HPDME -	Department of Health Policy Development, Monitoring and Evaluation
HSIL	High-grade Squamous Intraepithelial lesions (HSIL)
HPR	HIV Prevention Research
HTC	HIV/AIDAS Counselling
HRDC	Health research Development Committe
IACR	International Association of Cancer Registries
IACR	International Association of Cancer Registries
ICC	Invasive Cervical Cancer.

JHPIEGO	Johns Hopkins Program for International Education in -Gynecology and Obstetrics
IBD	Inflammatory Bowel Disease
.LEEP	Loop electrosurgical Excision procedure- test treat abnormal cell growth on surface tissue of cervix.
MDT	Multidisciplinary Team
MOH	Ministry of Health In Botswana
NCCPP	National Cervical Cancer Prevention Programme
NACA	Botswana National AIDS Coordinating Agency
NCD	Non Communicable Disease.
NAHPC	National Aids and Health Promotion Council
PEPFAR	President's Emergency Plan for AIDS Relief
PMH-	Princess Marina Hospital
PMTCT	Prevention of Mother to Child Transmission
PMTCT	**Prevention of Mother-to-Child Transmission**
PrEP	Pre-Exposure Prophylaxis
SRHR	Sexual reproductive ehealth Right
SIL	Squamous Intraepithelial lesions
STD	Sexually Transmitted Diseases
TB	Tuberculosis
UICC -	The Union for International Cancer Control's
UNAIDS -	United Nations Programme on HIV and AIDS.
NFPA	United nations Sexual Reproductive

	Health Agency
USA-	United states of America
VIA	Visual Inspection With Acetic Test
VICP	National Vaccine Injury Compenation program
VMMC	Voluntary medical male Circumcision
VIN-	Vulvar Intraepithelial Neoplasia

KEY WORDS

Invasive cancer- -Cancer that has spread beyond the layer of tissue in which it developed and is growing into surrounding, healthy tissues.

Pre invasive - cancer cells have formed inside the walls of the ducts, but haven't invaded the surrounding tissue.

Papanicolaou - (Pap) smear

Universal Health care_ Universal Health care_ residents of a particular country or region are assured to take health care. It is either all people or who cannot afford on own their own.

See and Treat method (VIA)- inexpensive type of cancer screening using vinegar, if cervix has abnormal cells it turned changes into white.

Cryotherapy – Abnormal cervical cells can be removed by applying a cold air on the abnormal cells and remove them off.

Speculum – A medical instruct net used by health workers to view women's cervix and vagina During pelvic exam.

CHAPTER 1

INTRODUCTION

1.0.**Introduction**

Cases of cervical cancer increase every year worldwide, and mortality among women is high due to this disease. Generally, cervical cancer death occurs higher in African countries compared to first world countries (US, Australia, Canada, etc.) (WHO, 2010). Research studies on cervical cancers have proved that women with HIV were likely to get cervical cancer more than women who were not infected with HIV (Markowitz et al., 2007). Botswana is an upper Middle-Income (MIC) country with a high HIV infection among women, which is one of the main factors that causes cervical cancer in the women with a high HIV infection among women which is one of the main factors that causes cervical cancer in the women (WHO, 2010). Cervical cancer is the second leading disease of death in women despite being among preventable cancers due to its slow progression, availability of screening facility (pap smear test), and effective precursor treatment (Kawonga et al., 2008).

Perang et al. (2013), indicated that cervical cancer also generally increases in rural areas than in urban areas of Africa because the population is substantially poorer, and access to health services is more difficult. In African countries such as Malawi, cervical cancer is the most prevalent disease among women reaching up to 80% mortality rate (Victoria et al., 2011). Similarly, cervical cancer is the leading cancer in the women of Botswana. As indicated above, the risk factor for cervical cancer is related to high prevalence of HIV in the women of Botswana, and it is known to be the most significant cause for cervical cancer (Torre et al., 2015). Cervical cancer screening prevents

the disease from reaching to invasive stage as well as reducing the mortality rate (Chin et al., 1998).

This study takes place in the Republic of Botswana, which became independent in 1966. Before independence, it was under the British, and it was known as *'Protectorate of Bechuanaland'* (Particia, 2019). Botswana is one of the landlocked countries in the African continent. It is situated in the south-west part of the African continent, close to Southern Africa. It is surrounded by four countries**:** Namibia to the West and North, South Africa to the South, Zimbabwe to the East, and shares a tiny section of its borders (about 156 meters or 171 yards) with Zambia in the Northeast Gaborone is the capital city of Botswana (*Appendix 1 Botswana map*) (Alaina et al 2013). Botswana lies across the Tropic of Capricorn. Botswana is a Sub-Saharan African country (Appendix 4) with a population of two (2) million. About two thirds (2/3) of the women population are affected with HIV (Othabane, 2018). As indicated earlier, globally, a high rate of women mortality is caused by cervical cancer. Similarly, cervical cancer is the leading of cause of women mortality in Botswana (Grover, 2014). In Botswana, many studies have been undertaken about cervical cancer, such as cervical cancer screening, barriers to access screening and factors that influence cervical cancer prevalence. However, this study is intended to evaluate the strategies that Botswana has in place to mitigate the spread of cervical cancer among women such as screening and prevention programs. In this chapter, the background of the study, statement of the problem, research objectives, research questions, purpose of the study, significance of the study, limitations, and delimitations of the study are included to contextualize the research.

1.1 Background of the Study.

As an upper Middle –Income economy, Botswana's health care system is steadily improving and has easily accessible infrastructure too. However, the country is facing serious health issues such as tu*berculosis* (TB), HIV and AIDS. The HIV and AIDS pandemic hit Botswana hard, making it the top and the epidemic has strongly affected the women of Botswana (Rovner, 2013). People also get other related illnesses along with HIV and AIDS, especially different types of cancers like cervical, Kaposi sarcoma (skin cancer) and lymphomas - cancer cell grows in the immune system due to HIV (CDC, 2017). here are five main types of cancers that affect a woman's reproductive organs: cervical, ovarian, uterine, vaginal, and vulvar cancers. Cervical cancer is a gynecological cancer affecting women's reproductive organs. (Ncube et al., 2015). Cervical cancer is the second most common cancer among women after breast cancer worldwide, which is the leading cause of mortality of women in developing countries (Mukama et al., 2017). The authors further reveal that, 80 % of cervical cancer is detected in late stage due to the lack of knowledge about the disease as well as proper or insufficient screening tests. Another study conducted by Tanera et al., (2019) reported that cervical cancer occurs in Low and Middle-Income Countries (LMIC).

In Botswana, cervical cancer is the leading cause of death among women, and higher cases are found in HIV infected women (BAIS, 2013). The Ministry of Health and Wellness (MOHW) applies a prevention strategy to treat pre-cancerous lesions of the cervix. To detect the pre-cancerous stage among women. The MOHW conducts screening tests for pre-invasive cervical lesions at local clinics (Oncol, 2015). The government is the source of funding to public hospitals and clinics in provision of health care for Batswana, including cancer prevention and treatment services (Suneja, 2013). There are several strategic plans that have been implemented over the past

ten years by the Ministry of Health and Wellness (MOHW) as well as by Non-Governmental Organizations (e.g., CDC Botswana) to prevent cervical cancer in the women of Botswana. Among them, the MOHW implemented 'see and treat' program in 2011 in Botswana public clinic (Oncol. 2015). Nevertheless, statistics showed that Botswana women of aged between 30-49 years, and about 25 % of the total female population were at high risk of developing cervical cancer (Branchi et al., 2019). Among the latter group, 50 % of them may have HIV infection (BAIS II, 2019). Oncol further indicated that more women who are at high risk of cervical cancer would continue to grow until more effective primary or secondary prevention efforts were established.

Prior studies showed that women in Botswana were detected with cervical cancer at advanced stage though the government had introduced the "see and treat" prevention technique at local clinics which is freely available to access (Formanr et al., 2012. The reasons for this incidence may be multifactor. So, this study aims at evaluating the strategies that are put in place to mitigate cervical cancer among women in Botswana. The study intends to explore and understand factors contributing to high prevalence of cervical cancer despite implementation of the existing prevention program. Focus will be on exploration of the effectiveness of the existing cervical cancer screening and prevention strategy (see and treat method) used in the public sector.

1.2 Statement of the Problem

In Botswana, cervical cancer is the most common cancer among Botswana women aged between 15 and 44 years (WHO, 2018). To mitigate the high prevalence of cervical cancer in Botswana several efforts are conducted by various stakeholders. The Ministry of Health and Wellness (MOHW) in Botswana, recognizes, the seriousness of the disease and it developed a well-coordinated multidisciplinary cervical cancer care program. Recently, a multidisciplinary gynecological oncology clinic has been initiated at Princess Marina Hospital (PMH), to improve

gynecological oncology care in Botswana (Oncol, 2015). In addition, the Cancer Association of Botswana, co-ordinates several programs in the fight against cervical cancer and organizes awareness campaigns, promotes prevention and health promotion through talks, conferences and distributes brochures throughout the country (CAB, 2012).

Research studies conducted on cervical cancer had show that though many programs had existed in the country to prevent and diminish factors that contribute to cervical cancer in women, cases on this ailment were not decreasing (Brachi, et al., 2019).

Research conducted by Brown et al., (2013) on cytology-based screening test for cervical cancer, indicated that cervical cancer screening reduces the morbidity and mortality from the same illness. The major challenges for cytology-based screening, which was initially introduced in Botswana were lack of manpower, laboratory facilities and follow up problem (Jemal et al., 2018). The research further showed that this type of screening is not feasible for, low-income and some middle- income countries. The world Health Organization (WHO, 2010) recommended the *'see and treat'* technique for cervical cancer screening in poor resourced countries to overcome the challenges faced by cytology-based screening. Therefore, MOHW also introduced an additional screening and prevention tool for pre cervical cancer lesion called VIA (Visual Inspection with Aceticacid) test followed by *cryotherapy* in 2011. Research showed that organized screening, public awareness and early pre-cancerous screening and its treatment can reduce the incidence of the illness (Forman et al., 2012).

As alluded earlier, late detection of cervical cancer among women in Botswana remains a major challenge for the existing screening and prevention facility available at local clinics (Suneja et al., 2013). Associated with this factor, women presenting with advanced stages of cervical cancer who are in need of chemotherapy and radiation treatment that do not find assistance because it is not

offered at local clinics but only at public referral hospital (Princes Marina), and private hospitals e.g. Gaborone Private Hospital) as result morbidity and mortality go up (Anakwenzie et al, 2018; CDC, 2014).

This study recognizes the important of exploring the barriers to cervical cancer prevention in Botswana, against existing research evidence that cervical cancer could be prevented by regular screening as well as by adopting pre-cancerous treatment program of 'see and treat' /VIA method which is available in the local clinics of Botswana (Ferlay, 2012). Evaluation of the existing cancer screening and prevention program would reveal gaps in the program associated with highlighted challenges such as late diagnosis despite promotion and awareness campaigns. The evaluation would reveal issues of acceptability, adherence and effectiveness of the screening and prevention program.

1.3 Hypothesis of the study

The hypothesis of the study is as follows:

Null Hypothesis (H0). The current control strategies (see and treat technique) for cervical cancer screening and pre-cancerous prevention treatment in Botswana was not effective.

Alternative Hypothesis (H_g): The current control strategies (see and treat technique) for cervical cancer screening and pre- cancerous prevention treatment in Botswana was effective

1.4 Purpose of the Study

The purpose of this study was to evaluate the cervical cancer screening and prevention strategy in Botswana. The study sought to understand why cervical cancer prevalence escalates and increases morbidity and mortality among women in Botswana despite existing research evidence showing that cervical cancer was preventable by regular screening and adoption of pre-cancerous treatment.

1.5 The Primary goal of the Study:

The primary goal of the study was to evaluate the effectiveness of the current strategy for cervical cancer screening and prevention

1.6 Specific Objectives

The following are the specific objectives of this study, namely, to:

1. Explore health workers' knowledge of and adherence with the cervical cancer screening and prevention protocols in Botswana's public hospitals and clinics in Gaborone

2. Explore factors on women's access to the cervical cancer screening and prevention program in Botswana's public hospitals and clinics in Gaborone

3. Explore barriers and challenges faced by the women and health professionals for accessng cervical cancer screening and prevention.

4. Explore the oversight mechanisms of the cervical cancer screening and prevention program in Botswana's public hospitals and clinics in Gaborone

1.7. Research questions

1. Are health workers in Botswana dedicated to the vIA program and do they have knowledge and skill?

2.What factors hinder women's access to the cervical cancer screening and prevention program?

3. What are the barriers and challenges faced by the woman and health professionals for accessing cervical cancer screening and prevention strategy?

4.What oversight measures are used for the cervical cancer screening and prevention program in Botswana clinic?

1.7 Significance of the Study

Evaluation of the cervical cancer screening and prevention strategy in Botswana would provide insights on why cervical cancer increasing the morbidity and mortality among women in Botswana. It will reveal the gaps in the cancer program by indicating the implementation, shortcomings at institutional level and health care workers, oversight issues and knowledge, attitudes and practices associated with health seeking behaviors. So, the study has a significant value to the planners (policy makers and program leaders) in the Ministry of Health and Wellness (MOHW).

1.8 Limitations of the Study

Limitation ranges from the methods of data collection to ways of data analysis. The following are the limitations of this research: Due to limited time patients attending the research clinic couldn't be interviewed where asked to answer questionnaires which provided less insight

They had come for health care services, limited time on their side as they are busy eager to see the heath workers and may not report frequently to the clinics. Hence, they answered questionnaires only. The study is limited in terms of the population and respondents. The researcher could only select women population who attend at cancer units as well as health workers of the same unit instead of selecting women from other clinical units. Time shall be a major constraint because of the limited period of study offered as partial fulfillment of the academic requirements for the Doctoral thesis. The bias of the researcher and hesitation of the responses given by the participants may affect the accuracy of the data. Apart from that, the researcher would like to include Princes

Marina Hospital as a research site. Unfortunately, hospital has a own protocol for conducting the research. By submitting the proposal and grinding for collecting data besides MOHW permission. The researcher followed MOHW protocol for research and granted the permission to collect data from the greater Gaborone DHMT. Hence, the researcher has decided to saved time and collected the data from the selected research clinics.

1.9 Delimitations of the Study.

The following are the delimitation of this study:

The study is focused on one health district. There are many health districts in Botswana called District Health management Team (DHMT), but the researcher focused on Greater Gaborone DHMTs, Because it is near to the researcher's residence and workplace. There are seven clinics and a referral hospital that offer *VIA* test and *cryotherapy* treatment. There are many problems such as poor health, communication, as well as health professionals' attitudes towards the parents in connection with cervical cancer. However, this study was focused on strategic plan put in place to reduce the rate and the spread of cervical cancer in women of Botswana. The study was limited to public hospitals and clinics mandated to run the cervical cancer screening and prevention program in Gaborone. The area shall form the geographic scope of the study from which a sample will be selected.

1.10 Key terms –

Mitigate- *Lower* the Severity/ lessen the gravity of the sickness

Strategies- A plan of action designed to achieve an overall aim

Cervical cancer *r*- Cancer occurs at the entrance (mouth) of the uterus.

Gynecological cancer- any cancer that starts in a woman's reproductive organs.

1.11 Conclusion

The chapter dealt with the introduction, background to the study, statement of the problem, purpose of the study, objectives of the study, research question, significant of the study, limitation, and delimitation of the study. The study is mainly focused on evaluation of the existing strategy in mitigation of cervical cancer among women in Botswana.

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CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

The present chapter reviews literature related to cervical cancer, in general, with specific reference to the Botswana situation by answering the research questions posed in Chapter 1. The selected literature proves that no one has studied the gap spelt out in the statement of the problem. A brief history of research in cervical cancer is provided, together with what has been studied in the area by prior researchers. Theoretical grounding is also given, explaining theories that are used to guide the study. Similarly, controversies available in the literature are explored, by referring to prior studies in the field. Therefore, the chapter deals with the review of related literature, which is focused on the research problem, research questions ad objectives of the study.

2.1 Non communicable Disease (NCD)

Non communicable Diseases (NCD) are the leading cause of death worldwide. They claimed 46.5-56.9 % of death annually (WHO, 2016). According to the World Health Organization (2016) NCD in Botswana is increasing; adults are diagnosed with hypertension, Diabetics, Obesity, tobacco use, cancers, cardiovascular diseases, and unhealthy eating. The Vice president (Mr. Tsogwane) of Botswana, made a remark in a speech on National AIDS and Health Promotion Council (NAHPC) that NCDs have reached epidemic level. He further urged on effective health communication and promotion program on this issue Botswana Policy News (BPN, 2019). The main concern in Botswana is the high rates of new HIV infection among youth and adolescence and it has an effects on NCDs (BPN,2019). According to the world Health Organization (WHO, 2016) chronic illness like cancer and diabetes claimed many lives. A person aged between 30-70 has one in five chances of dying from non-communicable Diseases (WHO, 2018). According to

the World Health Organization (WHO) Cervical cancer is one of the chronic illnesses under NCDs in Botswana. The MOHW collaborated with WHO developed strategies for NCDs such as health promotion and strengthening National polices (NCD Botswana ,2018)

According to Dr Oleg Chestnov, assistant Director of WHO commented that cancer should not be a death sentence anywhere in the world as there are proven ways to prevent and cure many cancers (WHO, 2013). He further indicated that person living with cancer must have access to proper care and treatments. Non communicable Diseases (NCDs) such as cancers, diabetics heart and lung diseases claimed many people's deaths in 2012 worldwide. This mainly affected in Low- and Middle-Income countries (LMIC) (WHO, 2013).The WHO also encourages countries to implement comprehensive cancer control programmers. A survey on National capacity for Non-Communicable Diseases, the survey result indicated that a major gap in cancer control planning and services including cervical cancer (WHO, 2013).

Cervical cancer is one of the preventable and treatable forms of cancer if it is detected at early stage. Regular screening may help to find its progress and are enable treatment of pre - cancerous lesions (WHO, 2018). Women in Africa do not have access to cervical cancer prevention program. As a result, it is detected at late stage and are low to cure it, as a result, women die from cervical cancer at tender stage (WHO, 2018). The WHO further explained that women usually neglect themselves their health care due to social factors as well as gender roles to the family thus they are late to receive cervical cancer prevention treatment. However, WHO supports ministry of health in African countries and urges them to support women and find a way of changing their attitude, inform and motivate them to take prevention techniques and make them from cervical cancer illness (WHO, 2018).

Jean Marie Dangou, WHO Advisor for cancer and chronic disease of African Regional Office recommended to give priority for cervical cancer prevention. Several women are suffering and dying from cervical cancer due to the lack of receiving primary prevention for cervical cancer (WHO2018). According to the WHO (2016), the mortality rate of cervical cancer has increased but intervention to NCDs were not sufficient. The WHO support the African countries for developing multisectoral strategies and provide guidelines for NCD surveillance (WHO, 2019). Botswana has introduced multiscriptal strategies for NCD such as cervical cancer'See and Treat' technique for cervical cancer prevention strategy is one of them. Therefore, this study will be focused and analyze its effectiveness, level of use and health workers dedication to the program at the primary care center of Botswana.

2.2 Cancer.

The term cancer refers to normal body cells that begin to grow in number as well as in structure that form a tumor**.** As a result, the cells become non-functional**,** and this is called cancer (WHO, 2011). There are 200 types of cancer, however, the most common cancers are lung, skin, prostate, colorectal, kidney and bladder cancers (WebMD, 2005). Cancer symptoms depend on specific type and grade of cancers. Though signs and symptoms of cancers are specific**,** the following could be general symptoms that are found in patients with different cancers: fatigue, weight loss, pain, skin color changes, changes in bowl movement, unusual bleeding, persistent cough, voice change, fever, and lumps (Medicine Net, 2006). It is difficult to determine the initiating event (s) that cause cancer in a person. However, research has indicated that there are several factors that alone cause or in connection with other factors interact to develop cancer in people (Medicine Net 2008). Chemical or toxic compound exposures, ionizing radiation and some pathogens, that may also cause a normal body cell to develop into abnormal cells that can cause cancer (WHO, 2018).

Alcohol creates carcinogenic material such as aldehyde in the body and it could also be responsible for cancer. Chemicals present in the cigarettes (Nicotine) can also cause cancer especially lung cancer (Roy and Tang 2013).

Many people have the genes that are linked to cancer but do not develop it. Researchers are not able to give a satisfactory answer for that (Clifford et al., (2003). But it is important to note that everyone has the risk factors for cancer and is exposed to cancer-causing substances. For example, sunlight, cigarette smoke, and X-rays. Environmental factors stated above are called carcinogens which are not inherited from parents to children. They are called *acquired mutations***.** Cancer caused by this mutational change in the gene is known as *sporadic cancers* (WHO,2010). The higher the amount or level of exposure to cancer-causing materials, the higher the chances of developing cancers (American Cancer Net, 2018). Some people may have a high immune response that controls or eliminate cells that are likely to develop into cancer cells (Medicine Net, 2008). Hence such people are not likely to get cancers. Recently, it is discovered that diet also can cause cancer. For example, red meat such as lamb, mutton, and beef; preserved food that contains carcinogenic materials as well as salt can-also be a-cancer risk. Barbecued meat may also increase cancer risk due to compounds formed at high temperatures (Medicine Net, 2008). Less important factors such as radiation from cell phones, hormone therapy and lack of exercise also could be risk factors, yet more research is needed on this matter (NCI, 2016).

Frequently, cancer cells could break away from the original mass of cells, travel through the blood or lymph systems, and lodge in other organs where they can grow again repeat the uncontrolled growth cycle. This process of cancer cells leaving an area and growing in another body area is termed *metastatic spread or metastasis.* For example, if breast cancer cells spread to a bone, it

means that the individual has metastatic breast cancer to bone. This is not the same as "bone cancer," which would mean the cancer had started in the bone (Ma and Yu, 2006).

The main cancer types that occur in men, women and children are as follows: for men, prostrate, lung and Colo-rectal. For women, cancers such as breast, cervix, ovarian, endometrial, and colorectal; in children: blood, brain tumor and lymphoma (immune system) (NCI, 2017). The World Health Organization (WHO) provides the following general information about cancer worldwide:

- Cancer is a leading cause of death worldwide. It is accounted for 8.2 million deaths (around 22% of all deaths not related to communicable diseases) Lung, stomach, liver, colon, and breast cancer causes the most cancer deaths **in** each year (WHO,2018
- Deaths from cancer worldwide continue rising, with an estimation of 13.1 million deaths projected for 2030 (about a 70% increase).

2.3 Biology of cervix and development of Cervical cancer

The molecular structure of cervix as well as infection of cancer is as follows: the cervix connects the body of the uterus to the vagina. The *endo-cervix* is the part of the cervix, closest to the body of the uterus. The part of the uterus closest to the vagina is the exo-cervix. Cervical cancer begins in the cells lining of the cervix, mainly the lower part of the uterus known as the uterine cervix. There are mainly two types of cells covering the cervix, the glandular cells, and the squamous cells (ACS, 2015). These two types of cells meet at a place called the *transformation zone*. The location of the transformation zone changes as a person's age increases and after childbirth (Chang and Laimins, 2000). Normal cells do not transform into cancer cells, the normal cells of the cervix initially become precancerous and subsequently turn into cancerous. During the early years of

persons' lives, normal cells divide more rapidly to allow the person to grow. When a person becomes an adult, most cells divide only to replace the dying cells. Cervical cancer originates commonly in the transformation zone. The transmission zone of cervix is susceptible to external viral infection of pre-malignant and malignant cells. Thus, Cancer cells grow beyond the surface of the cervix, deeper tissues of the cervix and other parts of the body (Kashyap et al., 2019). A study conducted by Mc Farland, (2009) reported that cervical cancer is ranked as the most frequent cancer among women of Botswana between 15 - 44 years of age. Another study revealed that the number of cervical cancer cases starts to increase among women age of 20-49 years (Ferlay et al., 2008).

2.4 Cause of Cervical cancer

There are several reasons for the causes of cancer as mentioned above in section 2.2. This section is going to focus on causes of cervical cancer. They are as follows:

2.4.1 HPV Virus.

Human papillomaviruses (HPV) are small double-stranded DNA viruses, which infect stratified epithelium of the cervix that is responsible for cervical cancer (Cleaver, 2005). Papillomaviruses can also cause a few life-threatening diseases such genital herpes, genital warts, and chlamydia (Clifford et al., 2003). Mucosal types of HPV also infect the lining of the mouth, throat, respiratory tract, or anogenital epithelium (Chan et al., 2001). HPVs can also be grouped into high-risk and low-risk types. Low-risk HPV types include 6, 11, 42, 43, and 44. High-risk HPV types include 16, 18, 31 and 70. Some HPV types are less frequently found in cancers but are often found in Squamous Intraepithelial Lesions (SILs) (Anderson et al., 2001). A large group of HPV types cause lower genital tract cancer such as penis, cervix, and vulva (McCance et al., 1998).

The virus HPV infects mucosal surfaces, the genital tract of women, uterine and the cervix. Through further investigation by scientists, it has been discovered that Human Papilloma Virus (HPV) is the causative agent for cervical cancer in women (Woodman et al., 2001). A group of HPV viruses like HPV16 and HPV 18, are commonly associated with premalignant and malignant lesions (Cason et al., 1999). In adults, transmission of HPV is predominantly caused by sexual contact. However, there is evidence that HPV can be transmitted from mother to neonate (newborn), probably during delivery. Therefore, laryngeal infection in young children can occur due to this incidence (Adam et al., 2000). The viruses cause similar lesions in both males and females; however, cancer of the cervix is more common than cancer at other sites. For example, penile cancer is much rarer and occurs mainly in men over 60 years of age (Mc Cance, 1998).

The epithelial cells of the female genital tracts are more prone to malignant cancer due to HPV infection (Jackson and Storey, 2000). Initial infection is with low grade Squamous Intraepithelial lesions (SIL); then the lesion may progress into High grade Squamous Intraepithelial lesions (HLSIL). This **is** further invading over the basement membrane of the cervix and forms a metastatic disease of *cervical cancer* (Alfandari et al., 1999). Research has reported that the number of cases for malignant disease of the cervix is small compared to the number of women infected with HPV (ASO, 2020).

For example, studies have shown that 20–25% of young women aged between 18–30 years of age are infected with an oncogenic virus, but there are only 15 000 cases of invasive cervical cancer per year in the USA**,** and this occurs most frequently in women in their 40- 50th years (ASA,2008). This happens in some people, and the body can clear the infection on its own. But sometimes, the infection does not go away. Therefore, chronic, or long-lasting infection, especially when it is caused by certain high-risk HPV types, can cause cancer over time (Hamamori et al., 1999). Viral

DNA of HPV such as E6 and E7 inactivate tumors in the cells of cervix, besides that E6 and E7 co-operate effectively and immortalize human primary epithelial cells (Chen et al., 1995).

There are many factors that increase both HPV acquisition and promote the oncogenic effect of the virus in African women such as multiple sexual partners, early marriages, and roles etc. also influenced on cervical cancers. The details on these aspects have been shown in this chapter section sociocultural perspective. There are two types of cervical cancers; *squamous cell carcinoma* that effects the lining of the cervix. Many people are affected by this type of cervical cancer. The other type of cervical cancer is called *adeno carcinoma* that affects glandular cells of cervical canal (Woodman et al., 2001).

2. 5 Factors related to cervical cancer in the women of Botswana

This section explains the factors related to cervical cancer that are shown under the following headings:

2.5 .1 Screening awareness

In Saudi Arabia, cervical cancer is the eighth most common cancer amongst women in 45- 59-year of age group (KSACR, 2014). It was further reported that in Saudi Arabia, about 316 women were diagnosed with cervical cancer, and 158 die due to the disease. A study conducted in Saudi Arabia by Ferlay et al., (2012) reported that in the past decade cervical cancer incidents have decreased in developed countries due to increased awareness and screening program employed in those countries. In addition, the HPV vaccine has also contributed to a decline the rate of cervical cancer (Torrie et al., 2012). On the contrary, in developing continents such as Africa and Asia**,** cases of the same disease are not reduced due to the lack of knowledge and screening facilities for the same disease (IARC, 2017). When a woman is infected with HPV, no signs and symptoms were shown. Therefore, scholars have insisted that women must go for frequent screening test (Cleaver, 2005). In fact, all cervical cancer cases (99%) are linked to genital infection with HPV, which is the most common viral infection of the reproductive tract. (WHO, 2019). A study about cancer due to obesity indicated that intake of fat content causes weight gain that increased hormone level in the body and chances of getting gynecological cancers like cervical cancer (Flepisi et al., 2014). The MOHW has introduced screening program (see and treat) for cervical cancer prevention in 2012. Hence, this study is going to evaluate its effectiveness and level of use by the women population to lessens the incidence of the same illness in Botswana.

2. 5.2 HIV and cervical Cancer

In Botswana, the prevalence of HIV in women has increased since 1980s. Currently, 18 million women live with HIV in Low- and Middle-Income Countries (LMIC) (Sunjea et al., 2013). Cervical cancer is the most common cancer among women who live with HIV (Matenge and Mash 2018). A woman with HIV is likely to develop an invasive cervical cancer compared to a woman

who did not have HIV since the risk of getting HPV is higher in HIV positive woman (Becker and Newscom, 2003). Early research also suggested that HIV positive women had more risk to develop cervical cancer than HIV negative women (Kawonga. and Formn,2008). Even multiple studies have confirmed that HIV positive women were significantly more prone to develop cervical cancer (Ghebre et al., 2017). People with HIV have an elevated risk of developing certain cancers, called AIDs defining conditions. Invasive cervical cancer (ICC) is one of them. However, ICC can develop in both HIV-infected and HIV non infected women (Sankaranarayana et al., 2013).

The incidents of cervical cancer among women with HIV infection women will be as high as seven times greater than HIV non infected women (Brown et al., 2016)). Research conducted by Abraham et al., (2013) have shown that women who lived with HIV are at greater risk for HPV infection and are 2–8 times more likely to develop cervical cancer than uninfected women as mentioned earlier. Studies have further shown that HIV-positive women develop severe pre-cancerous lesions at a younger age than non-infected women 32.5 years versus 47.5 yrs (Danso et al., 2006). It was estimated that about two thirds (2/3) of cervical cancer patients are HIV-positive and 25% of women at potential risk of cervical cancer, who lived with HIV (Hawes et al., 2006). The prevalence of HPV among HIV-positive women is associated strongly with CD4 counts (white blood cells that fight infection) and HIV viral load (VL). HIV positive women have low CD4 counts and could easily be infected with HPV virus (Jamal et al., 2012). Human Immunodeficiency Virus (HIV) and cervical cancers are closely linked, especially in Botswana (Brachi et al., 2019**).** In sub-Saharan Africa, the intensity of the incidence and mortality due to cervical cancer have-also increased (UNAIDS, 2017).

Research studies reported that HIV positive women have a weak immune system, so that HPV virus is easily contracted and creates an invasive cancer lesion at the cervix (Bray et al., 2018).

Another study conducted by Bonnet et al., (2014). showed that a few women were identified with HIV infection as a risk factor for cervical cancer. A few other studies have also suggested the same while others confirmed that HIV/AIDS is a risk factor for cervical cancer (Arulogun amd Maxwell,2012) Yet some authors found an inconclusive correlation between malignant cervical lesions and HIV infection (Serraino et al., 1999). Chirenje (2006) reported that immune depression, especially by HIV, is known to be a risk factor for cervical cancer. Research has confirmed that HIV facilitates infection with specific types of HPV (16 & 18) some of which may promote (HPV-*p* types) or inhibit (HPV *i* types) and progression into cervical carcinogenesis in women (Maranga, et al., 2013). All these research studies proved that HIV in women induces the development of HPV virus that leads to cervical cancer in women.

2. 5.3 Immune System Deficiency.

Research studies showed that women with lowered immune systems have a higher risk of developing cervical cancer. A lowered immune system can be caused by immune suppression from corticosteroid medications, infection of HIV/ AIDS and organ transplantation (Paul, 2011). Corticosteroids (cortisone) like medicines are used to get relief for inflamed areas of the body. They are often used as part of the treatment for several different diseases, such as severe allergies or skin problems, asthma, or arthritis (Cancer Net, 2019). The National Institute of Health (NIH) (2019) reported that all people with HIV have immune suppression and maintain CD4 (white blood cells) and T cell (type of lymph cells) count. Anti-Retroviral Therapy (ART) suppression for HIV attacks and retains the immune system by preventing the attack of virus on CD 4 and T cells (Mathenge and Mash, 2018). Research conducted in National Institute of Allergy and Infectious Disease (NIAID) indicated that immunity decline take place due to ART (NIAID, 2019).

Research studies proved that severely immunosuppressed individuals due to ART in HIV/AIDS women have increased risk to develop cervical cancer (Douek et al., 2002). Research studies further indicated that Acquired Immunodeficiency Syndrome (AIDS) and organ-transplant recipients treated with immunosuppressants, have an increased risk of HPV associated cancers (Grulich et al., 2007). People who have Autoimmune diseases (AID) disease s have various defects in their immune system and may require immunosuppressive treatment. Hence, AID's has been linked to an increased risk of cervical cancer, particularly of hematological malignancies. Research has further indicated that women with inflammatory bowel disease (IBD) have an increased risk of Cervical Intraepithelial Neoplasia (CIN) (Kane et al., 2008). Another study conducted by sager et al. (2019) indicated that patients with inflammatory Bowel Disease (IBD) showed a high prevalence of Human Papillomavirus (HPV) which is the main cause of High-grade Squamous Intraepithelial lesions (HSIL) (Mathenge and (Mash, 2018).

Another study further indicated that patients undergoing immune compromising therapy may develop into genital dysplasia (lesions), The research also indicated that immune boost drug administered in a 32-year-old woman for Inflammatory Bowl Disease (IBD) resulted in development of genital dysplasia (abnormal change). The research further indicated that patients on immune suppressant medicine as well as with laser vaporization for HPV, their gynecological examination and biopsy revealed that they have high-grade vulvar intraepithelial neoplasia (VIN) (Sager et al., 2019). Therefore, these research evidence clearly indicated that induced (suppression) immune system and its weakness due to drugs/and ART therapies for HIV infection are likely to develop cervical cancer in woman (Becker et al., 2003).

2.5.4 Socio cultural factors related to Cervical Cancer

Research studies have also indicated that low socio-economic status such as early marriage and multiple childbirth are also-caused for developing cervical cancer among women (Kashyap et al., 2019). In many societies, mid adult women have low autonomy for seeking health care. Women are poor and travel to the hospital for screening as well as follow up (Ohaeri, et al., 2019). Psychosocial factors such as stress, hostility, depression, hopelessness, and job control etc. are associated with physical health (Burkman et al., 2004). Social factors and physical conditions of the environment in which people are born, live, learn, play, work, and age also affect one's health (Kwachi et al., 1999). Social and economic factors such as income, education, employment, community safety and social support could significantly affect how well and how long people live (Levi et al., 2015).

According to the International Agency for Research on Cancer (IARC) reported1 that 84 % of new cervical cancer issues and its death occurred in Low- and Middle-Income Countries (LMIC) (Vega et al., 2008). Early stages of cervical cancer diagnosis are less expensive. However, low financial resources of the people may also account for non-compliance with screening guidelines (Hunter et al., 2010). Non-compliance includes poor implementation of comprehensive cancer control plans, poor healthcare, infrastructure to implement cancer screening program (Maranga, et al., 2013). Cervical cancer screening is considered as a diagnostic tool for detecting precancerous and cancerous cells (WHO, 2010). Some studies in LMICs on screening indicated that socio economic status negatively influenced cancer screening rates. People are also-afraid and have misconceptions about cervical cancer screening (Adler and Newman,2002). A research_study revealed that someone who undergoes cervical cancer screening regarded as below their dignity and the husband

believed that his wife was unfaithful (Charles, 2002). Another study conducted by Raesima et al. (2015) indicated that a belief existed in the society that cervical cancer was a death sentence and knowing that someone had been diagnosed with cervical cancer would cause much stress and could lead to early death (Mathenge and Mash, 2018).

Low levels of health literacy, regarding the importance of routine cancer screening and high prevalence of competing health issues such as HIV, TB and HPV etc. are also associated with an increased risk of cervical cancer **(**Akimemiju, et al., 2016). Another study conducted in India, exploring women's knowledge and screening awareness about cervical cancer, indicated that educated women who had knowledge about cervical cancer as well as its screening strategies and have gone for treatment procedures (Kashyap et al., 2019). The same study further indicated that women at a rural community, about 7-8 % have gone for a screening test and had poor knowledge about cervical cancer (Arulogun amd Maxwell, 2012). A study conducted by Geetha and Santhy (2013) showed that health workers are not sharing knowledge and screening about cervical cancer issues in women's community. On the contrary, the Ministry of Heath in Botswana has different approaches to disseminate knowledge and awareness about cervical cancer issues. The CDC of Botswana joined with Cancer Association of Botswana (CAB) as well as Botswana National Cancer Registry (BNCR) organize cervical cancer campaign in the community to fight against the disease that was explained above in this chapter 2.7.2 and 2.7.3 respectively.

The epidemiology of cervical cancer is still unclear. Nevertheless, it is known that the incidence is higher in African women and lower in Jewish women than in White women (Beaber et al., 2014). In Africa, under sociocultural perspectives, it is generally accepted factors such as early coitus, frequency of coitus, multiple marriages, early marriage, early first child, number of casual sexual partners and cervicitis (inflammation of the cervix) are related to cause cervical cancer

(Smith et al., 2003). Research showed that cervical cancer was rare in women who never married. The study of the cervix with *colposcope* showed that sexually promiscuous women have increased risk of developing cervical neoplasia (Iodice et al., 2010). Early age at first sexual intercourse (AFSI) has been associated with increased risk of high-risk Human Papilloma Virus (HPV) infection, which is sexually transmitted infection (WHO,2010). Polygamy is accepted in many societies in sub-Saharan Africa (Cronje, 2004). Polygamy is reported to be a significant risk of cervical cancer, two-fold and the risk increases with increasing number of wives or husbands (Bayo et al., 2002).

In some cultures, very young girls, usually virgins, are given out for marriage to much older men, some of them have three or more wives. This may increase the chance of a girl catching HPV infection at first intercourse with her husband (Bayo et al., 2002). Most research studies showed that an increasing number of steady partners and young age at first sexual intercourse increase the probability of developing cervical cancer (Paul, 2011). Research showed that women with many sexual partners, and those whose partners have many sexual consorts or have been previously exposed to the virus were most at risk of developing the disease (Exe et al., 2012).

Risky sexual behavior such as unprotected sex, women's partner having multiple partners, and child marriage were an increased risk of HPV. Because of biological predisposition of the immature cervix during adolescence, that may be more susceptible to persistent HPV infections (Bosch *et al*., 2002). Another study by WHO (2002) confirmed the widespread belief that multiple pregnancies are another risk factor for cervical cancer. Women who tested positive for HPV and had seven or more full term pregnancies were 3-8 times more likely to develop the disease than HPV infected nulliparous (more than one child) women. This was probably due to the increased exposure to HPV infection with sexual activity (Burkman et al., 2004). High parity, which was the

norm in some cultures in Africa, was also a recognized, independent, HPV-related co-factor for the development of cervical cancer (Chauki and Munoz, 1998).

2.5.5 Oral contraceptives.

Some research studies suggested that oral contraceptives, which were the birth control pills, might be associated with an increased risk of cervical cancer (Morch et al ., (2017). Research conducted by WHO's international agency for research on cervical cancer showed that prolonged use of oral contraceptive pills cause increased risk of developing cervical cancer in women (Burd, 2017). It was documented that the Oral Contraceptive Pills (OCP) change the susceptibility of cervical cells to persistent infection with high-risk HPV types (Humington., 2011). Estrogen and progesterone are the two-sex hormones in women produced by the ovaries. The contraceptive pills contain synthetic version of these two hormones**.** Therefore, they could potentially increase the risk of cervical cancer. In addition, chemicals in the pills affect cervical cells and might change into carcinogenic cells (Smith, et al., 2003). As a result, use of oral contraceptives could be one of the risk factors for developing cervical cancer in women.

In Botswana, oral contractive pills are widely used as a family planning technique. Most of the young girls use pills to prevent unwanted pregnancies. A study conducted by WHO (2002) indicated that there was a link between contractive pills and cervical cancer. The research further indicated that women/girls who have used pills continuously for five years had an increased risk of getting cervical cancer due to increased absorption of HPV virus. The agency also reviewed eight studies from Thailand, Philippines, Morocco, Brazil, Peru, Paraguay, Colombia, and Spain. Their results show that women who had taken the pill for 5-9 years were nearly three times more likely to develop cervical cancer than non-users (WHO, 2009). Another study reported that 10% increased risk for less than five years use of pills, 60% increased risk with 5-9 years and doubling

the risk with 10 or years of use of pills and development of cervical cancer (Bano et al., 2007). However, the risk of cervical cancer has been found to decline over time after women stop using oral contraceptives (Smith and Green, 2003).

2.6 Cervical Cancer Screening methods

Cervical cancer screening detects precancerous (abnormal cells) changes of the cervix. (cervical dysplasia). Cervical cancer develops slowly, over time, before the cancer develops, the cervical cells undergo changes known as dysplasia. Dysplasia can be detected through screening and can be treated before it changes and develop into cervical cancer (ACS,2020). Research showed that screening for cervical cancer helps and

decrease the risks from invasive cervical cancer (NCI, 2020). Therefore, following screening test can be used for cervical cancer screening:

2.6.1 HPV DNA test. HPV test is one of a screening test for cervical cancer in women. The HPV test is conducted as follows: A sample of cells are removed from the cervix, which are tested for the strains of HPV virus. HPV viruses are attached and can live only on squamous epicedial cells of the cervix. It is infected by direct skin contact during sexual activity (ACS, 2020). The positive result of the test indicated that, a woman is contracted with a high-risk HPV virus that cause cervical cancer (HPV16 &18). A negative test means a person do not have an HPV type that causes cervical cancer (CDC, 2012). It is nothing to panic or do not have cervical cancer now if the test is positive. However, it is a warning sign that cervical cancer could develop in future. Therefore, the physician can advise the patient to come for regular screening, further diagnosis and to examine if any signs of pre- cancerous or cancerous lesion .at the cervix. Hence the patients can take pre - cancerous treatment accordingly.

2.6.2 Pap Test:

It is done by a sample of cells removed from the cervix. It is used to find changes or abnormal cells in the cervix. These abnormal cells may be pre- cancer or cancer. The Pap smear test can be done in every three years. However, it is effective test along with HPV test that are more effective to prevent cervical cancer (ACS, 2020). A normal cell means that there are no cell changes at the cervix. Abnormal cells mean that cell changes have been observed at the cervix. The abnormal changes are caused by HPV virus, and it does not have cervical cancer. The abnormal changes may be low or high grade; low grade may disappear, and high-grade abnormal cells may develop into cancer of the cervix if they are not removed (CDC, 2002).

2.6.3 Visual Inspection with Acetic Acid Test (VIA).

VIA is a screening test that can be done with few tools and the abnormal cells of the cervix can be detected with naked eyes (ASCO, 2005). Vinegar is applied at the cervix, if cervical cells are abnormal, they and turn white. The detail of this test is discussed in this chapter in section 2.8.2 of secondary prevention. Hence, this study is focused on effectiveness of 'see and treat' program and the way of strengthening it to reduce the effects of cervical cancer incidence

2.7 Stakeholders Involvement in cervical cancer prevention strategies.

The following stakeholders are involved in cervical prevention program. They are as follows:

2.7.1 Ministry of Health and Wellness Botswana (MOHW).

The Ministry of Health is mandated with oversight and delivery of health services for Batswana. It is also the major provider of health services through a wide range of health facilities and management structures. The Ministry formulates Health policies, throughout the health care delivery system (MOH,2003). It provides primary health care services through District Health

Management Teams (DHMTs). DHMTs are responsible for running a network of health facilities, hospitals, clinics, health posts and mobile stops as well as community-based preventative and promotive services (MOH,2019). In Botswana, the health delivery philosophy is based on providing quality affordable health services to the nation. The primary health care system is based on the Botswana healthcare model. It includes diagnosis, treatment and recovery based on scientifically and socially acceptable way (MOH, 2003). Therefore, universal health care is accessible to all individuals and families in a community. A quality medical services to all citizens offer by the government (Kgokgwe et al., 2016). At the lowest level, there are 894 mobile health stops, 357 health posts. Either the whole population or those who cannot take treatment on their own (WHO, 2011). In Botswana, the Primary Health Care services is under District Health Management Team (DHMT). The MOHW in Botswana, has overall responsibility for the provision of health services.

The public health system is organized into different levels**,** based on the complexity of services.. There are 290 clinics, 17 Primary Hospitals and 15 District Hospitals and three National Referral Hospitals that represent the highest level of the health care system (CSO, 2010). The current organizational structure of MOH comprises six departments namely: Department of Health Policy Development- Monitoring and Evaluation (HPDME); Public Health; HIV/AIDS Prevention and Care; Clinical Services; Health Inspectorate and Corporate Services. The HPDME houses, Monitoring and Evaluation Division which has overall responsibility for coordinating and managing health information (Kgokgwe et al., 2016).

For administration purposes, the health system is divided into Districts Health Management Teams. Currently, there are 27 Health Districts, the DHMT has three (3) functions: curative, preventive, and corporate (MOH, 2019). In general, the management team is headed by the DHMT

head with overall responsibility for coordinating and overseeing activities. This position is held by people with a varied health professional background including public health specialists, medical doctors, and public health nurses (MOH,2019. The head of curative services**,** who is a medical practitioner oversees delivery of patient care services in all facilities in the district. The head of preventive services coordinates public health related activities, while the head of corporate services is responsible for managing all forms of resource inputs including human resources (Kgokgwe et al., 2016) see appendix 2& 3 DHMT.

2.7.2 Cancer Association of Botswana (CAB)

The Cancer Association of Botswana (CAB) is a Non-Governmental Organization (NGO) established in 1998. There are various activities taking place at the CAB such as education about cancer and increasing awareness of people in all areas and communities of the country. It promotes prevention and health promotion through talks, conferences, campaigns and the distribution of brochures and posters throughout the country (CAB, 2020). It promotes healthy lifestyles and early detection of cancer. It also facilitate medical care and provide counselling and support those who are affected with cancer. CAB offers free confidential counseling to patients, family, and friends. CAB has a group of survivors who visit cancer patients at their homes and provide them with emotional and spiritual support (CAB,2009). CAB is also currently developing its recreational and occupational therapy and nutrition programs. CAB also offered care to patients as well as make phone calls to patients and seek their welfares. Thus, they provide emotional support and motivate the patients to take further care (CAB2020).CAB awareness program involves prevention of cancer through the media, such as radio and newspaper. Apart from that, after-care is also offered to patients after returning to their respective homes.

2.7.3 Botswana National Cancer Registry (BNCR).

The Ministry of Health (MOHW)**,** with the assistance of the International Association of Cancer Registries (IACR)**,** established a National Cancer Registry under the Centre for Disease Control and Prevention (CDC) in 1999. Its main roles are to identify potential risk factors involved in cancer, determine the incidence of cancer in the country and evaluate cancer treatment, control and prevention program. The BNCR, which is a population-based cancer registry, collects information on demographic, risk factors, treatment, and care of cancers in the whole country through its referral and district hospitals (Pusoentsi, 2018).

2.8 National Cervical cancer Prevention Program in Botswana (NCCPP)

Botswana is a middle-income country with a population of two (2) million and has high prevalence of HIV and AIDS. Cervical cancer is the leading cause of cancer death among women in Botswana (UNAIDS. 2014). Cervical cancer can be prevented by regular screening with HPV test and pap smear test to find any pre-cancerous lesion and then treat (ASO,2020). Botswana has a high burden of cervical cancer, and its mortality rate is high due to the lack of screening tests, as well as poor treatment facilities (WHO, 2011). Several strategic partnerships and their initiatives have played a pivotal role in cervical cancer prevention in Botswana (IARC, 2018). The main catalysts for these were the cervical cancer prevention pilot program funded by the President's Emergency Plan for AIDS Relief (PEPFAR). It was worked with CDC of Botswana. The main roles are prevention of infectious diseases such as HIV/AIDS. If HIV/AIDs are reduced, cervical cancer would also be reduced (Oncol, 2015). Hence, this section deals with different kinds of prevention methods to cervical cancer incidence proposed by MOH Botswana. However, this study will evaluate the effectiveness secondary prevention of 'see treat method' at primary care center. Botswana

Ministry of health and Wellness (MOH) initiated National Cancer prevention program comprehensive strategy (2012-2016). The NCCPs are as follows:

2.8.1 Primary Prevention - HPV Vaccine.

The main element under primary prevention is Human Papilloma Virus (HPV) vaccination. As mentioned in 2.4.1. HPV causes cervical cancer, and it causes changes in the cells of cervix called precancerous dysplasia (abnormal cells) (CDC, 2012). The first vaccine is licensed to Gardasil approved by US food and drug administration (FDA) for prevention of cervical cancer caused by HPV. Gardasil 9 is available in US for preventing infection from HPV16, HPV 18 and five (5) other types of HPV infected cancer (ACS, 2020). Another vaccine *cervarix i*s also available in US but these vaccines never be used outside the US (ASCO,2021). Research showed that vaccines had effect and prevent pre cursor cells of cervix and protect against HPV16 and 18 (Kitchener et al., 2013). Cervical cancer is the common cancer among women of aged between 15-44 and the leading cause of cancer among women in Botswana (IARC, 2012).

American Society of Cancer Oncology (ASCO, 2021) suggested that cervical cancer could be prevented if girls (age 9-13) receive HPV vaccination. The world Health Organization (2013) recommend a comprehensive approach to cervical cancer prevention and control. Vaccination is one of the most used public health strategies to reduce risk of infection caused by pathogens (ASO, 2021). The two types of vaccine mentioned above (Gradsil9 and cervarix) is worth if they are administered to girls before they are active on sex. The vaccine campaign must start at the age of 9-13 girls (ACS, 2020). The WHO recommend in 2014, three full course dose is given to girls and boys of aged between 9-14 and 9-13 respectively over six months (Garland et al., 2007).

The WHO (2013) recommended that the inclusion of HPV vaccination in national immunization programs. Unfortunately, HPV vaccines are not available in many African countries. A few Middle-Income Countries such as Rwanda, South Africa, Lesotho, and Uganda have introduced HPV vaccines for girls which is integrated with National immunization program (CCA, 2014). However, barrier to introduce vaccinations include its cost effect, safety of the vaccine provider (Cageny et al., 2013). In Botswana, 4-5 times increased risks for cervical cancer among HIV infected women (IARC, 2012). Primary prevention of cervical cancer via HPV vaccination may be helpful to Botswana.

Women in Africa have the highest rate of cervical cancer compared to women from other continents. Research and investigation to cervical cancer, showed that vaccine, screening and treatments efforts are needed (Clifford et al., 2003**).** The World Health Organization (WHO) advocates a comprehensive approach to cervical cancer prevention, control hence identify opportunities to deliver effective interventions **(WHO,2013). Research indicated that** 75 % of sexually active people were infected HPV at some point during their lives (Cleaver, 2005). Therefore, vaccination is one of the most used public health strategies to reduce the risk of infection and minimize the prevalence of the disease-causing agent with HPV (WHO, 2010). There are two types of vaccine for use; the *bivalent vaccine* that protects against HPV types 16 and 18. The *quadrivalent vaccine* protects against HPV types 16 ,18, 6 and 11, which cause 90 % of genital warts (CDC, 2012). The vaccines are 95 % effective at preventing HPV infection, procedure is to inoculate full three course dose must be given to a person over six months (Garland et al., 2007). The Minister of Health Botswana (MOH, 2009) recommended to give HPV vaccine to 9-13 years of girls. The government also licensed HPV vaccine in 2009, but due to its high cost the vaccine is not yet available in the public sector where majority of the population take care of their health

(Di Angi et al., 2011. Botswana has challenge on HIV and cervical cancer; introduce HPV vaccine is not easy to implement where the resources are limited as well as not advisable to give vaccine to people who are infected with HIV (Schiller et al., 2012).

2.8.2 Secondary Prevention – 'See and Treat' method

The Ministry of Health and Wellness Botswana (MOHW) is giving care and protection to the people for various illness, cervical cancer is one of them. The MOH has conducted a research update on illnesses and implement strategies to improve health and special care on chronic illness such as cervical cancer (MOH, 2018). Cervical cancer is one of the leading cancers among women of Botswana. It is preventable if it is detected early and provide pre-cancerous treatment (WHO, 2014). Pap smear test is one of the screening tests for cervical cancer. The above test is common in countries like US, UK and in Arabian countries. Since they have modern equipment and laboratory facilities for pap smear test and is generally available (Kawonga et al., 2008). In African countries, pap smear test is not very common due to the lack of laboratory facilities at the local clinics as well as its cost, so people seldom go for it.

To overcome the difficulty of pap smear test, MOH has introduced an affordable screening program for cervical cancer known *as Visual Inspection with Acetic Acid* test (VIA). This screening and prevention for pre- cancerous lesion. Screening for early detection and treatment is a secondary prevention. Early diagnosis and treatment of cervical pre-cancerous lesions can prevent 80 % of the incidence (Weaver et al., 2011**).** The WHO's (2010) -approved a strategy for cervical cancer screening in low resource countries. It is known as 'Visual Inspection with Acetic Acid' test (VIA) or Visual Inspection with Lugol's Iodine test (VILI).

The actual procedures are as follows: nurses dip the brush in vinegar and apply on woman's cervix. If the cervix has precancerous spot, it is turned into white**.** Pre- cancerous cells are treated

immediately. It is done by putting a very cold chemical on the affected cells to freeze them and fell off from the cervix. The cold comes from liquid nitrogen or argon gas. This technique or procedure gets rid of the bad cells so that new, and normal cells can grow back in the same spot. This kind of screening and pre- cancerous treatment technique to cervical cancer is called *cryotherapy*. (Elsevier, 2008). This method has high sensitivity among HIV-infected and uninfected women, since the result is instant, the women who screen positive for precancerous lesions can be offered *cryotherapy* treatment during the same visit, or a 'screen and treat' approach (Denny et al., 2006). This strategy has been shown cost-effective, affordable, and an ideal at first-line treatment for Cervical Intraepithelial Neoplasia (CIN) of any grade of cervical lesion size and location. (Peng et al., 2013). This type of screening tests and treatments are available in few Primary Health care clinics of Botswana.

The, MOHW is also introduced two treatments for invasive cancer t known as Loop *Electrosurgical Excision Procedure* (LEEP). LEEP is kind of diagnosis as well as treatment for abnormal and invasive cervical cancer. In this technique a loop is heated by electric current to remove lesions at women's genital tract (ACOG, 2017**).** If the patient is detected with cervical abnormalities after VIA test LEEP or cryotherapy treatment is given immediately, after the treatment, the patients can go home the same day. Pape smear test result may take time to get the result as well as it must be done frequently or regularly. In case, if a woman is detected with pre-cancerous cells by papa smear test, she can receive LEEP treatment which can avoid the delay of the result done by pap smear test (CDC, 2012). Loop Electrosurgical Excision Procedure is done as follows: a wire loop is heated by electric current it cut away thin layer of abnormal tissue and tissue in a woman's lower genital track**.** It is a kind of pre and post cervical cancer prevention treatment for cervical cancer.

2.8.3 Tertiary Prevention

Women with abnormal cervical cells who are diagnosed with precancerous lesions or invasive cervical cancer, both need treatment. The untreated pre- cancerous cervical cells may develop into an invasive cervical cancer. Most of the women are diagnosed with abnormal cervical cells at advanced stage (Gaya et al., 2012). Further examination such as vaginal, endoscopy, inspection of urinary bladder, rectum and parametrium (tissue fat) are required to detect the stage and severity of the cervical cancer (IARC,2005). Tertiary prevention seeks to limit disability and promote rehabilitation. A lot of steps such as precancerous screening, cryotherapy etc. will prevent progression of precancerous into invasive stage (Agrawal et al., 2011). Treatment for invasive cervical cancer include a combination of surgery, chemotherapy, and radiotherapy. These facilities are limited in many African countries, even in Botswana the situations are not different from others. As a result, patients are on palliative care and control the symptoms of the sickness. Research showed that patients with invasive cervical cancer in Zimbabwe, Uganda, Nigeria and Tanzania about 24-67 % women are receiving radiation or chemotherapy. The research further indicated that if they reached at three or fourth stage and had HIV infection treatment is not recommended (Wabinga et al., 2003).

2.9 Challenges and Barriers to access cervical cancer prevention

There are challenges and barriers facing cervical cancer screening and prevention of pre-cancerous treatments. The research indicated that about 10 % of female population were taken current cervical cancer prevention efforts (Woodman et al., 2001**).** The government of Botswana recommends HPV vaccine for 9-13 years of girls Another study further indicated that comprehensive HPV vaccination implementation plan for the national HPV vaccine to women had

rolled out in 2015 (Oncol, 2015). There are no gynecological oncologists in Botswana must be another challenge.

Patients suspected of having precancerous dysplasia or invasive cervical cancer are referred to gynecology for biopsy and pathological test for cancer confirmation. Advanced tests such as X rays, scan and ultrasound are not available under public sector. They must be done in the lab (Sunjea et al., 2018). This may also delay the results; thus, treatment may delay. Research studies on knowledge and attitudes towards cervical cancer issues indicated that people have poor knowledge regarding screening test, and family history. There is also a lack of education and history of disease, which have significantly affected cervical cancer in Botswana (Carmen and Wallace, 2013). Evidence showed that pap smear (cytology test) is recommended and effective, yet it is challenged due to resources and unaffordability to patients with low income. Infrastructure or access, the use of Visual Inspection using Acetic acid (VIA) could be both an effective and more culturally acceptable screening strategy (Carr and Sellors, 2014). This could be a relief for patients who comes from low-income background (WHO, 2012).

However, this facility is not available in all primary health care center. This could also be a barrier for them. Scio cultural perspectives influence the women getting cervical cancer screening; they believe that cervical screening may affect their reproductive health and had a fear that they become infertile. This was a challenge and a barrier on cervical cancer related issues (Grover et al., 2015). In conclusion, stigma associated with sickness, dedication to the family, gender role, negligence towards women and girls from the elders, parents', poverty, low income, and misconception towards the disease were also risk factors, barriers and challenges in screening and receiving pre-cancerous prevention treatment of cervical cancer in women of Botswana.

2.10 Conclusion

Cervical cancer is the cancer of cervix. It is detected with screening. Pap smear is one of the screening techniques used in many countries but it has disadvantages such as well-equipped laboratory, manpower and follow up program in many countries. Therefore, this method is not feasible for low- and middle-income countries. Hence WHO recommended 'see and treat' method as a screening technique in place of pap smear test. The MOHW in Botswana implemented 'see treat' (VIA) in 2012 in the public sector for cervical cancer screening and prevent pre-cancerous lesion of the cervix. Though prevention strategy exists in public sector morbidity and mortality rates is not diminishing. Hence, this study will evaluate health workers dedication, acceptability and effectiveness of the program put in place to mitigate diminish the effects cervical cancer in women.

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CHAPTER 3

RESEARCH METHODOLOGY

3.0 Introduction

This chapter describes the methodological steps, methods and procedures that would used to carry out the current study. The step comprise research methodology, research setting, population of the study, sampling and samples, research instruments, data collection procedure, ethical consideration, validity and reliability and summary of the chapter.

3.1 Research Type (Design).

The research design of this study was exploratory research. The exploratory research is to explore a problem that provide insights and comprehend the problem more precise manner. (Polit and Hugler, 1997). This study evaluated the effectiveness of the strategy put in place to mitigate the effect of cervical cancer in the women of Botswana. In exploratory studies result in a range of causes and alternative options for a solution for a specific problem (Devers et al., 1999). In this study the researcher focused on comprehensive national cervical cancer prevention strategy by MOHW Botswana implemented in between 2012 – 2016 at primary care center of Botswana called 'see and treat method'. The researcher is exploring and assessing the program based of NCCPP strategy. Therefore**, t**his study provides knowledge on how program was implemented and health workers and patients input on how implementation of the strategy can be improved.

3.1.2 Research Approach

The research approach was used in the study would be both qualitative and quantitative (mixed methods). A qualitative study approach provides insights into people's lifestyle, behavior their knowledge, their feelings, attitudes, opinions, values, and experiences. Therefore, interviews with

health workers gave more information about this program as well as reasons on high incidence about the illness. Hence, it permited the participants to share their experiences. (Burrill et al., 1998). The quantitative aspect of the study revealed women's view about VIA program and suggestions for its development.

It also helps in finding the problem by way of generating numerical data or data that can be transformed into usable statistics. In this study, a supplementary quantitative part explores in depth about risk factors, norms, culture, beliefs regarding cervical cancer issue**s** (McLeod, 2019). When combined, qualitative and quantitative inputs gave better results about how the cervical cancer program was implemented and what health workers thought about the illness (Polgar, 2000). Therefore, mixed approach of both qualitative and quantitative are not alternative research, or not incompare, but they are complementary, and they may help to strengthen the data collected by both approaches. A quantitative study supports qualitative data, it also provides further insight into the findings (Fathella,2004). The qualitative approach mainly focusses on health workers, and they are involved in interviews which is shown in section 3.5.1 whereas questionnaires were applied on sample women population that are shown in section (3.5.1 & 3.5.2)

3.2. Clinics with VIA program

The study was focused on clinics belongs to the Greater Gaborone DHMT. There are six (6) clinics in Greater Gaborone DHNT that offered pre cervical cancer treatment by VIA followed by cryotherapy technique. The clinics are as follows:

1. Phase 2 clinic
2. Broadhurst Traditional Area clinic (BTA) clinic,
3. Nkoyaphiri clinic,
4. Tlokweng main clinic,
5. Mafitlhakggosi clinic,

6. Bontleng clinic.

The Simple Random Sampling (SRS) technique was used to select the research clinics from the above list of the clinics. The selected clinics were called as research clinics. The sampling procedures were shown in section 3.5 and TA clinic and Nkoyaphiri clinics were selected as the research clinics.

3. 3 Research Sites/Clinics

The BTA clinic is situated in the capital city of Gaborone, in Botswana. The BTA clinic is situated just behind Cash Build Hardware Shop along Sefalana Road that joins to A_1 Francistown - Gaborone main road. It belongs to the Greater Gaborone District Health Management Team (DHMT). The clinic opens at 8.00 A.M in the morning and closes at 4.30 PM. It is a 12-hour clinic and runs from Monday to Friday**.** It is a multidisciplinary unit offering various such as Infectious Disease Control Centre (IDCC) Sexual Reproductive Health Unit (SRH), and Childrens' Welfare Centre (CWC) The clinic has a special service for pre cervical cancer screening, and its treatment based using *VIA* method. The screening services are scheduled on Monday and Wednesday and it starting at 8.30 AM to 12.30 PM.

The second site was *Nkoyaphiri clinis,* at Modistashane block 9 Gaborone. It is 24-hour clinics, offering maternity services. It has the VIA screening program with cryotherapy treatment taking place in the morning 9.30 AM -12. 30 PM Monday to Friday. Apart from that, HPV DNA self sample collect test as well as pap screening are also taking place. Therefore, the sample of this study would be two clinics from cluster I of Greater Gaborone DHMTs. The details of clinics in cluster 1 and a hospital are shown in fig1 in section 3.6

3. 4 Sampling Techniques, Sample population and Sample Size

In this study, the sampling frame was the list of all six (6) clinics and Princes marina Hospital of the Greater Gaborone DHMT. The researcher sampled the clinics by using Simple Random Sample (SRS). The researcher has listed all six (6) clinics in a small bit of paper, that was placed in a basket, shake it well blind fold someone and pick any two scrolled papers from the basket. This is called a lottery method of simple random sampling (SRS). Unscrolled the paper, whichever clinics appear by this lucky draw would be considered as sample clinics for this study. The names of the two clinics were randomly picked from a small basket that in all the six names were placed. Therefore, Nkoyaphiri clinic and Broadhurst Traditional Area Clinic (BTA) were picked from the basket and decided as research sites.

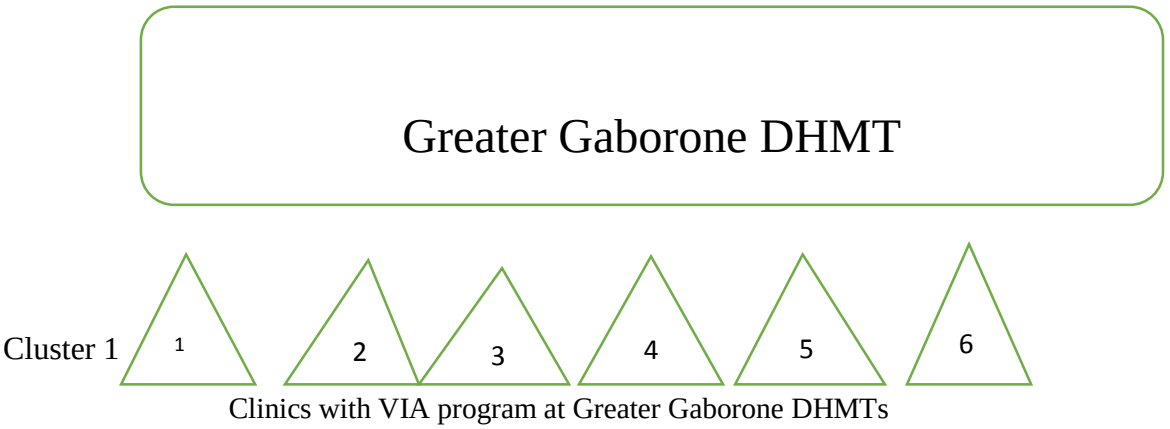
3.5 Target population

The target population of this study was all patients and health workers of BTA and Nkoyaphiri clinic from cluster I of greater Gaborone DHMT as shown in fig 1 on page 63.

3.6 Sample Population

In this study, the sample was all health workers and all women patients at cervical cancer unit of the research clinic such as BTA and Nkoyaphiri clinics. Total population sample method was also used for sampling health workers. All health workers were included in the sample since their number was very small. The interviews were conducted with them. The women patients sample size was shown in section 3.6 and sampling frame of the study is shown below. In fig.1

Fig.1 Sampling Frame of the Study



In this study, the researcher randomly selected BTA and Nkyaphiri clinics as research sites.

Clinics in cluster I

1. Phase II
2. **Broadhurst Traditional Area clinics**
3. **Nkyaphiri Clinic**
4. Tlokweng main Clinic
5. Mafitlhakggosi clinic
6. Bontleng clinic.
7.

3.7 Sample Size

The sample of the women participants was selected from the woman patients based on their daily attendance. The researcher selected 25 % of women patients from total women patients. This was the sample size. The notates was as follows:

Total women Population = **N**

Sample size= **n (25%)**

Participant in the study will be= **N** X 25/100

25% from total population of 60 patient:

60X25÷ 100 = 15 women patient would be participated in this study.

The sample size was selected randomly from patients' seats. The women population was administered questionnaires which comprise both demographic as well as short response questions that was focused on factors related to the VIA program.

3.8 Data Collection Methods

As mentioned earlier, the study approach was both qualitative and quantitative. The qualitative approach was interview that was applied to health workers whereas quantitative approach were questionnaires which was administered to the women.

3.8.1 Qualitative Data Collection methods.

The following measurements or data collection tools were used in the qualitative approach:

3.8.1.1 Observation– Record review

In this study, observation was one of the data collections tools. Observation was made from outsider or insider perspectives or somewhere in between. Outside observer's maintain a distance while internal observers were closer to the objects or people and interact with them (Dawson et al., 1998). Outside observation was took place in this study.

Hence, the researcher observed the quality of the health service delivery at cervical cancer unit of the research clinics The researcher also observes additional documents, heath professionals' attitude and behavior towards cervical cancer patients as well as how they attend them. The researcher also reviewed the MOHW documents such as NCCPs and its importance in the VIA program. The researcher also observed health workers seriousness and dedication to this program. The observation was also focused on research questions that would evaluate clinical facilities, if the women maximize the use of the program or not. The additional document viewed include cancer screening and follow up referral and treatment records

The researcher also reviewed cancer screening and follow up, referral and treatment records.

3.8.1.2. In-depth Interviews and Unstructured interviews

In this study, the researcher used semi-structured interview which comprises both structured and unstructured interviews. Unstructured interview was guide or a friendly talk with health professionals to capture various factors related to cervical cancer issue in Botswana. During the unstructured interview, the researcher requested health workers to reveal some of the documents such as cancer register, scanning register and treatment record, especially for screening regarding

cervical cancer issues. Researcher has moved on conducting an in-depth or structured interview was conducted guide (Appendix 7& 8).

The questions were open-ended where the researcher expected a detailed answer from the health professionals in connection with cervical cancer issues of women in Botswana. The structured questions also helped to answer research questions about health workers, challenges, maximum utilization, barrier to take screening, pre-cancerous treatment facilities and how they offer their services to the women. prevention strategy and its objectives would evenly be spread in the interview guide. The duration of the interview was 30 minutes with health professionals of the selected clinics. The questions were focused on research questions (4, 5 &6) The information gathered through the above-mentioned interviews are more useful, reliable and optimize the answers for research questions or research objectives (Corbin and Strauss, 2008).

3.8 Quantitative Data

The questioners were answered by women patients receiving and who took health care at the cervical cancer unit. In this study, bivariable questionnaires like 'yes' or ;NO' were prepared. The respondent chooses right response from variables either 'yes' or "No'. This was focused on research questions 1-4 barriers, challenges to accesses pre invasive cancer prevention treatment, women's attitude to this program, health workers dedication and strategies put in place to lessen the effects of the illness etc.

3.9 Data collection Procedure

Prior to the collection of data, the researcher had written a letter to the Ministry of Health and wellness Botswana (MOHW) as along with the proof of PH.D. registration from Selinus University of Science and Literature, Bologna, Italy. In the letter, the researcher has indicated the research sites, reasons for choosing Greater Gaborone DHMT clinics. Apart from tha, the t researcher also

submitted documents as per MOHW request such as CV, university letter, supervisors' letter, proposal, research budget and COVID 19 protocol while collecting the data. Having got the permission from the DHMT/MOHW through a written document, the researcher has approached to the sample clinics and met the Matron of cervical cancer unit and explained the objectives and duration of the study, as well as data collection techniques. The researcher has started collecting the data after receiving the permission from the respective Matron of the clinics. Data was collected physically by the researcher through interview and distributing the questionnaires to the patients. Research assistants were assigned to assist with collecting questionnaires from the patients.

3.10 Data editing and Analysis

Data editing is defined as the process of involving the review and adjustment of the collected data. The purpose is to control the quality of the collected data. Data editing was performed manually, and organized the data based on research themes. Data analysis is a process used by the researchers for reducing data to a story and interpreting it into derive insights. In short, data analysis is a process helps in reducing a large chunk of data into smaller fragments, which makes sense (Khan, 2008). Say how in this study it will be done!

3.10.1 Analysis of qualitative data

The qualitative data of this study were collected through observation, as well as using individual interviews. Firstly, the data would be categorized into research problem, research objectives or research questions. Therefore, the data would be arranged according to the themes and objectives of the study. In this study, observation of cervical cancer unit is one of the qualitative data. The observation has helped to answer the volume of patients attend at the cervical cancer unit. During this process, the researcher would immerse herself at the settings and have a close observation to patients, health professionals and as well as heath service delivery. The quality of health services

provided by the health professionals, facilities for the treatment and its services offered to the patients as well as the problem faced to the cervical cancer unit for this health service delivery. The observation made by the researcher was recorded according to the research objectives.

The researcher then follows semi - structured interview. The researcher asked the questions to the health professionals using an interview guide. In this process, the responses have noted down. The interview was continued until their responses were saturated and their responses have been transcribed as it is (verbatim). Having collected the interview data, the researcher has arranged on and prepared the data for analysis. The researcher has filtered the important words and sentences of the data that are related to the research themes and objectives The data that are not relevant to the study were removed (cleansing). After removing the unwanted data, coding of the data had been taking place. In this process, classifying the answers with special number or name. Coding of the data make easier to interpret participant's feedback. Assigning codes to words and phrases in each response helps to capture the responses could analyze and summaries the results of the content. In this study, the process of coding, has focused on research questions and categorized the response accordingly. The researcher has l interpreted the content of the response based on research objectives and had concluded the results of the qualitative data.

3.10.2 Analysis of Quantitative Data by using SPSS

Questionnaires used to quantitative data for this study. The questionnaires were divided in two sections. One covering demographic data and another research variables being studied. The questionnaire data was analyzed by using a computer software program called Statistical Package for Social Sciences SPSS, 1995). Descriptive analysis provides information on the basic qualities of data statistics such as mean, range, minimum - maximum, percentage (%) and frequency. In this study, descriptive statistics were useful to predict and conclude the results using, frequency,

and percentage. The SPSS generates frequency tables and percentages that would assist the researcher to have an objective appreciation and quantification of the respondents' opinions and perceptions. The frequency tables would be generated directly per each question (variable statement) included in the questionnaire. Crosstabs would also be used as they were vital for understanding the relationship between descriptive variables of the sample and measured on dependent variables. It also (crosstabs) provides an insight into the implication of independent on the identified dependent variables. This would be important in further understanding and categorising the opinions and perceptions of the respondents as would as their implications on measured variables. The quantitative data collected and analysed shall then be used to test the hypothesis based on research evidence. Hypothesis testing shall be performed to generate research conclusions.

3.11 Ethics

The following ethical principles were observed in this study:

The researcher had written a letter to DHMT/MOH manager and explained the objectives of the study. The research ethics were adhered while collecting the data by ensuring privacy and confidentiality of participants response. The information obyained will be shared with MOHW and other authorities for the purpose of this research study

The interviewee's name and the interview information would not be revealed and confidentially was kept. All study participants were informed about participation in the research, objectives of the study, and time of involvement also informed them. Anonymity and privacy of the participants was maintained while collecting the data. According to McMillian and Schumacher (1997), information should be regarded as confidential unless otherwise agreed through informed consent. The researcher also has taken permission from MOHW to collect the from the clinics.

The researcher has submitted all necessary documents to obtain a permission letter which was shown in the Appendix. Questionnaires answers were collected amorously. The researcher selects questionnaires to avoid sensitivity of the illness, time, language, and accent barriers from the researcher. The questions also were well worded, using familiar terms to avoid confusion or ambiguity. Jargon will not be used in the questions. The questions or statements were phrased in such way that ordinary people could easily pick the answer. The researcher has collected data after being received the approval letter from MOHW.

Apart from above, the following instructions and protection of the subjects were given while answering in the questionnaires as well as on interviews which are also considered as ethics of this study

- An introductory statement by the researcher and explained the purpose of the questionnaires
- Demographic questions to collect relevant information about the background of the respondents.
- Opinion questions require reflection, it is easier for the respondent to answer factual questions first serve as a 'warm up' to the actual questions.
- Closing statements by researcher to thank the respondent.

Protection of the Subjects:

- The researcher was explained the objective of the study, duration of their participation and how to answer the questionnaires.
- The researcher would collect the questionnaire data anonymously and assure confidentiality of the statements given by the participants.

- Demographic questions would collect relevant data about the background of the study respondents
- Any circumstances in which subjects showed noncooperation to attend the questionnaires the researcher will act flexibly
- There is no experiment or test will be conducted on the participants. This study is based on observation.

3.12 Validity and Reliability

This study will ensured validity and reliability of findings as stated in the sections below.

3.12.1 Validity and Reliability of Qualitative data

In qualitative research, validity–or trustworthiness and reliability or consistency are discussed in terms of the credibility: *transferability, dependability, and confirmability* of the instruments and results of the study (Ali and Yusof, 2012).

3.12.1.1 Trustworthiness, Credibility, Confirmability and Transferability and Dependability the Qualitative data.

In this study, the interview guide was checked by the internal supervisor prof. Modesto from 'The Gaborone University College of Law and Professional Studies' (GUC). Responses and comments from the supervisor have helped the researcher for further clarity of the interview questions Information obtained through observation as well as from the semi structured interview are triangulated that added *credibility (internal validity)* as well as trustworthiness of the of the data collected. The purposive sampling method also contributed to *dependability* of the data collected from the participants. The interview permission from the health professionals for conducting the interview and interview information is noted down by the researcher and it was rechecked for

clarity. This kind of action by the researcher may improve *confirmability* of the data collected. The study participants in this study were women, homogeneous purposive sampling technique used in this study contributed *transferability* of the research methodology.

3.10.1.2 Quantitative data - Validity and reliability

Validity functions as a quality measure in quantitative research. Reliability means the results can be reproduced when the research is repeated under the same conditions. The two important qualities of surveys are consistency and accuracy. These are assessed validity and reliability and could be assessed with design as well as on study purpose (Ary et al., 2006). The questions prepared for this study to ensure validity

It was related to cervical cancer disease and they have its interconnections. Questionnaires were adequately covered all content that were displayed on variables. The phenomena of the questions have contributed *internal validity*. The questions generated for quantitative part of this study was checked by the internal supervisor prof. Modsto and had determined their clarity, suitability, quality relate with research questions as well as focused on NCCPP comprehensive cervical cancer strategies. The questionnaires were pre-tested among public health students of GUC before administered to the (patients) sample population. Piloting the questionnaires was enabled the researcher to check its comprehension, clarity, and appropriateness. This added to content validity.

Reliability of the data means consistency the results obtained from the data. In this study, questions were carefully structured, equal number of items had tried to include in each variable. Close ended questionnaires were given for cervical cancer comprehensive strategies which was prevalent in the clinics of Botswana. Questions were also included effectiveness of the program as well as health workers dedication to these national strategies. The researcher kept validity and reliability of the

data collected by applying both qualitative and quantitative approaches that enables triangulation of the study results.

3.13 Conclusion

This chapter discussed research type, research methods, data collection tools, settings, data collection procedures, data editing, data analysis, ethical consideration and validity and reliability.

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CHAPTER 4

PRESENTATION AND DISUSSION OF THE FINDINGS

4.1 Findings

This chapter presents the findings of the study and a discusses them. Quantitative findings are presented. The major findings of the study are reported under the main headings which reflected the data collection tools focusing on the research objectives.

4.1.1 Qualitative Findings

Mainly, qualitative data of this study were from observation, document review, structured and unstructured interviews.

Table 1: Health workers dedication

NO	Observed item	BTA Clinic	Nkoyaphiri clinic
1.	Health Service delivery	good	good
2.	Health workers dedication	good	good
3	Attention to the patient	fast	fast
4	Punctuality of the health Workers.	punctual	punctual
5	Screening /reporting time	8.00-12.30	8.00-12.30
6	Screening days	Monday and Wednesday	Monday to Friday.
7	Duration of work	12 hours, operated during Day time. 8.00- 4.30 PM	24-hour clinic. Special service s like maternity is offered during night time.

Observation of health workers conducting the VIA program activities revealed that health workers' dedication to the program at both clinics was good. All the three variables on service delivery, dedication and punctuality were shown to be good. Furthermore, records indicated days and times at which the VIA program was offered. The specific findings on each of the variables are presented below. In Botswana, clinics functioned either at 24 hours or 12 hours. Nkoyaphiri clinic offered 24-hour services and BTA clinic offered 12-hour services. Generally maternity services are offered on 24-hour clinics. However, cervical cancer screening is done during daytime in the morning 300-12 PM.

4. 1.1.1 Observation

The observation findings emanate from the two study clinics: the Broadhurst Traditional Area (BTA) and Nkoyaphiri clinics focusing on the variables shown below in Table 1.

Health service Delivery

The findings showed that health service delivery was good at both clinics. Health workers worked as a team; they have a collocative working relationship. They also showed autonomous services that proved they went through patients card and booked them for screening. Apart from that, health workers were integrated with Infectious Disease control Centre (IDCC). Therefore, the women patients who have come to take ARV treatment unit and encouraged them to go for cervical cancer screening. This was an indication of good health service delivery.

Health Workers Dedication

The findings indicated that health workers followed NCCPP guideline on cervical cancer screening. The health workers urged the women and girls to go for cervical cancer screening at early stage and prevent it from further consequences. They kept various records for cervical cancer

screening. Apart from that health workers timely inform to the DHMTs about progress of the program and its records are kept. This is showed that health workers were dedicated

Health Worker Attention to Patients

The health workers were paying attention to the patients. They used to give a motional talk on cervical cancer screening and tried to involve maximum women for screening. They also made a follow up on various health services that were given to them. The health workers also call them individually in advance and reminded them about respective health services supposed to be taken. Apart from that, they were also called the referred clinic or hospital and enquired about the patients if they have taken the services that prescribed from the host clinic. This is indicated that health workers of the research clinics paid attention to the patients.

Punctuality of the Health Workers

The findings indicated that health workers of the research clinics were punctual. They reported to the clinic at 8.00 AM in the morning. The screening started at 8.30 AM and ended at 12.30 PM. The health workers attended the women patients according to the booked list scheduled for screening. In BTA screening was scheduled on Mondays and Wednesdays. Finding showed that at Nkoyaphiri clinic, screening took place on Monday to Friday from 8.00- 12. 30 PM. The afternoonsessions, they normally used for updating various registers on cervical cancer screening.

Reporting Time and screening Time

BTA and Nkoyaphiri clinics are a multipipeline clinics as they offer various services such child welfare unit, Infectious Disease Control unit (IDCC) Sexual Reproductive Health unit and cervical cancer unit etc. Staff are reporting at 6.00 PM. Prior to screening, the staff prepared and organized materials for screening. Hence, the screening starts at 8. 30 A.M. and ended at 12.30 PM. This was called screening time.

Screening Days

The clinics had a specific day for cervical cancer screening. The BTA clinic offered a screening service on every Monday and Wednesday of a week. The Nkoyaphiri clinic offered the same services from Monday to Fridays in a week.

Duration of the clinical services

In Botswana, the clinics are operated differently; some clinics offer services for 24 hours which are called 24-hour clinics. Special services like maternity are offered at this clinic. Some clinics are offered health services for 12 hours, and they are known as 12-hour clinks and they do not provide maternity service. Researchers observation revealed that BTA clinic functioned for 12 hours whereas Nkoyaphiri clinic offered services for 24 hours. The BTA clinic do not offer *Maternity* services to the people whereas NkoyaPhiri clinic offered a *Maternity* service to the public as shown in Table 1.

Document Review Findings

Documents and records on cervical cancer screenings were reviewed. Information from the review provided answers to the first research question and objective. At both clinics it is evident that VIA program services are offered as indicated in the records that were available as NCCPP protocol. They include screening, cryotherapy, referral and follow up records which were observed and reviewed showing adherence to the main service activities. There was variation between the clinics on availability of the District Health Management Team (DHMT) records. One clinic kept the records while the other didn't. The availability status is shown in the table below in table 2.

Table 2: Document Reviewed by the Researcher

No	Checklists / viewed documents	BTA clinic	Nkoyaphori clinic
1	Screening records	Available	Available
2	Cryotherapy records	Available	Available
3	Referral records	Available	Available
4	Follow up Records	Available	Available
5	DHMTs visiting Records	Available	Not Available

The records kept reflected that woman who attended for cervical cancer screening, those who had taken cryotherapy treatment for pre lesion for cervical cancer screening. For the cervical lesions that couldn't be treated through the 'see and treat' method patients were referred for advanced treatment to Princes Marina Hospital and Bontleng clinic for LEEP. Referral record and were also kept. After the patients were screened and treated, the health workers also kept an appointment register for the patients to review their status This is called a follow up record. Normally, DHMT visits the research clinics to monitor the success of the program. Therefore, the cervical cancer unit also had a DHMT visiting record. The findings discovered that all records such as screening, cryotherapy, referral, and follow-up records were only available in BTA and Nkyoaphiri clinics. The findings further showed that DHMT vesting records are available only at BTA clinics whereas the same record was not available at Nkoyaphiri clinic as shown in table 2.

4.1.1.3 Interviews

Interviews also contributed to the qualitative findings. The interviews were conducted with health workers of the cervical cancer unit of the research clinics. It was discovered that the health workers are inadequate at cervical cancer unit, the research clinics had only one health worker who offered

services on cervical cancer screening and who participated in the interviews. Unstructured and structured interviews were conducted with them. The results are as in table 3.

Table 3: Unstructured Interview Results

No	Interview focus	BTA clinic	Nkoyaphiri clinic
1	VIA program commencement	In 2018 September	In 2018 September
2.	Program uptake (initially)	Slow with few patients	Slow with few patients
3	Program utilization	Going well and patients seeking services	Slow with few patients
4	Screening days	Mondays and Wednesdays	Monday to Fridays
5	Types of screening services	VIA and pap smear test	VIA, pap smear and HPV DNA self-sample collection

BTA Clinic Findings

The unstructured interview findings revealed that the 'see and treat method (VIA) of cervical cancer screening was started at BTA clinic in 2018 September. The attendance was poor with only a few patients seeking the service Only a few women were reported to attend the clinic for cervical cancer screening. The findings showed that pap smear test was also offered at the clinic mostly for women who were aged above 50. Finally, the findings discovered that at BTA clinic cervical cancer screening services were offered in only two days in a week (Monday and Wednesday).

Nkoyaphiri Clinic Findings

At Nkoyaphiri clinic, the same experience that was shown for the BTA clinic occurred as commencement was also in 2018 September. a Similar to BTA clinic, screening was slow in the

beginning which has improved with time. At the time of the study, the program was reported to be doing well with many women reporting for the various program related to cervical. The findings also discovered that more activities were offered for the program at this clinic than at the other study site. The screening program activities in this clinic included VIA test, Pap smear test and HPV DNA self-sample collection. Therefore, of the two clinics Nkoyaphiri is the one giving the full package of the cervical cancer screening program activities as specified in the NCCPP guidelines. In addition, service provision at this clinic was better than at the other because services were offered for a longer duration with opening times from Monday to Friday every week.

Structured Interviews

Structured interviews were also conducted with health workers at the same research clinics. The researcher asked open ended questions that were focused on the research objectives. The main findings are highlighted under research objectives of the study

Health Workers Knowledge, Dedication, and Skills on Screening

Findings on this variable mainly addressed objective one of the research study. The interviews were conducted to explore the health workers' depth of knowledge about the functioning of the VIA program at the research clinics.

Table 4: Health worker's Knowledge, Skills & Dedication to VIA program

BTA Clinic findings	Nkoysphiri Clinic findings
▪ The health workers have special knowledge on cervical cancer screening and contained training for it. ▪ Through their knowledge and skills, they were able to screen and identify the level and degree of pre cursor lesion of the cervix. ▪ Health workers were delivered and provided a motivational talk to the women patients about cervical cancer screening ▪ Women living with HIV/AIDS and are aged between 20-49 had urged them to go for cervical cancer screening ▪ Screening was done according to the booking given to the women patients. ▪ If pre lesion is found immediate cryotherapy is given. ▪ High level/degree lesion would be referred for LEEP treatment at Bonteleng clinic or Princes Marina Hospital. ▪ Cryotherapy treatment has cured the pre lesion	• clinic. Positive women were screened. Health workers gave a motivational talk about all health issues, especially on cervical cancer screening and its related issues. • Three types of screening were given: VIA, pap smear and HPV DNA self-sample collection test. • Detect the level of lesion by color and determined relevant treatment for by referred the patients to Bonteleng clinic or Princes marina Hospital • Positive pre lesion is given immediate treatment of cryotherapy. Non positive women patients must come for review and given a date for the follow up. . • Women who are aged above 50 s would go for pap smear test. In this case, the swab would be sent to the National laboratory and results are accessed through internet. Pap smear test positive women were referred to Princes Marina Hospital for treatment. Pap smear test negative women were asked to come for review. • HPV DNA self-sample collection is also taking place at Nkoyaphiri

Findings regarding health worker's knowledge and skills on screening technique and identification of pre-cancerous lesions, determination of their appropriate treatment and the health worker's dedication to the program are summarized for each clinic below. Summary of Health workers dedication is shown in Table 4 Extracts of health worker responses are also provided for each clinic for insight on their views.

This is what a health worker said at the BTA clinic:

"Women are screened at aged between 20-49. If a women shows a positive pre cursor result immediate cryotherapy is given. If the lesion is not relevant for cryotherapy, we refer to Bontleng /Princes Marina Hospital. For LEEP treatment. We go through patients' health card and book for screening. We check after six months to see pre lesion has fallen off".

At the Nkoyaphiri clinic a health worker's response is capture below.

"We give a health talk to all patients about all illnesses and their solution. We also talk on VIA screening too. Here VIA, Pap smear and HPV DNA self-sample test etc. are done. We detect the level of lesion by color and determine the appropriate treatment. We refer patients".

Factors Hindering Women's Access to Cervical Cancer Screening

This area was focused on health worker views on factors influencing women to stop going for cervical cancer screening. The variables such as norms, culture, tradition, and gender roles were used to explore any influence on women regarding utilization of cervical screening services. The findings are shown in Table 5

Table 5: Hindering factors for women to access cervical cancer screening

BTA Clinic Findings	Nkoyaphiri clinic findings
• Women did not have any cultural norms, belief, tradition about cervical cancer screening, • Women knew about the cervical cancer screening program at BTA clinic but not serious about it. • Women showed fear of use of the speculum used for diagnosis procedures for cervical cancer screening and felt that it may cause wound at the cervix. • Elderly women seemed to have an impression that they wouldn't get this illness and that the illness is meant for young girls only since they were sexually active	• Gender roles do not play role on women to access cervical cancer screening. • Spouse/ women's partner encouraged the women to take health intervention such as cervical cancer screening. • Women were afraid of the speculum placed at their cervix while screening and felt it may hurt them • Elderly women considered that this cervical cancer is meant for young girls only.

Some health worker views about women/s access of the program to follow :

BTA health workers response is shown below.

"Women have knowledge about cervical cancer screening program run at the clinics. However. they just ignore and some may be afraid about the use of speculum placed in the vagina. Older women think about it as a disease for young girls only".

Nkoyaphiri Health worker's response is shown below on women to access screening:

"They believe that the speculum used is harmful to the mouth cervix. They think, it may hurt or cause wound and may create problem in their sexual relationships. Adult women over 50 think these screenings are for young girls. However, Women's partners /spouses encourage them to take the health care services. Sometimes they also accompany them to the clinic. It looks like no culture false beliefs influence women against screening"'.

Barriers and challenges faced by women and the health workers on screening.

The findings on data from this aspect of the interview address objective 3 of the study. The following findings were discovered for this section, and it is shown in Table 6.

Table 6: Barriers and challenges for cervical cancer screening.

BTA Clinic Findings	**Nkoyaphiri clinic findings**
• Women stayed nearby BTA clinic were reported on cervical cancer screening. Patients profiles reported that majority women patients lived within 10-50 km away from the clinic. • Women who are at rural area were not getting an opportunity to go for cervical cancer screening since VIA program was not available in rural area clinic which was expressed by the health worker. • Inadequate staff at the cervical cancer unit was one of the challenges. People were deployed due to COVID 19. • Screening was two days in a week the time was not sufficient staff to cover all patient on screening. In a day. Therefore, booked them for next appointment.	• There are three types of screening available: HPV DNA self-sample, collection, pap smear test and VIA screening • Health workers are reported that women patients from the surrounding areas were coming to the clinic. The demographic dated showed that women patients lived within 10-50 kms away from the clinic. • Health workers expressed that woman from rural areas were missing the screening opportunity since lack of access to VIA program in rural area clinic. Thus, they reached into an invasive stages of cervical cancer • The demographic data showed that 5% of women patients visited the clinic from the rural area as shown in Table 8 • Inadequate staff at cervical cancer unit. if the health worker is sick or on leave there no replacement. Hence women lose the opportunity for screening. •

Below health workers thought about changes faced by women.A health worker at BTA had this to say about staffing issues:

"Staff is not sufficient; therefore, we could not attend all patients. Some may return home due to delay or even we ask them to come in the following week. We are willing to visit other clinics and do screening if we have enough staff".

Nkoyaphiri health workers response is as follows:

"If on leave, people will miss opportunity for screening. People near by the clinic are only visiting the clinic. Rural area people are missing screening. Women from rural areas were not reporting to the clinic. They remained without screening".

Strategies on Improving Cervical Cancer Screening Program

Findings here address the final objective of the study. In this section, the researcher explored various strategies put in place to mitigate cervical cancer among women in Botswana.

Table 7: Strategies for improving VIA program

BTA Clinic findings	Nkoyaphiri clinic findings
• Increase staff at cervical cancer unit. • Build a waiting room for the patients • Improve clinical physical structure • Establish community awareness about cervical cancer screening. • Health dissemination is also required over mass media such as BTV and radio about VIA program • Introduce VIA program at rural area clinic	• Introduce VIA program as many clinics as possible, especially in rural area clinic. It was discovered from patients profiles that 5 % of women participants were from rural area. this was an indication that women from rural areas were not visiting the VIA clinic. • Community awareness on cervical cancer screening is not occurred and it is essential. • Improve screening staff at cervical cancer unit of the clinic. • Improve clinical physical structure and build a waiting room for the patients

This section also sought the level of utilization of VIA program by the women as well as further strategies for improving the current control and prevention program at local clinics.

The summary of the proposed strategies is found in table 7. Health workers views on improvement strategies are as follows :

Below captioned is a health worker's response from the BTA clinic:

"We give health talks and distribute posters or brochures. But there is not much community awareness done on this program. However, women talk about cervical cancer screening among themselves. Patient do not have a waiting room. Clinic has not enough space".

A health worker at Nkoyaphiri said:

"People use the available facility. Women are not reporting to the clinic from far.in remote areas We do not have a proper building. Patients do not have a waiting room. Resources are needed. Community awareness is poor. We only have posters and pamphlets

4.1.2 Quantitative Findings

The quantitative findings were obtained using questionnaires. A total of 80 questionnaires administered to the women at the cervical cancer unit of the research clinics (BTA and Nkoyaphiri clinic). Forty women from each clinic were participated in this study. The questionnaire had two sections; the first section was on women personal profiles, while the second section was on their views about the VIA program. Participants' responses consisted of 'Yes' or 'NO' options. The participants ticked the correct response. The results are as follows:

4.1.2.1 Participant Profiles

Findings in this section depict profiles of the women who attended the cancer program. The profiling demographic data included age, residential place, educational level, average distance and distance traveled to the clinic. The summary of the findings is shown in Table 8.

Table 8: Patients Demographic Data / Personal profiles

Personal Data	Variables	frequency	%
Age	20-29	27	33.7
	30-39	18	22.5
	40-49	31	38.7
	< 50	4	5
Total		80	100
Place of residence	Town	18	20
	Village	227	33. 8
	City	31	38.7
	Rural area	4	5
	Total	80	100
Education level	Primary	6	20
	Secondary	48	60.0
	University	25	31.3
	Home school	1	1.3
	Total	80	100
Distance to the clinic	10-20km	61	75.3
	25-50km	23	28.7
	60-100km	4	5
	< 100km	2	2.5
	Total	80	100

The specific details on findings under each demographic variable presented below.

Age

The findings indicated that 33.7 % of women belonged to the age group between 20 and 29. The findings also showed that 22.5 % of women were between ages 30 and 39. The results further showed that 38.7 % of women participants were 40-49 years of ages. The women participants above 50 constituted about 5% only. In short, the majority of the women participants were in the age group between 20 and 49 years of age (95%).

Residential Place

The findings related to women participants place of residence revealed that 33.8% of women were lived in the villages. The results also showed that 38. 7% of women as well as 22.5% of women participants were from city and town respectively. The findings further showed that 5% of women had come from the rural areas to the clinic. In general, the findings indicated that women who visited the clinics lived nearby the areas.

Educational Level

In connection to their educational level, the results showed that 60 % of women participants had secondary education while 31.3% of them had university level education. The results finally indicated that primary and home school educators were 20% of and 1.3 % respectively.

Distance to the clinic.

The findings regarding women participants distance to the clinic showed that 75.3%of women lived between 10-20 km away from the clinic. The findings revealed that 28.7 % of women participants were lived between 25-50 km away from the clinic. The data further showed that 5 % of women participants travelled between 60-100 km from their home the clinic and accessed the service. The results finally revealed that 2.5% of women who travelled above 100km to the clinic. In general, majority of the women stayed between 10-50 kms from the clinic

Participants Socio-economic Status

Women socio economic background was also assessed. The findings of the section are displayed on Table 9. The result on each variable is described below.

Participants 's Economic Status.

The results of the data discovered that 48.8% of women belonged to low-income families. The findings also revealed that 45% of women belonged to middle income families. The data finally showed that 2.5% and 3.5% of women belonged to upper middle as well as rich families as indicated in Table 9.

Table 9: Patients Socio economic Status.

Socio Demographic data	variables	f	% Age
Economy	low	39	48.8
	Middle	36	45
	Upper Middle	2	2.5
	Rich	3	3.5
Total		80	100
STDs	Gonorrhea	4	5
	Chlamydia	2	2.5
	HIV/ADIS	74	92.5
	Total	80	100
Knowledge about VIA test	knew but ignored	41	51.3
	Do not know	19	23.8
	Misconception	13	16.3
	Lack of motion to do the test	2	2.5
	Total	80	100

Participants Reported STDs Status

The health workers revealed that many women in the program had STDs and HIV/AIDS. 'See and treat' program is mainly focused on HIV/AIDS women. The findings on HIV/AIDS and STD status are shown in table 9. The findings revealed that 92.5% of women who attended the clinic for cervical cancer screening were infected with HIV/AIDS. Further, they showed that 5% of the women had gonorrhea and 2.5% chlamydia as shown in Table 9.

Participants' Knowledge about VIA program

The findings in this area discovered that 51.3% women had knowledge about the VIA program that was available in the Botswana clinics. On the other hand, data showed that 23.8% of women didn't know about VIA program running at the clinics. The data showed that 16.3 % or women had misconception about cervical cancer screening. Finally, the resulted showed that 2.5% of women had lack of motivation for cervical cancer screening.

VIA Program Activities

This second section of the quantitative tool (questionnaire) had various variables mainly inquiring about the patients' views on the pre lesion cervical cancer screening and treatment program (VIA) at the two local clinics. A summary of the findings is shown in the Table 10 below.

Health Workers Dedication and Patient Motivation to VIA Program

The findings in this section indicated that 80% of women supported the view that health workers had dedication on VIA program. Findings again showed that a few women patients 20 % of them were opposed to the idea of health workers' dedication to this program. The findings on health workers motivation to patients about cervical cancer screening showed that 87.5% of the women participants were agreed that health workers do provide motivation and awareness to patients on VIA program. Scarcely any women (1.2 %) of women participants were disagreed on the same. Finally, the results discovered that 98.8 % of women participants were agreed that health workers urged the women and girls to go for cervical cancer screening at their early ages and demonstrated positive attitudes when they offered screening services.

Hindrance of Women to Access of VIA program

There was a sizeable number of women who were unaware of the VIA program since findings showed that 61.3 % of the women were aware of the VIA program and 38.7 % of women participants were not aware of the program. The findings on misconception about cervical cancer screening revealed that 81.3% women had no misconceptions about screening while 18.7 % had misconception about it. Women's knowledge of screening services could prevent cervical cancer. Women's knowledge that screening services could prevent cervical cancer revealed that 68.7% of women did not know that screening could prevent cervical cancer versus 31.35% of women were aware that screening could prevent cervical cancer.

Table 10: Women's responses to the Questionnaires

No	Objectives vs variables	Responses		Responses	
I	Health workers Dedication	Yes ((f)	%	NO (f)	%
1	Health workers are dedicated	64	80	16	
2	Health workers motivated women and girls to go for screening	79	798.2	1	1.2
3	Health workers give awareness about screening to the patients	/70	87.5	10	12.5
II	Hindering Factors for screening				
1	I am aware of cervical cancer prevention & treatment	49	61.3	31	38.7
2	Cervical cancer is due to evil spirit	15	18.7	65	81.3
3	I do know screening can Prevent Cervical cancer	25	31.25	/55	68.7
III	Barriers and challenges				
1	Screening is available nearby my clinic	36	45	44	55
2	I am comfortable with female screeners.	62	77.5	1 8	22.5
3	Women's responsibility in the family stopped me for SR	29	36.3	61	67.7
IV	Strategies to improve VIA program				
1	Introduce VIA program in many clinics especially in rural areas	73	91.3	7	8.7
2	Clinic needed more Health workers At cervical cancer unit	7 6	95	4	5
3	Community awareness is needed for cervical cancer screening	76	95	4	5

Key: I, II,III,IV= Research Objectives; 1-3= Variables on each objectives

Barriers and Challenges for Cervical Cancer Screening

In this section, the findings of the study discovered that 55% of women didn't support the idea that the VIA program is easily accessible to rural women and 45% agreed that the program is available to all at their nearby clinics. The study results further showed that 77.5% of women preferred to have a female screener and 22.5% had no problem or no specific choice of the screener, either male or female. Finally, on whether gender role/ family responsibility would be a barrier on screening, it showed that 76.3 % of women did not see as a barrier for screening whereas 36.3% of women were agreed that gender role and responsibility would influence screening.

Strategies on Improving Cervical Cancer Screening Program.

Findings here helped address the fourth objective of the study regarding the need for suggestions on strategies to mitigate cervical cancer among the women of Botswana. A majority at 95 % of women supported the idea of implementing VIA program in as many clinics as possible in Botswana clinics. Similarly, the findings discovered that 95% of women participants were agreed on appointing more staff at the cervical cancer unit of the research clinics and across the country. The finding also indicated that 95% of women supported on improving health dissemination programs related to cervical cancer screening at community level is needed and 55 of women were not supported the same as shown in Table 10.

4.2 Discussion

The discussion is mainly based on triangulation of the findings obtained from the various methods used for this research. Consistency of findings across the various data tools and sources indicated the strength of the findings. The discussion further seeks to appraise the research against the study objectives and the findings affirmatively answer the objectives or whether they reveal an opposite state. The discussion also reflects on the study findings against existing

knowledge based on available literature. The discussion follows the next highlighted sub-headings.

4.2.1 Health Workers Dedication to VIA program-

The findings obtained from qualitative and quantitative data of the study showed that health workers adhered and followed the NCCPP guideline for cervical cancer screening. They motivated the patients to go for the cervical cancer screening program. Prior documents also expressed that in Botswana, clinical health workers were dedicated on cervical cancer screening. The Botswana National Cervical Cancer Prevention Program (NCCPP) reveals that the Coordinator Ms. Ramipi together with a team of the program's health workers was trying to break the chain of Human Papilloma Virus (HPV). She was further quoted explaining that health workers were autonomous and able to take decisions on screening (Hopkins, 2018). The current study findings discovered that health workers of the research clinics were punctual and showed adequate dedication regarding cervical cancer screening. H

The staff dedication can be seen in national efforts through contribution of organizations such as *Jhpiego* that helps the health workers, and assists in planning and implementing low-cost health service program like 'see and treat' approach. The health worker's dedication aspect was strongly by responses from the health workers and patients. The VIA program records also supported these findings since little gaps in record keeping were identified. However, progress tracking on leadership and management efforts can be improved by keeping the DHMT monitoring records in all health facilities offering the program, which was not the case in this study.

The analysis of the data discovered that health workers at cervical cancer unit had all records related to cervical cancer screening and they were followed the NCCPP program guidelines. Based on the screening records health workers were shown further attention to the patients on screening

and its related issues. Branchi et al., (2019) conducted a study on health workers dedication to 'see and treat' approach screening. His study results revealed that women participants who had a negative screen result were given appointments to return within one-year Women participants who had been treated during the screening, should be visited the clinics and were, given an appointment to return after six months. Finally, in a few cases, women who had been treated required a follow-up appointment after one year. The current study results were also consisted with Branchi et al., (2019) study result by keeping clinical records for respective health services such as screening, cryotherapy, referral and follow up records as shown in Table 2. In general, health workers of the clinics were dedicated on cervical cancer screening. The study results concluded that health workers at research clinics had dedicated to cervical cancer screening.

4.2.2 Factors on Women's Participation in the VIA Program

Regarding the level of awareness and knowledge of the VIA program, results extracted from qualitative and quantitative data discovered that women participants had knowledge about 'see and treat' approach (VIA) program. However, findings show that women who attended the program were only HIV positive which may be a critical gap to follow up in service provision, It also came out that although women had a good attitude towards the program they also didn't regard it as a critical service. This can be serious gap since scholars are reported to consider awareness and knowledge on cervical cancer as important in cancer prevention and control (Dacosta, 2000). A study conducted by (Major et al., 2018) described that knowledge about the disease would make it easy for women participants to go for screening. Their study further indicated that patients lacked knowledge about cervical cancer screening. In contrast, this study results had shown that women have knowledge about free and cost-effective cervical cancer screening prevalent in Botswana clinics, but they were ignored.

The analysis of the data discovered that women knowledge on cervical screening was good and immense. The health workers were embarking knowledge to the women by motivational talk to them on every day. On the contrary, other African countries such Ethiopia, Ghana and even in Caribbean Island women never heard about cervical cancer information from their clinical health workers. However, the y herd about through mass media like radio and showed that it had a less impact and showed less interest in cervical cancer screening (Wakwoya, et al., 2020). The study findings revealed that though women had acquired cervical cancer screening but participation for the screening was not reflected accordingly. Women from rural area was not reported for screening due to unavailability of VIA program in those area clinics. The current study results were consisted with Aswathy et al., (2012) and Shekhar et al., (2013) studies in India showed that rural women had low women had low level of knowledge about screening and hardly a few had gone for cervical cancer screening. The results of the study concluded that health workers were knowledge and screening about cervical cancer issues in women's community.

4.2.3 Myths and Misconception

In general, the results analyzed from the data had shown that women participants did not have any traditional or cultural belief on screening. However, concerning myths and misconception about cancer screening, a study conducted by Dacosta (2000) explained that cultural belief, customs, and cultural practices had been prevented from women to go for cervical cancer screening. The same study results also described that in the Caribbean Islands, traditional therapist or a bush doctor used herbs to cure much illness. Although similar practices may occur in Botswana, culture and gender factors were not reported to play a major role in the utilization of the VIA program services.

Prior studies done in Botswana showed that society norms, culture, tradition an belief etc influenced on women to go for cervical cancer screening (Major et al., 2018). In contrast, the

current study results discovered that such societal norms and cultural aspects have been vanished , might be cervical cancer awareness through posters, brochures and through a health talk received from the clinics. However, the results of the data confirmed that women had misconception about the use of the speculum placed at their cervical region. studies conducted in other African countries also showed that women were afraid of the speculum placed at their cervical region while on diagnosis. They believed that the speculum may hurt and cause further consequences in their relationship. This might be a societal norm and belief. In general women were fear and panic generated by cancer diagnosis. In Ghana, women were feared about the procedure to be done for screening as well as the use of the speculum insertion. They believed that the speculum may create a space or gap between the uterus and the vagina (Williams 2014). The findings of this study were also same as with William's (2014) study results where women were afraid that speculum use.

In conclusion on this aspect, the current study results were contradicting with Major et al., (2018), Dacosta (2000) and (Wakwoya et al., (2020) study results. The current study results had shown that women did not have any misconception, myths and cultural perspectives that influenced on women to go for cervical cancer screening. However, the women had a fear on the use of the speculum which may negatively affect their health seeking behaviors towards the cervical cancer screening program.

4.2.4 Screening for cervical Cancer

The findings derived from qualitative and quantitative data revealed that women had knowledge about screening (VIA) that was observed at the research clinics. However, the women patients did not know about the use of screening. The findings showed that women patients do not know screening was the first step on cervical cancer detection and followed by its treatment. Cervical cancer was one of the second prevalent cancer as well as a leading cause of cancer deaths in Africa

in 2018 (IARC, 2019). According to Oncol (2016), effective primary and secondary prevention program as well as proper treatment could reduce cervical cancer morbidity and mortality rate in developed countries. Screening facilities for cervical cancer screening are now available in low- and middle-income countries while Sub-Saharan Africa has started cervical cancer prevention program aiming to reduce cervical cancer related morality (Oncol, 2016). Statistics showed that in Botswana, morbidity, and mortality rate due to cervical cancer illness is increasing (Yakutchik,2020). The World Health Organization (WHO, (2008) advocates a comprehensive approach for cervical cancer prevention and control. Therefore, NCCPPP program implemented a comprehensive cervical cancer preventor control program implemented in Botswana clinic, VIA program was one of them. According to World Health organization (WHO) (2010) Cervical cancer screening was considered as a diagnostic tool for detecting precancerous and cancerous cells. According to Center for Disease Control and Prevention Centre (CDC, 1997) stated that cervical cancer screening could be prevented morbidity and mortality rate in women. Studies reported that in developed countries cervical cancer incidents have been reduced due to cervical cancer screening program (Ferlay et al., 2012). On the contrary, in developing continents such as Africa and Asia**,** cases of the same disease are not reduced due to the lack of acknowledge and screening facilities for the same disease (IARC, 2019). However, the findings of this study results also agreed with prior research study results that were explained by Ferlay et al., (2012) study results. The current study findings also revealed that women who had taken pre-lesion treatment of cryotherapy had realized a positive effect, the abnormal cells had fallen off. This was expressed by the health worker. "*In follow up , we normally checked the cervical cells, it has been seen the lesion is fell off. Cryotherapy is effective".*

Research studies as well as the scholars discovered that cervical cancer can be prevented if it was detected early and given a treatment (Daniel et al., 2019). The current study findings discovered that women were aware of the screening program occurred in the research clinics. However, a few women members knew about the importance of screening and what screening did to them. As indicated later, screening could detect pre cervical cancerous lesions and can be directed its treatment accordingly. The findings on this section concluded that 'see a d treat' approach cured and diminished the effects of cervical cancer related illness. Yet, the women must gain knowledge about its importance and the benefit of screening.

4.2.5 Barriers and Challenges for Screening

In this section, the study explored if there were any barriers and challenges faced by women and health workers on cervical cancer screening. A study conducted by Young, and Severson (2005) showed that Hispanics had feelings of nervousness and embarrassment with male physician. This study results had also showed the same results that the women preferred a woman nurse for cervical cancer screening. Other studies conducted in other nations like Vietnam, Ghana and Caribbean Island showed that men inhibit their participation while screening and such didn't even show any interest in promoting women's health. The same study results further indicated that men generally neither took much care in women's health issues nor encouraged them on preventive measures (Ongtengco et al. 2020). In contrast, this study results showed spouse or partner encouraged the women to take health intervention for cervical cancer screening. Even women's spouses or partners were reported to accompany them and support them to follow health workers instruction after screening and cryotherapy treatment. The study results found challenges related to unavailability of VIA program nearby women's vicinity clinics as well as health workers face a problem of insufficient staff at the cervical cancer unit. However, the findings showed that

irrespective of the short fall mentioned above due to the cooperation and understanding of the women and the health worker, the VIA program is running well at the research clinics. Women were ready to accept the booking and the health workers have patience to rebook and screen extra volume of women. From these findings it can concluded that women did not have any serious challenges besides the few discussed on cervical cancer screening.

From these findings it can concluded that women did not have any serious challenges besides the few discussed on cervical cancer screening.

4.2.6 Proposed Strategies to Improve the VIA Program

The following findings were obtained from qualitative and quantitative data for the effective use of the VIA program. The findings are headed under the sub-headings as shown below:

4.2.6.1 Clinical Resources and Accessibility of VIA program

This section analyzed the main constraints faced at the clinics for cervical screening as well as the hindering factors for the development of this program. The data showed that the research clinics did not have enough staffs to support cervical cancer screening. The study findings revealed that the research clinics faced an acute shortage of staff. It has been expressed in health workers words *"if I am on leave or sick no replacement for screening. The women left home for without screening".* The findings discovered that clinical physical structure was not conducive , and patients do not have a waiting room. The findings also revealed that due to the large volume of the patients and inadequate staff sometimes patients were returned home, and they have missed the opportunity for screening. The WHO (2008) indicated that 57 countries globally face a critical shortage of health professionals to treat cervical cancer related illness. This study results, also supported with WHO's report.

The study results reveled the women faced a constraint of accessing cervical cancer screening program due to the unavailability of the program in nearby clinics particularly in rural areas of women. The patients profiles as well as health workers response showed that rural area women did not reported for cervical cancer screening. 126 This could be due to the unavailability of the program at the clinics, distance, and lack of transport of the women patients to access VIA available clinics. A study conducted in Ghana by Binka et al., (2019) showed that access to screening facilities was one of the major constraints for cervical screening. This study results were consistent with Binka et al., (2019) study results. Though NCCPP program of screening strategy was scaled up throughout the country, a few clinics in Gaborone have VIA program. Hence, women had difficulties to receive cervical cancer screening. The findings conclude that since accessibility of the screening facilities were limited as well as inadequate staff at cervical cancer unit of the research clinics, the services can be improved by increasing staff and health facilities offering the services.

4.2.6.2 Community Awareness for Cervical Cancer Screening

Regarding awareness, the findings showed that cervical cancer screening awareness and promotion were predominately taking place internally, in the clinics with women. The health workers were delivering lessons to women patients who have visited for cervical cancer screening. The dissemination and awareness strategy may leave out those who do not visit the clinic. In connection to embarking on knowledge, skills and awareness of cervical cancer screening an article showed that health workers prompted women to go for cervical cancer screening and warned the women to take screening and treatment at early stage (Yakutchik, 2020). Such calls maybe associated with the limited VIA program awareness interventions.

In Major's (2018) study, the women indicated that they lacked knowledge of cervical cancer. They further stated that cervical cancer issues had not been publicized like HIV and AIDS. In his study, the women patients reported that while HIV/AIDS had pamphlets everywhere, very little was out there on the VIA program. They recommended that cervical cancer screening should also be given the same publicity to help people especially in the remote areas to know about the diseases. The current study results partially agreed with Major that patients mainly got information from health workers talk. But, there are no mass media and community publicity on cervical cancer screening. However, brochures, posters and charts related to HPV DNA self-sampling procedures as well as VIA test were displayed at the clinics for patients but not in other external places. The findings concluded that though health promotion for cervical cancer screening was not as strong as HIV/AIDS and cervical cancer screening awareness was fully communicated internally in clinics by health professionals but requires to be effectively socially broadcast.

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CHAPTER 5

SUMMARY OF FINDINGS, RECOMMENDATION AND CONCLUSION

5.1 Study Summary

This chapter presents the summary of the study findings, recommendations made based on findings and conclusion.

5.1.1 Summary of Findings

This study approach was both qualitative and quantitative methods. The study was important because to improve cervical cancer screening program in Botswana clinics. The key participant in this study were health workers and women patients at the cervical cancer unit of the research sites. The main findings from each method are summarized as shown below.

Qualitative findings

Qualitative measurements such as observation, document review and interviews were used in this in this study. The observation findings indicated that clinical services to cervical cancer unit was systematic and well organized. The patients were reported to the clinics according to their appointment date and time. Even the patients were also followed clinical rules and regulations; hence they waited close to the cervical cancer unit area and to hear a call from the health worker to go for a cervical cancer screening. Researcher's observation further revealed that the health workers always prepared and made a prior arrangement for screening. The observation finally discovered that health workers were attended the patients quickly and are tried to involve maximum women for screening, if one or other reasons screening did not take place, immediately

booked them for next appointment. In general, the observation showed that health service delivery for cervical cancer screening in the research clinics was good.

The researcher also reviewed a few documents with permission of cervical cancer units health professionals. The documents were related to cervical cancer screening program as per NCCPP guideline. The main records such as screening, cryotherapy, follow up and referral documents were available. These records were kept safely at the clinics for future references as well as also helpful to investigate to explore the program details and its success. Through, this action it could be impressed that the health workers were dedicated and were followed NCCPP guideline.

The final qualitative data was interviews; unstructured and structured interviews were conducted with the health workers. The unstructured interviews involved on a few information sought on a new cervical cancer prevention strategy of VIA program. The findings discovered that the VIA program has started in 2018September in both research clinics. The unstructured interview findings showed that in the beginning program was slow, not many women reported for screening. However, the findings revealed that currently the VIA program is running smoothly in both research clinics. Finally, the data showed that BTA clinics had VIA and pap smear screening and the screening took place on Monday and Wednesday. The Keypair clinics' had HPV DNA self-sample collection test, VIA and pap smear types of screening and took place Monday- Friday.

In depth interviews or structured interviews were also applied as a qualitative tool. The findings showed that health workers were provided a health talk to all patients every day. The important health issues like cervical cancer screening are also emphasized in their talk. The findings further indicated that women live with HIV/AIDS and who are aged between 20-49 are compulsory to go for cervical cancer screening. This process was done by the health worker, going through patients health cards and gave booking date for cervical cancer screening. The women who were aged

above 50 were recommended to go for pap smear test since VIA test has a poor result with their cervical cells. Women with positive pre cancer lesion were given an immediate cryotherapy treatment. The treated women were reported to the clinic after six months for review; the findings showed that cryotherapy treated patients were cured, the pre lesion has fallen off. The findings further showed that women with advanced lesion was not treated in the clinics, they were referred to Bonteleng clinics or Princes Marina Hospital for LEEP treatment. These findings showed that health workers were dedicated to VIA program, had had knowledge and skills on cervical cancer screening.

The interview data showed that women did not have any misconception about screening. Gender roles did not hinder the women to go for cervical cancer screening. Other African countries, men did not show interest in women's health intervention. Yet this study results revealed that Botswana men showed interest in women's health care service like cervical cancer screening. The spouses accompany them to the clinic and take precautions, advise from the health workers after the women being screened for cervical cancer. Though women patients had no serous false belief about screening, but the findings revealed that they were afraid of the speculum placed at the cervical area. The findings indicated that health workers were faced challenges in screening. The main challenges were inadequate staff at the cervical cancer unit. Therefore, health workers were not able to cover or screen all women who had come for screening. Those women were given an appointment for next slot of screening. The findings also explained about clinical physical structure s was poor. There was no `patients waiting room for patients. It was also indicated that rural area women are missing an opportunity for cervical cancer screening. The qualitative data finally indicated that there was no mass media and community level of level of health dissemination for cervical cancer screening.

Quantitative findings

Questionnaires were used as a quantitative measurement. This was given to women patients of the cervical cancer unit. It was a bivariable questionnaires, focused on research objectives, responses were ticked, and the information has been collected anormously. The following inferences have made from the questionnaires:

The findings from the demographic profile of the patients discovered that majority of the women were belonged to 20-49 years of age. Their educational status was secondary school level and are lived in nearby village, within 10-50 km away from the research clinic. Women's socio-economic status showed that majorly of were belonged to low-middle income families. The findings finally showed that women knew about the VIA program in Botswana clinics.

The survey was extended to explore women's views on VIA program. The findings showed that health workers were dedicated, encouraged, and motivated the women to go for cervical cancer screening. The study results on hindering factors women to go for cervical cancer screening showed that sociocultural, tradition and gender roles were not influenced on women to take cervical cancer screening. Though women had knowledge and awareness about cancer screening program, but they did not its importance and its benefit on screening. The challenges of women faced on screening revealed that unavailability of VIA program nearby their clinics and they preferred to have a women screener.

Finally, sought women's opinion about on improving VIA program in Botswana clinic. The findings described that the women supported to introduce VIA program in many clinics as possible. The data also revealed that women supported the idea of girls and women go for cervical cancer screening at early stage that diminish the effect of cervical cancer related illness. The

women also supported the need for more staff at the cervical cancer unit. The women finally supported health promotion for cervical cancer screening at community level in the form of workshop, conferences that help for improving maximum utilization of VIA program in Botswana women.

Comparison of the Findings from the Data

The findings from both data were almost same. However, the quantitative data showed that though women knew about cervical cancer screening, but they did not know that screening could do to a woman. Screening could detect pre lesions of the cervix and be able to direct its treatment. Lack of knowledge and the benefit of cervical cancer screening might affect the women to ignore cervical cancer screening. The quantitative data also had given more emphasize on health promotion about cervical cancer screening at community level. The qualitative data findings were strongly revealed about women's fear on cervical cancer diagnosis procedures where the use of a speculum placed at their cervical region. The findings obtained through qualitative and quantitative methods are portrayed in Table 11 and 12 respectively. The reason why the researcher used mixed approach was to measure and strengthening the findings of the study. The findings obtained through different instruments had showed the same results except the comparison had shown above. Hence, strengthen the validity the instruments applied as well as triangulated the study results.

Summary of Qualitative Findings

The summary findings of the qualitative data are shown in Table 11.

Table 11: Summary findings on qualitative data

Qualitative Instruments/Tools	**Variables**	**Findings**
Observation	Health service delivery	Adequate and good
Documents reviewed	Various records of VIA program	Records on screening are available
Unstructured Interviews	Preliminary Information about VIA program	VIA program implemented in the local clinics in 2018.
Structured Interviews	1.Health workers dedication to VIA program. 2. hindering factors of women on screening 3. barriers and challenges on screening 4. strategies for improving VIA program	1.Showed dedication and motivated and encouraged the women to take screening 2. use of speculum placed on the cervix 3.. lack of access VIA program at the clinic and inadequate e staff at cervical cancer unit. 4. a. improve human resources and physical structure of the clinics introduce VIA program in many clinics. b. health promotion about cervical cancer screening at community level is needed.

Summary of the Quantitative Findings

The summary findings of the quantitative data are shown in Table 12 below.

Table 12: summary findings on Quantitative Data

Quantitative data	Variables	Findings
Demographic Data	Age, residence, education, and distance to the clinic	Aged between 20-49. women are Located at the village, Secondary education, stayed 20-50 kms away from the clinic.
Socioeconomic status	Economy status, STDs, and knowledge on VIA program	Low- middle income family infected with. HIV/AIDS Knowledge on VIA program
Statements Questionnaires	1. Health workers dedication 2.Hindering factors for women to receive screening 3.Barriers and challenges. 4. strategies for improving VIA program	1.Health workers are dedicated, motivated, and encaged the women to receive VIA program 2. Use of the speculum at the cervix 3. Lack of access to VIA program and inadequate staff. 4.a. Introduce VIA program in as many clinics.as possible. b. Improve human resources as well as physical structure of the clinic c. Health promotion for cervical cancer screening at community level is needed.

5.1.2 conclusion

This study investigated to evaluate cervical cancer prevention control strategy (VIA) put in place to diminish the effects of cervical cancer related illness in women. the findings showed that within the limited clinical facilities women had utilized this program at their maximum level. Lack of health dissemination as well as VIA program unavailability in rural area clinics had missed the opportunity for women to go for receive cervical cancer screening. Inadequate staff at the cervical cancer unit of the research clinics were found to be one of the constraints for VIA program. The

study did not extend to rural area clinics and gathered the information about VIA program was one if the limitation of this study. Furthermore, the study was focused on only one DHMT unit clinics due to the time factor. However, the overall results of the study concluded that the current control prevention strategies (VIA) for pre cervical cancer lesions screening and cryotherapy treatment was effective.

5.1.3 Recommendations

The study proposed the following recommendations based on the findings.

1. Practices.

- The key findings discovered that clinical resources are not strong. The first resources are the clinical staff that are not sufficient at the cervical cancer unit. Hence, the ministry must provide training to the staff for cervical cancer screening and appoint an additional staff at cervical cancer unit of Botswana clinic.
- The DHMT must visit and review cervical cancer unit of the research clinics (if possible other clinics too). Then their recommendation further extended to MOHW to improve physical structure of the cervical cancer unit including waiting room for patients.
- Though NCCPP was scaled up program throughout the country still VIA program was not available in many clinics especially in rural area clinics. Therefore, MOHW should be implemented VIA program in many clinics as possible including the rural area clinics.

2 Health promotion and health Education

- Health promotion regarding cervical cancer was limited in the clinics only. The need for promoting health dissemination on cervical cancer among to women widely, especially at community level. Strong and frequent health communication related to cervical cancer

screening and it could be attracted more women to involve in cervical cancer screening which improv efficiency of the VIA program.

- The need for educating the women about diagnosis procedures for cervical cancer screening. This could remove the misconception about the use of speculum placed at their cervical region.
- The need for educating the women about the importance an, benefit of screening and make them aware and explain to them what screening could do to a woman
- It is wise to educate about cervical cancer cause effect to girls at their young ages. Therefore, review the policy and try to implement cervical cancer topic in Junior secondary school integrated science curriculum. This may provide more vision about the tallness and it diagnosis procedures. The information even can reach into the family members as well as to elderly women and could be able to avoid misconception about the use of the speculum.

3. Future Research

- The need for conducting a future research in rural area for women's involvement in cervical cancer screening program and its effective utilization under Botswana context.