# BARRIERS TO CRYOTHERAPY SERVICES FOR PRECANCEROUS CERVICAL LESIONS AMONG WOMEN OF REPRODUCTIVE AGE IN MIGOSI SUB-COUNTY HOSPITAL IN KISUMU COUNTY, KENYA

**BY**

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## DECLARATION AND APPROVAL

I hereby declare that this thesis is my original work and has not been presented for examination or conferment of a Degree in any other Institution.

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## DEDICATION

This work is a special dedication to my beloved parents Josiah Mandieka and Caren Mandieka.

## DEFINITION OF TERMS

**Cancer staging –** refers to the extent of cancer, how large is the lesion/tumor and how far it has spread.

**Cancerous cells –** abnormal malignant cells; they spread/ invade tissues in the body.

**Cervix –** cylinder-shaped neck of tissue that connects the vagina and uterus located at the lowermost portion of the uterus; the cervix is composed primarily of fibromuscular tissue. It has two parts; ectocervix, which can be seen from inside the vagina during the gynecologic examination, and the endocervix, the tunnel through the cervix from the external opens to allow passage from the uterus.

**Cryoprobe –** a long slender pointed surgical instrument, used to apply extreme cold to tissues in the body like the skin and cervix.

**Cryotherapy –** the use of extreme cold-produced liquid nitrogen to destroy abnormal tissue. It is used to treat external tumors, where liquid nitrogen is applied directly to the precancerous cancer cells with a cotton swab or cryoprobe.

**Early detection -** entails early diagnosis and screening, whereby early diagnosis focuses on the detection of symptomatic patients as early as possible through the recognition of possible warning signs of cervical cancer to take prompt action.

**Early diagnosis –** whereby patients present at advanced disease stages. It focuses on the detection of symptomatic patients as early as possible through the recognition of possible warning signs of cancer to take prompt action.

**Negative treatment outcome -** means cryotherapy was not effective because healing of the cervix was not grossly apparent in three or four weeks, cytology/pap smear, and colposcopic appearance did not reflect healing. The LSIL progressed to HSIL and became invasive cancer.

**Positive treatment outcome –** means cryotherapy was effective because healing of the cervix was grossly apparent in about four weeks, cytology/pap smear and colposcopic appearance continued to reflect healing or regenerative effects for approximately three months. The LSIL did not progress to HSIL to become invasive cancer.

**Precancerous cells –** abnormal cells that could turn into cancerous cells but which by themselves are not invasive.

**Screening -** involves applying simple tests or procedures across a healthy population to identify unrecognized cancer diseases in individuals before they develop any symptoms of cancer.

**Treatment outcome -** evaluation undertaken to assess the results or consequences of management and procedures used in combating disease to determine the efficacy, effectiveness, safety, practicability of these interventions in individual cases or series.

## ABSTRACT

Cervical cancer is fourth most fatal and common disease globally among women of reproductive age with an estimate of over 570,000 new cases and more than 311,000 fatality cases. In Kenya, cervical cancer ranks the second most frequent type of cancer after breast cancer. Current estimates indicate that every year 5,236 women are diagnosed with cervical cancer and 3211 die from the disease. The prevalence stands at 13% in the general population. Due to high burden, cryotherapy services, which are effective for treatment of precancerous lesions are available in selected health facilities in Kenya, however, barriers to the treatment services are poorly understood. Nonetheless, an understanding of these barriers is critical for enhanced service delivery. The objective of this study was to determine the barriers to cryotherapy among women of reproductive age in Migosi Sub-County Hospital. A cross-sectional study design was carried out to determine the barriers to the cryotherapy services among 60 women on a one-year therapy at Migosi Sub County Hospital in Western Kenya. The participants were selected purposively and interviewed via telephone calls using pre-coded semi-structured questionnaires. However, data of 5 nurses working at the cryotherapy section were collected through face-to-face interviews at the health facility. Data was entered in an excel sheet then exported to SPSS version 23.0 for analysis. Both descriptive and inferential statistics (Chi-square) were used and data presented in form of tables. Overall, 52 (85.4%) respondents adhered to post care treatment instructions and reported no adverse reactions. However, 28 (46.7%) experienced unavailability of cryotherapy services at the time of the appointment and got the services later, 24 (40%) got the services at the time of the appointment but waited for a long time before being served, 37 (61.7%) did not know why they were being treated and 46 (76.7%) had misconceptions and myths about the therapy. In addition, there was a statistically significant association between knowing both the benefits of screening and cryotherapy [$X^2(1, N = 60) = 5.90, p = .02$]. Also, the knowledge on the benefits of cryotherapy did not influence one's decision to wait for cryotherapy treatment services, [$X^2(1, N = 60) = 3.98, p = .46$]. The study showed a very good adherence to post treatment instruction but inadequate availability of cryotherapy treatment services and increased misconceptions and myths about cryotherapy. Therefore, the study recommends improved awareness campaigns and service delivery for the enhanced uptake of cryotherapy treatment services.

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## LIST OF ABBREVIATIONS

**AIDS -** Acquired Immune Deficiency Syndrome

**ANC -** Antenatal Clinic

**CBD -** Central Business District

**CD -** Communicable Diseases

**CO2 -** Carbon Oxide

**ERC -** Ethical Review Committee

**HIV -** Human Immunodeficiency Virus

**HPV -** Human Papilloma Virus

**JOOUST -** Jaramogi Oginga Odinga University of Science and Technology

**KII -** Key Informant Interview

**LMICs -** Low- and Middle-Income Countries

**LSIL -** Low squamous grade intraepithelial lesion

**MCH -** Maternal and Child Health

**MSCH -** Migosi Sub- County Hospital

**MOH -** Ministry of Health

**NACOSTI -** National Commission for Science Technology and Innovation

**NCD -** Non-communicable Diseases

**NHIF -** National Hospital Insurance Fund

**SCJ -** Squamo-columnar Junction

**TCA -** To come again

**UHC -** Universal Health Coverage

**VIA -** Visual Inspection with Acetic acid

**VILI -** Visual Inspection with Lugol's iodine

**WHO -** World Health Organization

# CHAPTER ONE: INTRODUCTION

## 1.1 Background of the Study

Cervical cancer is a non-communicable disease, that occurs as a result of long-term infection with human papillomavirus (HPV) types 16 and 18. Its risk factors include; early initiation to sexual intercourse, certain sexual behaviors like having multiple sexual partners, coinfection with sexually transmitted infections (STIs), immunosuppression due to HIV/AIDS infection, and tobacco use (Small Jr *et al.* (2017). Cervical cancer is ranked second among other types of Cancer in women from in lowly developed regions with more than half a million new cases in 2018 and this translates to 84% of new cases worldwide. In 2018 alone, it is documented that almost 500,000 women died from cervical cancer with over 85% of these deaths occurred in developing countries. This was approximately 1.05% of both reported new cases and fatalities reported in Kenya. The global health community has for the last 10 years been emphasizing on the importance of addressing cervical cancer screening and prevention where the disease burden is profound (Koech *et al.*, 2020).

Cancer ranks second leading cause of NCDs mortality, and its incidence increased from 28,000 to 41,000 between 2010 and 2015. Subramanian *et al.* (2018) found that cervical cancer ranked fourth among women worldwide and in East Africa. Globally, it has an estimated incidence of 569,847 and 311,365 deaths annually, majority from developing countries where the programs to both detect and treat precancerous lesions are neither not affordable nor available, thus accounting for 13.1% of all new female cancers globally Bray *et al.* (2018).

Sub-Saharan Africa leads with the highest incidence of cervical cancer globally, with an incidence rate of 50.9 cases per 100,000 women, and it's the most common cause of mortality among women in Tanzania (Nelson *et al.*, 2016).

In Eastern Africa, it remains the most common with estimated incidence and mortality rates of 40.1 and 30 per 100,000, respectively. Although cervical cancer has been detected early and treated with cryotherapy successfully in the United States of America and other developed countries, the health care system in East Africa continues to face serious challenges in providing regular

screening and cryotherapy treatment of cervical cancer (Gyenwali *et al.*, 2013; Huchko *et al.*, 2019).

According to the Global cancer statistics 2018, cervical cancer in Kenya contributed 12.9% of the new cancer deaths annually. It led in causes of cancer-related deaths in Kenya and ranked second among females Bray *et al.* (2018). Data from hospital registries in Kisumu County indicate that cervical cancer accounts for an average of 70% of all cancers of the genital tract (Rosser *et al.*, 2015b).

Studies in Peru, Uganda, and Vietnam had it that screening done using visual inspection of the cervix using acetic acid (VIA) is affordable, simple, and sensitive test that helps identify precancerous lesions of the cervix so that cryotherapy can be provided. Screening, treatment using VIA, and cryotherapy was implemented by Government partners at demonstration sites in those countries. Evaluations were done in the three countries to identify the barriers to the use of these services and the incorporation of screen-and-treat programs using cryotherapy and VIA into daily routine. Outcome showed that the use of cryotherapy and VIA in daily routine is a feasible approach to providing cervical precancer prevention services when readily available (Huchko *et al.*, 2019).

The majority of the developed nations have their incidence rate and mortality rates of cervical cancer over the past half a century reduced by approximately 75% due to developed screening, testing, and early detection and treatment of patients with cancerous cells that are not yet developed into the later dangerous stages. Technological advancement in the field of medicine has seen to it that cancer can be managed and even cured. This is very much evident in the development of prophylactic vaccines to curb human papillomavirus (HPV), which studies report to prevent 70% to 90% of cancers among unexposed women. Of note, there is a large number of exposed women attributable to low vaccine uptake, limited regular screening, and treatment. (Maza *et al.*, 2017).

Cervical cancer, which is rare in profuse countries such as the United States because of cytology-based prevention programs and cryotherapy treatment success, continues to be a major concern in LMICs. Cervical cancer early detection greatly improves the possibility of successful cryotherapy treatment and achievement of cure. This cervical precancer lesions early detection is better as the lesions are at a pre-symptomatic stage when a woman would have no reason to seek medical

attention, also be referred to as secondary prevention (Nelson *et al.*, 2016). Cryotherapy treatment at this pre-symptomatic stage is beneficial as the malignant tissues are manageable.

Cryotherapy is relatively inexpensive and does not use electricity. It has been used along with visual inspection with acetic acid (VIA) as same day 'see & treat' strategy, although the expense, low uptake, and logistical challenges of maintaining space, supplies, personnel for cryotherapy in remote settings makes it impossible to achieve single visit strategies in most healthcare settings in Western Kenya (Huchko *et al.*, 2019).

Achievement of early detection can be done by increasing awareness of possible warning signs of cervical precancer among women of reproductive age and health care providers through education. The aim is to improve the treatment outcomes by ensuring care is provided at the earliest possible stage. The main goal of screening is to identify asymptomatic individuals with abnormalities that indicate that they could be having a pre-cancerous lesion and promptly link them to cryotherapy treatment. However, the Kenya STEPwise survey for NCD Risk factors 2015 report, among women aged 30-49 years only 16.4% had been screened for cervical cancer. Generally, screening coverage in Kenya ranges between 3.5% and 14% (Chen *et al.* (2019).

Cryotherapy has been confirmed to effectively treat precancerous conditions of the cervix known as cervical intraepithelial neoplasia after screening. Early detection of these precancerous cells during screening facilitates early treatment using cryotherapy, leading to positive treatment outcomes. However, due to some barriers before, at the time of treatment and barriers to effective healing, most women of reproductive age do not go for regular screening, thus end up seeking treatment during the late stages when treatment-using cryotherapy is very expensive and difficult and chances of cure are profound thus resulting into negative treatment outcomes (Chen *et al.*, 2019). Normally, the cure rate, according to Cochrane review for CIN 3 after being subjected to cryotherapy, ranges from 77% to 93% (Maza *et al.*, 2017). With low screening, the availability of the cyrotherapy is expected to make no health impact. Thus it is important to determine the barriers to the cryotherapy services among women of reproductive age to intervene accordingly.

## 1.2 Problem Statement

Cervical cancer is a global menace worldwide. Efficient screening and diagnostic confirmation tests are essential for cancer control actions to achieve an effective impact on mortality. Sixteen point two (16.2) million of Kenyan women above 15 years are at risk of developing cervical cancer. Estimates indicate that yearly, 5,236 women are diagnosed with cervical cancer and 3,211 die from the disease (Huchko *et al.*, 2019). Cervical cancer is ranked as the 2nd most frequent cancer among Kenyan women aged between 15 – 49 years of age. About 9.1% of women in the general population are estimated to harbor cervical HPV-16/18 infection at a given time, and 63.1% of invasive cervical cancers are attributed to HPVs 16 or 18 (Maza *et al.*, 2017).

Cervical precancerous lesions are treatable with sophisticated methods such as the laser conization loop electrosurgical excision procedure (LEEP), or cold knife conization, however, cryotherapy has been identified to be very effective in cervical precancer treatment, simpler and more affordable, and to have at least equal sensitivity for identifying precancerous changes of the cervix, and this is only possible if women of reproductive age go for regular screening (Marth *et al.*, 2018). There have been increased awareness campaigns on screening cervical precancer and prompt cryotherapy treatment. However, in most settings, treatment uptake is perceived to be low (Chen *et al.*, 2019).

This study therefore, sought to unravel the barriers to cryotherapy treatment for cervical precancer among women of reproductive age since cryotherapy is cheap and very effective. This is in line with the Sustainable Development Goal number three: Ensure healthy lives and promote well-being for all at all ages. Additionally, investigating the barriers before cryotherapy treatment, at the time of treatment, and barriers to effective healing after cryotherapy of cervical precancerous lesions among women of reproductive age in Migosi Sub County Hospital Kisumu County, will help reduce cervical cancer mortality.

### 1.3 Broad Objectives

To investigate the barriers to Cryotherapy services for precancerous cervical lesions among women of reproductive age in Migosi sub-county hospital in Kisumu County, Kenya.

### 1.4 Specific Objectives

i. To determine the barriers before cryotherapy for precancerous cervical lesions.
ii. To assess the barriers at the time of cryotherapy for precancerous cervical lesions.
iii. To identify the barriers to the effective healing process after cryotherapy of precancerous cervical lesions.
iv. To determine the relationship between knowledge of both the benefits of screening and cryotherapy services.

### 1.5 Research questions

i. What are the barriers before cryotherapy for precancerous cervical lesions?
ii. What are the barriers at the time of cryotherapy for precancerous cervical lesions?
iii. What are the barriers to the effective healing process after cryotherapy of precancerous cervical lesions?
iv. What is the relationship between the knowledge of both the benefits of screening and cryotherapy services?

### 1.6 Justification of the study

Cervical precancer has been confirmed to be preventable and treatable but still causes more than 270,000 women deaths worldwide yearly. Despite being a highly curable cancer, it's still a worry since people still succumb due to cervical cancer. In Kenya Cervical cancer is ranked second most frequent cancer after breast cancer and accounts for an average of 2000 deaths yearly. Each year a rough incidence rate of 16.5 for every 100,000 women and age standardized rate of 28.7 is reported (Koech *et al.*, 2020). Kenya needs to put cervical cancer preventive and intervention measures in place in order to deal with its disease burden. Kenya is a small economy in resource setting and continues to face a number of challenges in managing cervical cancer (Kivuti-Bitok *et al.*, 2013). The prevalence of cervical cancer is on the rise in low- and middle-income countries (LMICs)

currently at more than 85% disproportionate to other parts of the world, where programs to detect precancerous lesions and provide timely cryotherapy treatment are not available or are beyond the means of most women, in many countries Kenya and Kisumu County not spared. Barriers to access cryotherapy treatment are very distressing to the women, profoundly affecting both their health, the family's daily functioning, and economic situation (Alsan *et al.*, 2016). Use of cryotherapy treatment for cervical precancer will mitigate the prevalence and mortality of cervical cancer.

Highlighting facts and information on the barriers of a cryotherapy treatment for cervical precancerous lesions will assist in making informed decisions and rational thinking-useful for reducing the prevalence of cervical cancer.

### 1.7 Significance of the study

This study highlighted new findings that ensured majority of the women diagnosed with cervical precancerous lesions were treated with cryotherapy before cancer became pronounced. Therefore, the findings of this study were expected to add to the existing knowledge of the benefits of routine cervical cancer screening among women of reproductive age. This was realized upon assessment of the barriers to cryotherapy treatment at the time of treatment. Secondly, the information generated is expected to enhance the functioning of healthcare institutions by recommending policies geared towards addressing the barriers of cryotherapy cervical precancerous treatment, also shape and enhance the right practices in the management of cervical precancerous lesions. Finally, the study findings would help in policy planning and development for the proper provision of cryotherapy services at all levels of health care service provision.

### 1.8 Scope of the study

The study covered 60 women of reproductive age who were on a one-year therapy and 5 Nurses who provided direct treatment and care to those women at Migosi Sub County Hospital. It focused on obtaining information on the effectiveness of cryotherapy services from women of reproductive age who were treated with the same since those women had gone through the entire treatment process. Data from participants was collected through telephone interviews using pre-coded semi-structured questionnaires while date from the 5 Nurses were collected through face-to-face interviews at the facility.

### 1.9 Limitations of the Study

There was a selection bias on women who had mobile phones as data was collected through telephone interviews and this could have led to loss of contextual and nonverbal data and to compromise rapport, probing and interpretation of responses however, it allowed respondents to feel relaxed and able to disclose sensitive information. We also note that this study focused on a population from one ethnic group (from Luo Nyanza) and therefore the findings may not be generalizable given that Kenya is multi-ethnic group county.

# CHAPTER TWO: LITERATURE REVIEW

## 2.0 Introduction

This chapter covers a review of previous studies on and/or related to the topic under review. These includes signs and symptoms of cervical precancer, the various cervical cancer control measures, effects on the health care service delivery. Several researchers have carried out studies relating to cryotherapy cervical precancer treatment. This chapter presents work that has been done by other researchers and their different perceptions on cryotherapy, cervical precancer, and the barriers to effective treatment.

## 2.1 Description of cervical cancer

Cervical Cancer is the growth of abnormal cells in the cervix that invade and damage normal tissues around the cervix and its majorly caused by Human Papilloma Virus (HPV) types 16 and 18. These cells located in the transformation zone do not abruptly change into invasive cancer. Rather, the cervix normal cells slowly develop as pre-cancerous lesions first and then later turn into cancerous cells (cancer) that can be detected by a pap-smear test (Berman *et al.* (2018).

A number of risk factors increase a woman's chance of getting cervical cancer which include but are not limited to; infection with the Human papillomavirus (HPV) that causes the growth of papilloma/warts, smoking of tobacco, and cigarette, which exposes women to cancer-causing chemicals. Women having weakened immune systems because of HIV infection have higher chances of acquiring cervical cancer, co-infection with sexually transmitted diseases such as chlamydia infection predispose women to cervical cancer, having multiple sexual partners and family history (Marth *et al.* (2018).

In its early stages, cervical precancer has no symptoms and is most likely to be detected using cervical cancer screening tests. However, when the cancers in the cervix become invasive and grow to nearby tissues, symptoms experienced include: Abnormal vaginal bleeding, such as, bleeding after menopause, bleeding and spotting between periods, bleeding after sex and having (menstrual) periods that are longer or heavier than usual and bleeding after douching or after a pelvic exam may also occur. Other women complain of an unusual discharge from their vagina that may contain some blood and may occur after menopause or between your periods and pain during sexual intercourse (Rosser *et al.* (2015b).

Screening detects precancerous lesions during early stages, this puts women in a better position to receive treatment when it's still highly effective. HPV testing is always recommended for women who are above 30 years of age and in areas of its unavailability, Visual Inspection with Lugol's iodine (VIA/VILI) and Visual Inspection with Acetic acid (VIA) or Visual Inspection with Acetic acid is recommended as the primary screening method. For women below 30 years, Pap smear test is the commonest screening test recommended while, those not eligible for VIA/VILLI, and used as a co-test for HIV-positive women (Rosser *et al.*, 2015a).

Most importantly, sexually active women are eligible for cervical cancer screening, women aged 50-65 years are still at risk of cervical cancer and should be screened after every five years. HIV positive women should be screened after every 5 years while HIV negative women should be screened after every two years (Ndejjo *et al.* (2017).

**2.2 Cryotherapy**

For success of cervical cancer prevention and screening program, treatment of precancerous lesions is a key consideration. Treatment of cervical intraepithelial lesions follow after the screening test. Treatment with cryotherapy involves majority of screen and treatment strategies to prevent cervical cancer (Bray *et al.*, 2018).

Cryotherapy, has several advantages over laser conization and LEEP that makes it an appropriate and acceptable treatment option, particularly in low-resource settings. Cryotherapy is a relatively simple procedure that is inexpensive and easy to learn.

Cryotherapy is an ablative form of treatment for precancerous lesions of the cervix, which freezes cells using a cryoprobe with a tip made of highly conductive metal (usually silver and copper), that makes direct surface contact with the ectocervical lesion. Carbon dioxide or Nitrous oxide is usually the coolant of choice. Cells reduced to –20°C for one or more minutes will undergo myonecrosis. When properly conducted, Cryotherapy is highly effective, with cure rates of 85-90% for lesions occupying less than 75% of the cervix; however, for larger lesions, the cure rate is reduced (Marth *et al.*, 2018).

### 2.2.1 Eligibility criteria for cryotherapy

Women with a positive test and an entirely visible lesion on the ectocervix, not extending to the vaginal wall or into the endocervix, women with a lesion adequately covered with a 2.5 cm cryotherapy probe. Women with no evidence of pelvic inflammatory diseases or cervicitis are also eligible; women who are not pregnant and women who have given consent for treatment.

### 2.2.2 Cryotherapy procedure

Trained nurses/midwives should conduct cryotherapy. There are set guidelines of cervical cancer treatment using cryotherapy, where a set of procedures should be strictly followed to the later to ensure effective treatment of cervical cancer.

Firstly, the treatment recommended should be explained, and the procedure described, including side effects, and reassured the patient. Instruments and supplies should be checked if they are available and arranged on a high-level disinfected tray. Check that the cryotherapy instrument is ready to use, that gas (CO2) is turned on at the cylinder, and the pressure reads at least 40–70 kg/cm2. Set timer to zero (Bray *et al.*, 2018).

High-level disinfected cryptic is then inserted into the protective sleeve. Protective cover removed from the end of the probe. Check that the woman has emptied her bladder in more than 30 minutes since the VIA test. Help her onto the examining table, and once in lithotomy position, drape her. Wash hands thoroughly with soap and water and dry. Next, wear a pair of examination or high-level disinfected surgical gloves on both hands. Insert speculum and adjust the speculum so that the entire cervix can be seen. Fix the speculum blades in the open position so that the speculum will remain in place with the cervix in view. Move the light source so that you can see the cervix.

Use a clean cotton swab to remove any discharge, blood, or mucus from the cervix and dispose of the swab (Marth *et al.*, 2018)

Identify the cervical os, SCJ, and site, and size of the lesion. Apply dilute acetic acid with a clean swab so that lesion can be seen clearly. Point probe at the ceiling. Press the freeze button for 1 second and then defrost button for 1 second. Screw cryptic with a sleeve onto the end of the probe, then apply the cryptic to the cervix ensuring that the nipple is placed squarely onto the cervical os

then check to be sure the cryptic is not touching the vaginal walls and set a timer for 3 minutes, (Bray *et al.*, 2018).

Press the freeze button. Apply pressure to the cervix as the gas begins to flow to the cryoprobe. Watch as the ice ball develops. Use the "freeze-clear-freeze technique" (double-freeze) and freeze the cervix for 3 minutes. Ensure adequate freezing has been achieved when the margin of the ice ball extends 4-5 mm past the outer edge of the cryotip. After 3 minutes, allow time for adequate thawing before removing the probe from the cervix. After thawing, repeat the procedure. Inspect the cervix carefully to ensure that a hard, white, completely ice ball is present.
Finally, close the master cylinder valve, inspect the cervix for bleeding. If there is bleeding, apply pressure to the area using a clean cotton swab, then remove the speculum and place it in 0.5% chlorine solution for 10 minutes for decontamination (Luciani *et al.*, 2008).

### 2.3 Barriers before Cryotherapy Treatment of Cervical precancerous lesions

Provision of cancer screening and treatment using cryotherapy is a good approach to curing precancerous lesions if done at an early stage. However, most women report to the health facilities when the precancerous lesions have progressed to cancerous lesions, and treatment is abysmal. This is attributed to a lack of awareness among the population, more so women of reproductive age. Health facilities organize and conduct outreach services in the rural areas and hard reached communities, but a larger population is not reached with the correct information, thus affecting their level of knowledge on cervical cancer and deterring them from seeking treatment (Ebu *et al.*, 2015).

#### 2.3.1 Time interval from diagnosis of precancerous lesions to treatment.

Prompt diagnosis and treatment are important in controlling the progression of precancerous lesions to cancerous lesion. When treatment is delayed, one's treatment outcome is also affected (Chen *et al.* (2019).

Often, treatment delay can be due to patient, healthcare provider, referral, and/or the system delay. From previous studies, patients with precancerous lesions have experienced delay in diagnosis and

treatment regardless of country or institution (Gyenwali *et al.* (2013). A delay in receiving pathological results and second opinion seeking can also contribute to treatment delay. The main cited reason for delayed treatment include, poor access to healthcare services in low- and middle-income countries (Deravin-Malone *et al.* (2016).

Previous studies have consistently shown the impact of the screening programs in early diagnosis among individuals at earlier stages of cervical cancer, resulting in positive/good treatment outcome (Abiodun *et al.*, 2014). Regularly screened women can often be diagnosed when they are asymptomatic, i.e., with precancerous lesions. These women are highly advantaged as they have an excellent chance of survival/healing and have lower chances of going through extensive treatment. Stage 2 patients requires both chemotherapy and radiation therapy or surgery. During progression, intense treatment and follow-up are necessary, which is very costly. There's a reduction in chances of survival during progression (Nelson *et al.*, 2016).

Ideally, VIA should facilitate screening, and if an abnormality is detected, one should be immediately treated with cryotherapy in the same visit. Cryotherapy is very effective as its used if there are abnormal precancerous lesions detected in the cervix. However, late-stage cervical cancer cannot be treated with cryotherapy since the lesions have progressed; instead, these women undergo radiotherapy and chemotherapy than are later sent home, where they receive palliative care to help reduce pain (Silva-Matos *et al.*, 2012).

### 2.3.2 Knowledge and misconception on cryotherapy

Although much has been invested in Information, Education, Communication (IEC) materials on cervical cancer screening and Cryotherapy, previous studies show that information was not adequately disseminated; rather, most education was facility-based, and most screenings were opportunistic. Patients know that symptoms such as discomfort or pain are the main motivators for screening, whereas, at this point, treatment is very difficult. Most women are not aware of the benefits of cryotherapy, its side effects, how to handle them, and this may lead to poor treatment outcomes. This barrier to population-based screening is important because women with precancerous lesions are typically asymptomatic, and their status makes them feel embarrassed or

anxious about having a pelvic examination, thus reducing hospital attendance (Ndizeye *et al.* (2018).

There are also existing misconceptions on cryotherapy treatment that it is painful, leads to infertility, and the speculum could enlarge the vagina. They also perceive that once they undergo cryotherapy treatment, they will not be allowed to use contraceptives again, or their uterus would be removed, whereas a woman's role is childbearing, thus hindering them from undergoing cryotherapy treatment leading to progression of cancer and poor treatment outcomes due to late diagnosis (Rosser *et al.*, 2015a).

Most women believe that these services are offered to healthy women, and therefore they do not need any health intervention. This is why most women do not seek treatment services when they are healthy, i.e., when there are no symptoms, and only present to health facilities when in pain and symptoms have presented. At this point, cervical cancer has advanced, and cryotherapy treatment cannot be effective, leading to poor treatment outcomes (Lunsford *et al.*, 2017).

### 2.3.3 Low socio-economic status

Cervical cancer screening and treatment is also influenced by the economic status of patients since a patient would need money for transportation, treatment, balanced diet to facilitate positive treatment outcomes. However, most women lack adequate finances to cater for the above needs; thus, they do not go for regular screening and may only hustle when worst has come to worst and are in great pain leading to late diagnosis (Munthali *et al.*, 2015). (Rocha *et al.*, 2017) mentions in their study findings that various factors discussed as barriers to accessing preventable health services, for instance low socioeconomic status and inadequate or rather limited coverage of cervical cancer screening.

Some women may visit a health facility but are referred to another hospital for further treatment, but due to inadequate funds, they do not honor the referral and appointment dates. Patients sometimes are fond of not remitting their NHIF payments; thus, they would be forced to use out-of-pocket payment methods to cater for their bills; when they think of this, they do not go to the hospital for screening and treatment. These barriers greatly affect treatment outcomes leading to the increased prevalence of cervical cancer (Modibbo *et al.*, 2016).

Although healthcare was devolved in Kenya and community health volunteers were employed to facilitate linkage, women still face significant financial constraints and logistical transportation barriers that hinder them from seeking cervical cancer and screening services promptly. Providing mobile treatment or reimbursing patients transportation costs has been thought to improve access to cryotherapy care (Charlotte M Page *et al.*, 2019).

### 2.3.4 Perceptions of health and health-seeking behavior

Women's perception about their health either motivates or demotivates them to seek cervical cancer screening and cryotherapy treatment. It has been reported that women described seeking screening and treatment because they experienced discomfort, pain, and smelly vaginal discharge. Some women in Uganda noted to fear cryotherapy cervical precancer treatment because it leads to death, and they did not want to die and leave their children; as a result, they rather not go for screening or seek treatment (Paul *et al.*, 2013).

Another study in Vietnam had it that women believed that cervical cancer screening was not for them because they perceived that they were not at risk. After all, cervical cancer is not for them. These women believed that fear of learning their screening results, shame or embarrassment of undressing for a pelvic exam stopped them from seeking treatment thus late diagnosis that affected their treatment outcome (Huchko *et al.*, 2019).

The use of male practitioners is another institutional barrier reported in various health facilities in Ghana. Most patients preferred being attended to by female providers, as they did not like exposing their private parts to men and only accepted older male providers to attend to them. As much as there are adequate equipment and stable cryotherapy machines in health facilities but male providers are the ones offering the services. This becomes a barrier to seeking effective treatment, thus leading to negative outcomes (Ebu *et al.*, 2015).

In developed countries, cervical cancer rarely occurs because of the availability of extensive cervical cancer screening and cryotherapy treatment programs among women. Such programs are, however, in developing countries such programs are not widely available, or they could be available, but various barriers are hindering their success. This study, therefore, intended to shed some light on these barriers that will eventually shape and enhance the foundation of the right

practice in the treatment of cervical cancer in Kenya and other parts of the country, thus encouraging women to seek cryotherapy cervical cancer treatment.

### 2.4 Barriers at the time of cryotherapy treatment of cervical precancerous lesions

There have been several attempts to expand cervical cancer screening, early treatment, and prevention at all levels of health care in different African countries. Irrespective of these concerted efforts, various countries continue to experience deterioration due to some barriers such as lack of financial resources, trained professionals and the absence of infrastructure, long distance to health facilities that hinder effective cryotherapy treatment of cervical cancer (Rosser *et al.*, 2015a).

#### 2.4.1 Inadequate infrastructure and equipment

In several health facilities, cryotherapy is not being provided because the machines have broken down, and they do not have adequate finances to repair them. Because of these, patients were being referred to other facilities that are far from their places of residence, making them not honor their appointments. Health care providers in these facilities complain that their knowledge of cryotherapy treatment keeps on diminishing because they are not practicing; therefore, they are not confident offering the services. The service providers' report of shortage of equipment such as speculums, tenaculum, registers, acetic acid, gas, and morphine, and these hinders effective treatment of cervical cancer (Munthali *et al.*, 2015).

Health providers reported that they had insufficient equipment and space necessary for cryotherapy. Cryotherapy is offered in the same room where women receive family planning services, leading to congestion. Providers in Vietnam described how the supply of acetic acid was not enough for conducting cryotherapy (Paul *et al.*, 2013).

In Uganda, health workers reported gas stock out as a major problem and once a cryotherapy machine stopped working and could not be repaired by the local technician hindering service delivery; thus, patients have to be referred to other health facilities (Gupta *et al.*, 2017).

In western Kenya, health care providers complained of inadequate space to offer cervical cancer screening and treatment services since they have to share one room with those offering ANC and family planning services. At times they have to turn to take during service delivery, and this makes

patients wait on the cue for long, and their privacy is infringed discouraging them from honoring their appointment dates next time, or they become lost to follow up thus affecting treatment outcomes, (Rosser *et al.*, 2015a).

### 2.4.2 Inadequate number of healthcare personnel

Most health facilities in Malawi have an inadequate number of trained health care personnel to offer cervical cancer screening and treatment services using cryotherapy. You may find a healthcare provider offering antenatal services, family planning and still has to offer cryotherapy services, and this is so overwhelming to the extent that this will affect the quality of services offered. Patients have to wait for long hours on the cue or even leave unattended to thus leading to ineffective treatment and poor outcomes (Munthali *et al.*, 2015).

Training on VIA and cryotherapy is very low in most health facilities. In Peru, providers complained of a limited number of training sessions conducted and various challenges they faced that included inadequate time to practice, which was very vital for sharpening their skills to carry out the procedures. In Uganda, the staff that have been trained to perform cryotherapy reported feeling less confident in their ability to provide cryotherapy. Barriers to the sustainability of cryotherapy were limited number of healthcare personnel expected to provide multiple services and were stretched thin. Health care providers in Peru and Uganda also reported burnout on the part of providers who were overwhelmed by their workloads (Paul *et al.*, 2013).

### 2.4.3 Health system challenges

Some health facilities do not offer cryotherapy services daily when patients need them. Rather, they offer them during certain days of the week or even once a week. Meaning, if a patient visits on the wrong day when they cannot get the service thus they have to return the next week for the service, and these would be costly to her discouraging her from seeking the service again, thus affecting the treatment outcomes, (Compaore *et al.*, 2016).

Health providers offering cervical cancer screening and treatment using cryotherapy complained of never being supervised and supported by their supervisors as required. Supervisors are supposed to visit the facilities to monitor service delivery and identify any challenges they could be

experiencing for their action. Some have never been supervised since their training and deployment, and this demotivates them and affects the quality of service they offer to patients, thus leading to poor treatment outcomes (Rosser *et al.*, 2015a).

Long distances to health facilities tend to deter women from seeking regular cervical cancer screening and effective treatment. Sometimes health care providers refer patients to higher-level facilities that tend to be far away from patients place of residence, thus being a major barrier at the time of treatment (Lunsford *et al.* (2017).

In Brazil, there wasn't any standardized referral or follow-up system that was put in place to make sure that VIA-positive women received appropriate treatment whereas in Peru, telephone calls facilitated follow-up, but this did not guarantee the consistent return of patients positively diagnosed by VIA. It was noted in Vietnam that other infections prevented immediate treatment, and this led to a loss to follow-up, leading to progression from precancerous to cancerous lesions. In Uganda, follow-up phone calls was impeded by phone calls, although very motivated staff sometimes used their own money to make calls (Girardi *et al.*, 2017).

Waiting time is an important indicator of the quality of cryotherapy services offered by hospitals and utilization of healthcare services by the patient**.** Patients perceive long waiting times as a barrier to obtaining services and causes stress for both patient and doctor. Waiting time is an aspect of practice that patients often use to judge health personnel knowledge and skill (Compaore *et al.*, 2016).

Cryotherapy treatment of cervical cancer is very effective in treatment of precancerous lesions. However, majority of women in low–middle-income countries are not better placed to access these services due to various barriers at the time of treatment. This research intended to unveil and document these barriers and to inform policymakers, various stakeholders, and the public for proper action.

## 2.5 Barriers to the effective healing process after cryotherapy treatment of cervical precancerous lesions

Treatment for cervical precancerous lesions with cryotherapy is uncomfortable for most women. The subsequent healing process is also perceived to bring discomfort and pain if women do not adhere to post-treatment care instructions. Women diagnosed with cervical precancerous lesions do not adhere to post-treatment care instructions widely including developed countries with well-organized health care systems (Manga *et al.*, 2019).

It can be hypothesized that the challenge of post-care treatment instructions adherence might be more serious in Sub-Saharan Africa (SSA), where healthcare systems are disorganized and resources are limited, which hinders the effective healing process after cryotherapy (Ndizeye *et al.*, 2018). Most importantly, during secondary prevention of cervical cancer, treatment does not just stop at cryotherapy; rather, home care, follow up and counseling should be done to avoid recurrence of the lesions or progression to cervical cancer, thus an effective healing process.

### 2.5.1 Post cryotherapy care instructions

Women are usually advised about post-treatment care instructions, various warning signs, and follow-up instructions, that include and are not limited to: mild cramps and lightly blood-stained watery discharge that can go up to 4-6 weeks after treatment. They should avoid vaginal douching or tampons or avoid sexual intercourse for one month after treatment. Where there are impossibilities to abstain, condoms should be used from 2 weeks' post-treatment. They should be given appointments for a follow-up visit one year after treatment. Cervical lesions may persist or recur in about 5-10% of HIV-negative cryotherapy clients. VIA should be repeated one year after cryotherapy to assess the persistence or recurrence of lesions.

### 2.5.2 Personal barriers

After cryotherapy, women are counseled on the post-treatment care instructions, but most women fear their male partners in that they fail to share their status and treatment that they just received. Their partners demand their usual sexual rights, and they end up engaging in sexual intercourse

without the use of protection, and these hinder the effective healing process as they may start experiencing pain and discomfort (Manga *et al.*, 2019).

Poverty is also a great contributor as women from Zimbabwe noted that they had successfully received cryotherapy treatment and were given TCAs, but 85% did not honor these appointment dates for their follow-up because of inadequate funds to cater for their transportation to and from the hospital. Most of these women were found to have their lesions progress as they had not turned up for follow up screening, thus hindering effective healing (Fallala *et al.*, 2015).

Low literacy levels were another contributing factor among women from western Kenya, where most women were aware of the post-treatment care instructions but neglected because they perceived themselves safe after cryotherapy. Reported cases of vaginal bleeding, smelly discharges were high because most women had ignored these instructions (Huchko *et al.*, 2019).

### 2.5.3 Male Partner Involvement

Previous studies depict that men play a significant role the kind of healthcare decisions that women make. Men can also play a big role in reducing cervical cancer burden by encouraging them to go for regular screening and protecting their partners from HPV infections (Binka *et al.*, 2019).

The main goal of offering cervical cancer screening and treatment services on the same day is to test and treat, but most women prefer to go back home to consult with their male partners/husbands on what to do. Due to this, some women may fail to come back for treatment as their partners/husbands may misadvise them or stop them from going back for treatment. Treatment becomes effective if men accompany their partner to the health facility for treatment because they would both be counseled on the dos and don’ts after their partner undergoes cryotherapy, e.g., abstaining from sexual intercourse or using condoms for four weeks post-treatment. However, most men do not like using condoms, and they go against post-cryotherapy treatment care instructions making their partners experience more pain, thus affecting their treatment outcomes (Binka *et al.*, 2019).

Several studies indicate that majority of the men have little or no knowledge of cervical cancer screening and cryotherapy, and some men are still in disbelief that they do not contribute to cervical cancer in women, not knowing they are the carriers. The limited knowledge of cervical

cancer among men is a threat to women since they usually subservient to men and have limited sexual power. This kind of gesture could mean that men are not likely to adjust their sexual behavior to reduce the risk of HPV transmission to women (Upadana *et al.*).

Furthermore, when men support their partners during the process of cervical cancer screening and treatment, it may greatly assist in reducing cervical cancer deaths. Men's role in the health-seeking behaviors of women in Ghana was found to be very important because male support for cervical cancer patients is crucial for their survival chances (Binka *et al.*, 2019).

### 2.5.4 Clinical barriers

Pre and post counseling on cryotherapy is very key in contributing towards effective healing after cryotherapy. Healthcare providers are expected to ensure women understand what cryotherapy is, why they are receiving this mode of treatment and how to take care of themselves after cryotherapy to achieve effective healing. A study in India revealed that staff burnout, long queues, and long waiting times affected the counseling process, as medics were very tired of conducting proper counseling sessions. Some of them noted that the long queues could not allow them to take so much time with a patient as others were also eagerly waiting; as a result, most women were not aware of these post-treatment care instructions that lead to effective healing after cryotherapy (Li *et al.*, 2016).

Inadequate medical suppliers and screening equipment contribute to referrals to other health facilities for follow-up. Most women in Burkina Faso noted that they prefer being followed up from the health facility that they originally received treatment, as they would not like other people to know about the healthcare status. 62% of the women referred for follow up screening to determine whether they were healed or not later reported cases of smelly vaginal discharge, painful coitus after cryotherapy because they had not gone back for follow up, (Marth *et al.*, 2018).

Staff attitude was another barrier to the effective healing process in Western Kenya as women reported that harshness of nurses and negative attitude made them not go back for ca checkups, as they would not want to experience such again. They preferred healing from home and assumed they would automatically get better after cryotherapy; unfortunately, more cases of progression to cancerous lesions were reported from the region (Rosser *et al.*, 2015a).

## 2.6 Conceptual framework

The conceptual framework operationalized variables in the study to investigate the barriers to the cryotherapy treatment services of cervical precancerous lesions among women of reproductive age in Migosi Sub-County Hospital in Kisumu County, Kenya. Barriers before cryotherapy, barriers at the time of treatment and barriers to effective healing process and the relationship between the knowledge of both the benefits of screening and cryotherapy are predictors to one's treatment outcome after cryotherapy. Screening as an intervening variable on the other hand facilitates early identification of the precancerous lesions thus, facilitates prompt cryotherapy treatment leading to a positive treatment outcome.

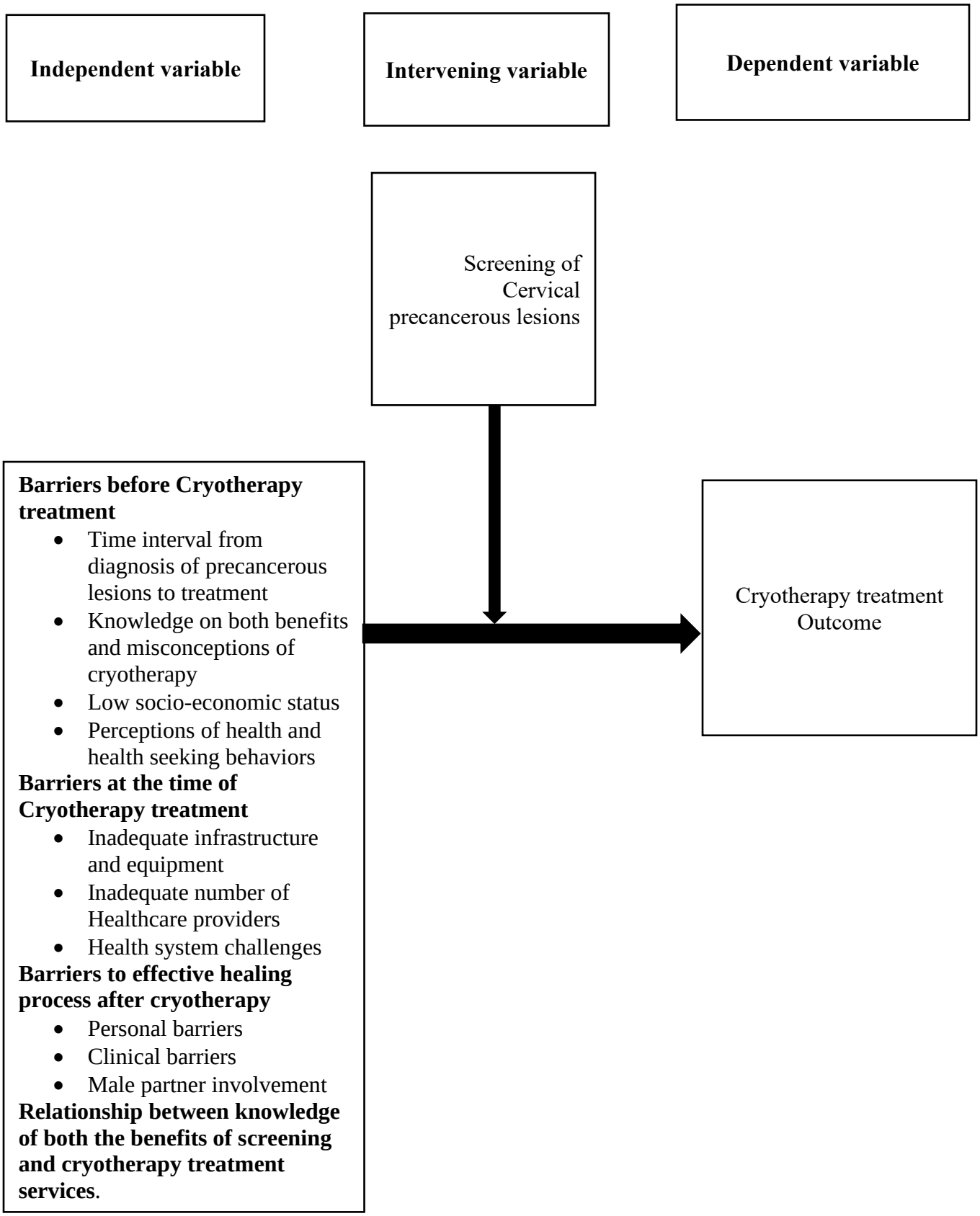


**Figure 2. 1 Conceptual framework, Own Source.**

# CHAPTER THREE: METHODOLOGY

## 3.0 Introduction

This chapter describes the methodology used in establishing barriers to cryotherapy treatment at MSCH in Kisumu County. This includes study area, research design, target population, sample size determination, sampling procedure, validity, and the ethical issues relating to the study.

## 3.1 Study Area

The study was conducted in Migosi Sub-County Hospital, a tier 3 facility, situated in Kisumu central Constituency, Migosi ward, Kondele location in Kisumu Central Sub-County. The health facility is located in Migosi estate 3km from Kisumu CBD, 10 minutes' personal drive and averagely 15 minutes' drive by use of public means (Ministry of Health, 2023).

The hospital serves a population of 20,870 yearly and over 5000 women of reproductive age. It covers approximately 32.7 sq. km with a population of 168,892 and within longitudes 330 20'E and 350 20'E and latitudes 00 20'S and 00 50'S close to Lake Victoria.

Majority of clients seeking services from this health facility are from the slums with low socio-economic status. Some are employees of the government and others are either engaged in informal and small-scale businesses.

The facility was chosen as a study site since it's among the facilities that offer cryotherapy and thrives towards offering proper disease prevention and treatment services including strengthening its cervical cancer department and being at the forefront of beating cervical cancer using cryotherapy. Other services offered include MCH services, Antenatal, anti-retroviral therapy, family planning, home-based care among others (service charter) (Ministry of Health, 2023).

## 3.2 Study Design

This study adopted a cross sectional study design using both the quantitative and qualitative approaches. The data was collected by conducting both face-to-face key informant interviews to the healthcare providers and telephone interviews to the study participants using pre-coded Semi-structured questionnaires.

### 3.3 Target Population

The study targeted 80 women aged 15-49 years who got cryotherapy treatment between 2018 and 2019. However, the researcher was not able to trace seven (7) women on the phone. Eight (8) women were involved in pretesting of the data collection tool. Five (5) women did not consent to participate in the study. Therefore, a total of 60 women participated in the study and 5 nurses at the department of cryotherapy were involved in the study.

#### 3.3.1 Inclusion and exclusion criteria

##### 3.3.1.1 Inclusion Criteria

The study specifically targeted women of reproductive age who fit the following criteria:

- Aged 15-49years
- Undergone cryotherapy in Migosi Sub County Hospital
- Assented/ Consented to be part of the study.
- One with a mobile phone contact
- The nurses, clinical officers involved in screening, diagnosis, and treatment of cervical precancer in the facility and have worked there for more than one year.

##### 3.3.1.2 Exclusion Criteria

This study excluded:

- Women (15-49) years who were diagnosed with cervical precancerous cells but were not included in cryotherapy.
- Women (15-49) years who were diagnosed with cervical precancerous cells but did not assent/consent to be part of the study.
- One without a mobile phone contact.
- The nurses, clinical officers who were not involved in screening, diagnosis, and treatment of cervical precancerous cells in the facility and have worked there for less than one year shall also be excluded.

### 3.3.2 Sample Size Determination

The study targeted women who were on therapy at Migosi Sub- County hospital between 2018 and 2019. In totality, 80 women of reproductive age had received cryotherapy treatment; however, the researcher was not able to trace seven (7) women on the phone. Eight (8) women were involved in pretesting of the data collection tool. Five (5) women did not consent to participate in the study; therefore, the researcher was left with a sample size of 60 women of reproductive age. The women interviewed during the pretest were excluded during the actual study.

### 3.3.3 Sampling procedure

Purposive sampling method was used in recruiting the study population. This was used under the strict condition to ensure all the subjects recruited in the study met the set minimum inclusion and exclusion criteria, were available on the phone, and consented to participate in the study.

The Key Informants included all the health care providers responsible for screening, diagnosis, and treatment of cervical precancerous lesions using cryotherapy at Migosi Sub- County Hospital and have worked there for more than one year.

The study participants' telephone numbers were from the cryotherapy register which I was given access to by the Nursing officer in charge of all the nursing services at MSCH, and permission to conduct the research was granted upon receipt of the approval letter from JOOUST E.R.C by the hospital medical superintendent. The subjects (study participants) whom we contacted within the data collection period (5th to 31st May 2020) met the minimum sample size.

## 3.4 Data collection procedure

The semi structured questionnaires and the key interview guides were used to collect data via telephone calls which took a duration of averagely 35 minutes. During the call before the interview began, the study participants were made aware about the study and their participation was completely voluntary. They were informed that the data collected would only be used for the purpose of the study and were asked for consent for their participation. All telephone conversations were recorded and participants were assured of the confidentially of the data collected from them.

However, data from the five nurses working at the cryotherapy section were collected through face-to-face interviews at the health facility.

### 3.5 Validity and Reliability

#### 3.5.1 Reliability

The reliability of data collection instruments was done by pre-testing questionnaires before administering the tools to the study participants. A semi-structured questionnaire was pre-tested on 10% of the sample size. This included eight of the respondents who met the inclusion and exclusion criteria at Migosi Sub-County Hospital. The clinical records and the patient's booklet for the cases were examined to assess their eligibility. Comments and suggestions made during pretesting were used to improve the instrument. The researcher employed Cronbach' s alpha test method to establish reliability. A coefficient value of 0.8 was obtained in the test. Thus, the tool used for the study was acceptable and reliable.

#### 3.5.2 Validity

The questionnaires were reviewed by the experts and healthcare providers in the areas of treatment services. The professional comments were used to amend the instrument to establish the content validity. A more improved questionnaire for the study was then used in the study.

### 3.6 Data Analysis and Presentation

To ease sorting grouping and coding of data collected was done. Completeness and consistency of information obtained was checked. Data was entered in an excel sheet then exported to SPSS version 23.0 for analysis of both descriptive and inferential statistics. Descriptive analysis was computed to describe the socio-demographic characteristics of the participants and measure the level of knowledge and the barriers to cryotherapy. Chi-square test of association was also used to examine the relationship between knowledge on the benefits of both screening and cryotherapy and knowledge on the benefits of cryotherapy and the waiting time. Only P value less than 0.05 was considered statistically significant. Findings were presented in form of tables for easy

interpretation. On the other hand, the qualitative data collected from the key informants was analyzed thematically and verbatives quoted within the result section of this work.

### 3.7 Ethical Consideration

Approval and clearance to carry out the research was sought from the Ethical Review Committee (ERC) and Board of Post Graduate Studies JOOUST and NACOSTI. Study participants were taken through a consent form in a language that they understood and requested to participate willingly. No participant was forced to participate in the study, neither were they be unduly influenced.

The study was purely academic research for Masters in Epidemiology and Biostatistics in Jaramogi Oginga Odinga University of Science and Technology. All the principles of research ethics about this study were observed, i.e., beneficence, respect, and justice.

In regards to respect for participants, all participants agreed to participate after the researcher's explanation of the aim of the research, its risks, and advantages and that participation was purely on a voluntary basis. The participants were also informed of the right to withdraw from the study as they deem fit without any restriction or need to give reasons without any penalty. All information was kept confidential to avoid stigmatization.

For beneficence, respondents were given detailed explanations on the purpose of the study and that there was no direct monetary gain to them, only that the findings would benefit them through their sensitization and that of policymakers on the importance of water quality improvement and maintenance.

Respondents were assured that the information given shall only be used for the research purpose and treated with the utmost confidentiality. In addition, the respondents were asked not to disclose their real identities on the questionnaires to ensure the anonymity of their responses. The information was sought in one on one contact at the respondent's house as this is a conducive environment.

# CHAPTER FOUR: RESULTS

## 4.0 Introduction

This chapter describes data analysis, presentation and interpretation of the research findings. Data was collected using semi-structured questionnaires that were then organized and analyzed electronically using Microsoft Excel, and SPSS version 23.0

## 4.1 Demographic characteristics

The respondents were 60 women of reproductive age who received cervical cancer screening and cryotherapy services. The response rate was 69.8%.

Table 4.1, shows the demographic characteristics of the respondents interviewed in the study. All the women (n=60) were interviewed, 14 (23.3%) of the respondents were between 25-29 years and another 14 (23.3%) 35-39 years. Twelve (20%) women were between 40-49 years, 10 (16.7%) and 6 (10%) of the women were between age group 30-34 years and 20-24 years respectively, and the rest were in the 15-19 years' category.

Of those interviewed, 35 (58.3%), were married, 16 (26.7%) and eight (13.3%) were single and widowed, respectively, and the rest were separated. Twenty-seven 27 (45%) of the women, had primary education as their highest level of education, 16 (26.7%) and 15 (25%) had secondary, and college-level respectively as their highest level of education and only two (3.3%) had university as their highest level of education.

On occupation, 27 (45%) earned a living through businesses, 24 (40%) were unemployed, five (8.3%) and four (6.7%) were employed and farmers, respectively. A higher number, 31 (51.7%), could regularly depend on their income, 13 (21.7%) and nine (15%) could possibly and uncertainly depend on their income, and the rest could not depend on their income.

**Table 4. 1 Demographic characteristics**

| *Characteristics* | *Categories* | *Frequency (n)* | *Percent (%)* |
|---|---|---|---|
| ***Age*** | 15-19 years | 4 | 6.7 |
| | 20-24 years | 6 | 10 |
| | 25-29 years | 14 | 23.3 |
| | 30-34 years | 10 | 16.7 |
| | 35-39 years | 14 | 23.3 |
| | 40-49 years | 12 | 20 |
| ***Marital status*** | Single | 16 | 26.7 |
| | Married | 35 | 58.3 |
| | Widowed | 8 | 13.3 |
| | Separated | 1 | 1.7 |
| ***Highest level of education*** | Never been to school | 0 | 0 |
| | Primary | 27 | 45 |
| | Secondary | 16 | 26.7 |
| | College | 15 | 25 |
| | University | 2 | 3.3 |
| ***Occupation*** | Employed | 5 | 8.3 |
| | Business | 27 | 45 |
| | Farmer | 4 | 6.7 |
| | Unemployed | 24 | 40 |
| ***Regularity/dependability of household income*** | Yes | 31 | 51.7 |
| | Possibly | 13 | 21.7 |
| | Uncertain | 9 | 15 |
| | No | 7 | 11.7 |

### 4.2 Barriers before Cryotherapy Treatment of Cervical Cancer

#### 4.2.1 Awareness of the benefits of cervical cancer screening and cryotherapy.

From the findings in table 4.2, the majority of the women, 49 (81.7%), were aware of the benefits of cervical cancer screening, and they went ahead to note that it facilitates early detection of precancerous lesions. Few, 11 (18.3%) women, were not aware of the benefits of cervical cancer screening and cryotherapy.

On the benefits of cryotherapy, 37 (61.7%), we're aware of these benefits, and they noted that it clears the precancerous lesions and facilitates healing. Twenty-three (38.3%) were not aware of any of the benefits thereof.

**Table 4. 2 Patient awareness**

| Patient awareness | Group | Frequency (#) | Percent (%) |
|---|---|---|---|
| ***Benefits of cervical cancer screening*** | Yes | 49 | 81.7 |
| | No | 11 | 18.3 |
| ***Benefits of Cryotherapy*** | Yes | 37 | 61.7 |
| | No | 23 | 38.3 |

Nurses were asked to give reasons as to why patient awareness on cervical cancer screening and cryotherapy was average. Some respondents had the following to say;

*'There are inadequate Information Education Communication (IEC) materials in the facility on the benefits of cervical cancer screening and cryotherapy (KII-4).'*

*'Due to the burnout, we experience after seeing many patients and other competing tasks, this makes us talk less and only offer the screening and cryotherapy. Therefore, we do not spend more time explaining to clients these benefits (KII-5)*

### 4.2.2 Myths and misconceptions on Cryotherapy

In figure 4.1, the majority of the women, 46 (76.7%), noted that they had heard of various advantages and disadvantages of cryotherapy, and 14 (23.3%) noted that they had not heard of any advantages and disadvantages of cryotherapy.

Of the 46 women who noted they had heard of any myth or misconception of cryotherapy, 40 (86.7%) of them cited that those myths and misconceptions had not influenced their decision to go for cryotherapy. The rest, i.e., 6 (13.3%) decisions to go for cryotherapy, were influenced by those myths and misconceptions, as summarized in Figure 4.1.

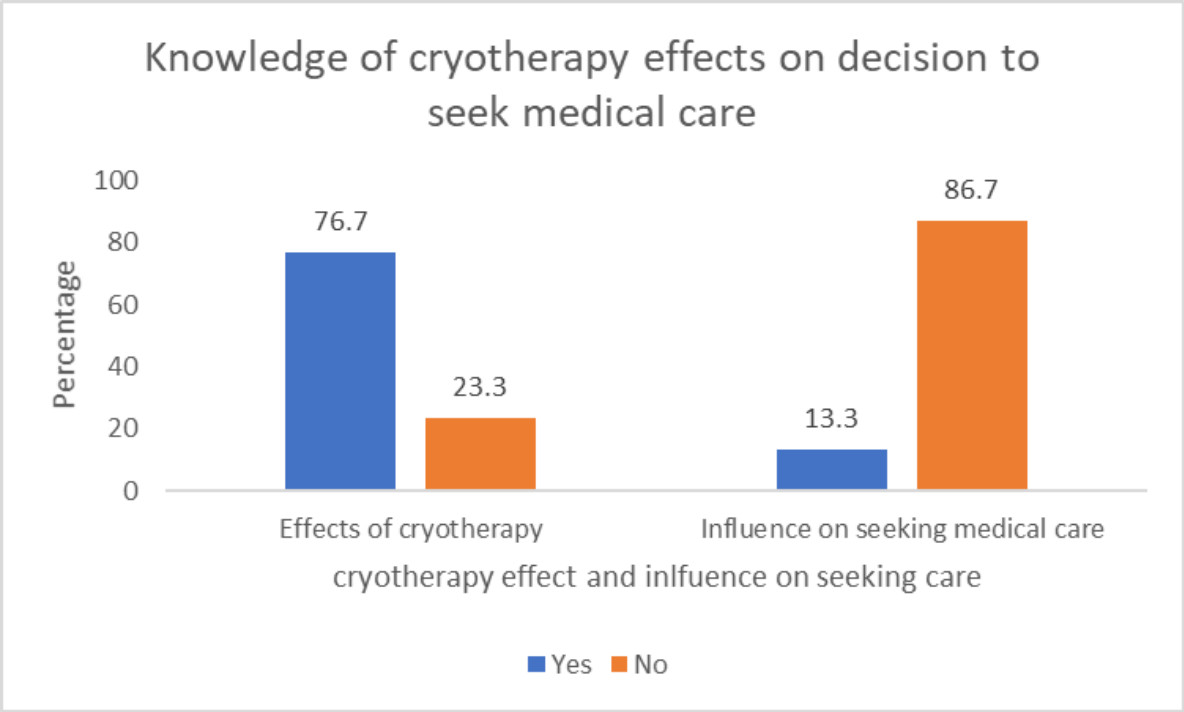


**Figure 4. 1 Knowledge of effects of cryotherapy**

Nurses were asked if they were aware of these disadvantages (myths and misconceptions) on cryotherapy and strategies they had put in place to refute them. Findings indicate that,

*'They are aware, and they intend to conduct more in reaches and outreaches that will facilitate correct information spread among the women' (KII-1).'*

*'Working closing with community health volunteers (CHVs) and capacity building them on the benefits of cryotherapy so that they can share the information to the women in the community (KII-3).'*

From Table 4.3, 46 (76.7%) women noted that they had heard of the myths and misconceptions of cryotherapy. When asked about some of them, 16 (34.8%) cited that most women believe the use of the speculum during treatment enlarges the vagina. Eleven (23.9%) cited that women have a fear that their uterus would be removed during treatment, 10 (21.7%) cited other disadvantages like fear of being attended to by a male provider. Nine (19.6%) women cited that women believe cryotherapy treatment can make women unable to reproduce.

**Table 4. 3 Myths and misconceptions of cryotherapy.**

| Myths and misconceptions of cryotherapy | Frequency(n) | Percentage (%) |
|---|---|---|
| The treatment makes women unable to reproduce | 9 | 19.6 |
| Speculum enlarges the vagina | 16 | 34.8 |
| Fear of being attended to by a male provider | 11 | 23.9 |
| Fear of losing uterus during treatment | 10 | 21.7 |
| **TOTAL** | **46** | **100** |

### 4.3 Barriers at the time of Cryotherapy Treatment of Cervical Cancer

#### 4.3.1 Place of service delivery

The majority of the women, 58 (96.7%), including those referred from other facilities, received both cervical cancer screening and treatment (cryotherapy) services at MSCH. Only two (3.3%) women were screened during an outreach/medical camp but eventually received treatment (cryotherapy) at the facility.

#### 4.3.2 Distance from home to health facility and mode of transport

The findings show that 57 (95%) of the women needed to cover more than 5 km of walking to reach the health facility, while only 3 (5%) of the women covered less than 5 km walking to reach the health facility.

On the mode of transport, the majority of the women, 35 (58.3%), used public transport as their mode of transportation to the facility. Fourteen (23.3%) and 11 (18.3%) used motorbikes and walked to the health facility, respectively.

### 4.3.3 Availability of Cryotherapy at the Health facility

From the Figure 4.2, 32 (53%) respondents noted that cryotherapy was readily available at MSCH, and 28 (47%) respondents noted that cryotherapy was not readily available at MSCH.

Of the 28 respondents who noted that cryotherapy was not readily available when asked why 12 (42.9%) said there was no healthcare provider to operate the cryotherapy machine. Eleven (39.3%) said the cryotherapy machine was not functioning, and four (14.2%) said there was gas stock out in the facility. The rest noted the other reason to be nurses' strike as what led to the unavailability of cryotherapy at the facility.

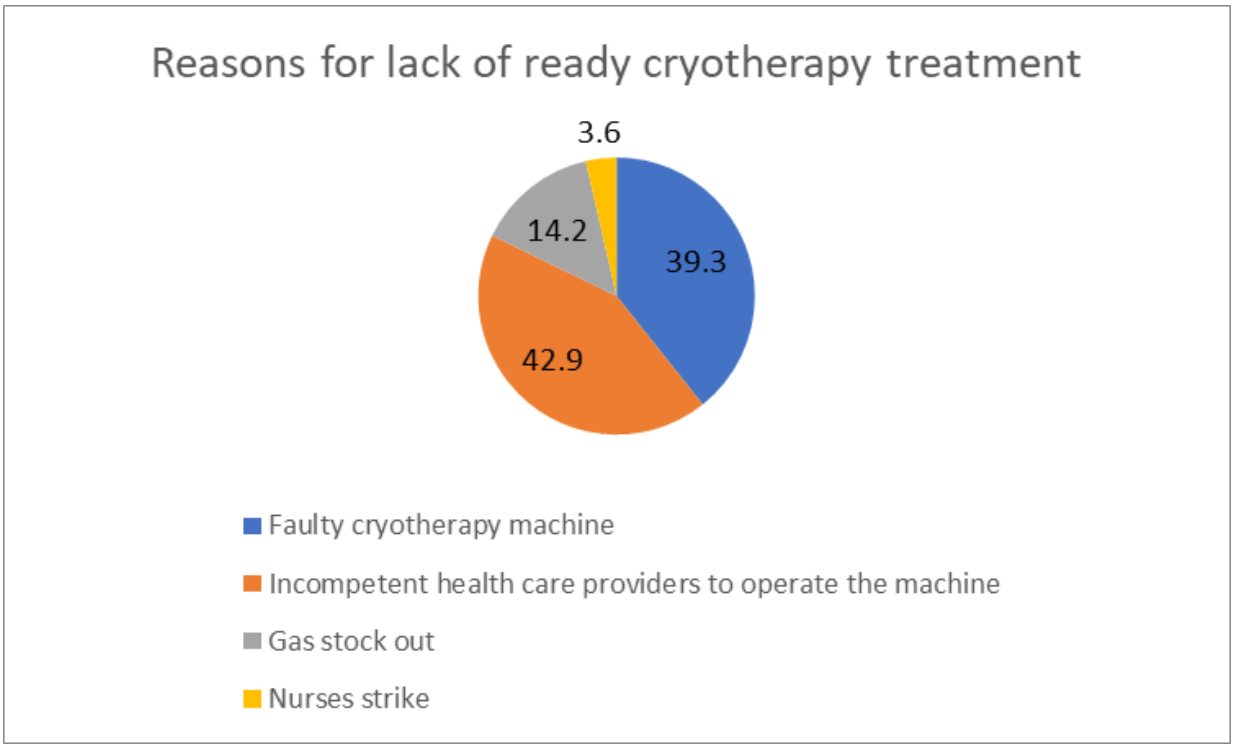


**Figure 4. 2 Reasons for lack of ready cryotherapy treatment.**

Nurses were asked to comment on the reasons for the unavailability of Cryotherapy at the facility. Findings indicated that,

*'The nurses trained to offer cryotherapy are few in number leading to burnout due to competing tasks and in any case, the nurses are not present, then there is no one to operate the machine and offer cryotherapy (KII-1).'*

*'Essential commodities, e.g., gas, vinegar, speculum for examination are often not readily available hindering effective service delivery (KII-5).'*

### 4.3.4 Actions at the Health facility

From the Table 4.4, 24(40%) respondents waited for more than 1 hour before they were attended to. Twenty-three (38.3%) and 13 (21.7%) respondents waited up to 30 min and up to 1 hour, respectively, before they were attended to. Therefore, long waiting time is a likely barrier to cryotherapy treatment of cervical precancer.

The majority 32 (53.3%) cited lack of confidentiality, 40% (n=24) were not pleased by the long waiting time before service delivery, and 1.7% (n=1) cited the impoliteness of service providers as actions that didn't, please them at the facility). Lack of confidentiality is likely to be a barrier to cryotherapy treatment of cervical precancer as opposed to impoliteness of service providers.

**Table 4. 4 Promptness of service delivery.**

| Promptness of service delivery | Category | Frequency (n) | Percent (%) |
|---|---|---|---|
| **Waiting time** | 15-30 min | 13 | 21.7 |
| | 30-1 hour | 23 | 38.3 |
| | More than 1 hour | 24 | 40 |
| **What didn't make you happy** | Service providers were impolite | 1 | 1.7 |
| | Attended by a male provider | 0 | 0 |
| | Long waiting time | 24 | 40 |

| | | |
|---|---|---|
| Lack of screening and treatment supplies | 3 | 5 |
| All the above | 0 | 0 |
| Lack of confidentiality | 32 | 53.3 |

When Nurses were asked to give the major reasons making women not visit the hospital for cryotherapy, findings indicated that,

*'Long waiting time before service delivery, lack of essential supplies, e.g., gas stock out, fear of pain during the treatment process and programming of services at the facility like cryotherapy not being offered daily are what discouraged women from going for cryotherapy (KII-2).'*

### 4.4 Barriers to the effective healing process after cryotherapy treatment

#### 4.4.1 Screening

Findings show that the majority of the women, 59 (98.3%), had gone for cervical cancer screening in the last 12 months, and only one (1.7%) had not gone for screening in the last 12 months. Fifty-eight (98.3%) knew they had abnormalities (precancerous lesions) through screening at the facility, and after the screening, they were all advised to immediately go for cryotherapy. One (1.7%) was screened during an outreach.

#### 4.4.2 Reasons for visiting the health facility on the day of diagnosis

The findings in the Table 4.5 show various reasons that prompted the women to visit the health facility. Of note was the majority of women, 34 (56.7%) had not experienced any pain rather, they had just gone for routine cervical cancer screening and 1 (1.7%) was experiencing abnormal vaginal bleeding.

**Table 4. 5 Reasons for visiting the health facility**

| Reason for visiting health facility | Frequency (n) | Percentage (%) |
|---|---|---|
| Abnormal vaginal bleeding | 1 | 1.7 |
| Abdominal pains | 10 | 16.7 |
| No pain, went for cervical cancer screening | 34 | 56.7 |

| | | |
|---|---|---|
| Pain during coitus | 15 | 25.0 |
| **TOTAL** | **60** | **100.0** |

### 4.4.3 Action taken at the health facility

From the findings, after screening results were out, women were advised to go for cryotherapy. A higher number of 34 (56.7%) women were treated with cryotherapy on-site, whereas 26 (43.3%) women were referred for cryotherapy from another facility to Migosi Sub-County Hospital.

### 4.4.4 Reasons for referral

In Figure 4.4, of the 26 women who were referred from the various facilities to MSCH, the majority, 11 (40%), cited the dysfunctionality of the cryotherapy machine as a reason for their referral. Eight (32%) cited no healthcare provider suitable for operating the cryotherapy machine contributed to their referrals, and seven (28%) cited gas stock out as what led to their referrals. These reasons for referral are likely barriers to cryotherapy treatment for cervical precancer.

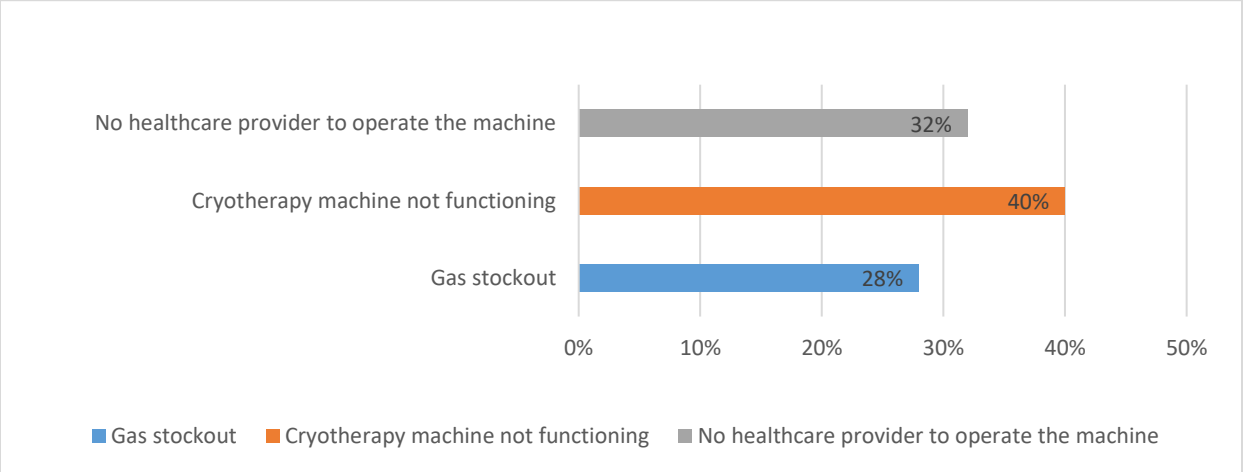


**Figure 4. 3 Reasons for referral.**

### 4.4.5 Treatment outcome

Findings in Table 4.6 depict how women adhered to post-treatment care instructions. A majority, 58 (96.7%) ensured they avoided vaginal douche/ tampons and 36 (60%), honored their appointment dates showing least proportion of respondent adherence in honoring appointment dates. The majority of the respondents did adhere to post treatment care instructions.

Experiences after cryotherapy varied among different women; a higher percentage, 51 (85%), did not experience any pain after cryotherapy. No woman (0%) reported severe vaginal bleeding after cryotherapy, as summarized in Table 4.8. This negates the perception that severe vaginal bleeding, abdominal pains and smelly vaginal discharge are barriers to cryotherapy treatment of cervical precancer.

**Table 4. 6 Treatment outcome.**

| Characteristics | Categories | Frequency (n) | Percent (%) |
|---|---|---|---|
| ***Adherence to post-treatment care instructions*** | Avoid vaginal douche/tampons | 58 | 96.7 |
| | Abstinence from sexual intercourse 1 month post treatment | 56 | 93.3 |
| | Use of condoms if a must 2 weeks post treatment | 55 | 91.7 |
| | Honoring appointment dates | 36 | 60 |
| ***Experience after cryotherapy*** | Severe vaginal bleeding | 0 | 0 |
| | Abdominal pains | 4 | 6.7 |
| | Smelly vaginal discharge | 5 | 8.3 |
| | No pains | 51 | 85 |

### 4.4.6 Male partner involvement

From the findings, 35 (58.3%) respondents were married but only 33 (94.3%) of the married shared, their screening results with their male partners. Ten (16.7%) respondents were single and four (40%) of the single shared their screening results with their male partners.

Of the 33 (94.3%) women who shared their screening results with their male partners, 26 (81.3%) were advised to seek treatment immediately, six (18.8%) partners asked to be given time to think about those results and the next move.

### 4.4.7 The relationship between the benefits of screening and benefits of cryotherapy

Table 4.7 shows chi-square test of association between those who knew the benefits of screening and benefits of cryotherapy. A woman of reproductive age who knows the benefits of screening is more likely aware of the benefits of cryotherapy [$X^2(1, N = 60) = 5.9097, p = .02$)].

**4. 7 The relationship between the benefits of screening and benefits of cryotherapy**

| **Benefits of screening** | **Benefits of cryotherapy** | | **P-value** |
|---|---|---|---|
| | **Yes** | **No** | |
| ***Yes*** | 49 (43.00) (0.84) | 37 (43.00) (0.84) | 0.02 |
| ***No*** | 11 (17.00) (2.12) | 23 (17.00) (2.12) | |

The results further show that the knowledge on the benefits of cryotherapy did not influence one's decision to wait for cryotherapy treatment [$X^2(1, N = 60) = 3.9863, p = .46366$)].

# CHAPTER FIVE: DISCUSSION

## 5.0 Discussion

The success of cryotherapy treatment depends on good adherence to post treatment care instructions, availability of services during the follow up treatments and the understanding of the patients about the treatment services. In this study however, the majority of the women reported good adherence to post treatment care instructions resulting into prompt healing process but pointed out a concern with unavailability of cryotherapy services and various myths and misconceptions hindering uptake of the treatment services. The study found out that despite the availability of cryotherapy machines in Kenya, unavailability of cryotherapy treatment services, non-adherence to post-treatment care instructions and myths and misconceptions remains barriers to uptake of the treatment services.

The adherence to post treatment care instructions included; avoiding vaginal douche/ tampons, abstaining from sexual intercourse one-month post treatment, ensuring use of condoms during sexual intercourse two weeks post treatment. We have also observed from the revealed findings that experiences after cryotherapy varied among different women, a higher percentage did not experience any pain after cryotherapy which is a good sign of healing. Few however, had smelly discharge and experienced abdominal pains and no woman reported severe vaginal bleeding after cryotherapy. These findings are consistent with other studies that identified and indicated healing becomes very effective when women adhere to these post treatment care instructions leading to no pain thus positive treatment outcomes (Manga *et al.*, 2019; Nelson *et al.*, 2016; Charlotte M Page *et al.*, 2019). At Kgatleng District in Botswana, they recommended that Healthcare providers should be more patient centered, make it intentional to explain the post-care treatment instructions and their specific significance in the treatment process. In addition, a good rapport is required to improve on adherence and completion of cryotherapy treatment (Tjedza G. Matenge *et al.*, 2018).

Despite the fact that there were no adverse reactions, a number of our study participants reported challenges with the inconsistency in cryotherapy service delivery, in particular, either faulty machine or absence of the healthcare provider who offer the services. Our findings are inconsistent with that of a study in Uganda that reported inadequate number of health care personnel who had been trained to offer cryotherapy services and faulty cryotherapy machines and inconsistency in cryotherapy service delivery (Ndejjo *et al.*, 2017). We further report barrier of treatment due to

the waiting time as study participants raised a concern with the long waiting before receiving cryotherapy. These findings are consistent with those of another study conducted in western Kenya where long waiting periods did upset the women but they felt unable to question this because of their lower status (Rosser *et al.*, 2015b). The study also revealed that the knowledge on the benefits of cryotherapy didn't influence one's decision on whether to wait or not despite the duration for cryotherapy treatment as a higher percentage had to wait for more than 30 minutes, however, this still discouraged some of them from honoring their appointment dates the next time or they become lost to follow up which could lead to progression of the precancerous lesions to cancerous lesions thus affecting their treatment outcomes. It's also in tandem with another study done across developing countries where they identified supply of cryotherapy equipment is problematic and staffing levels inadequate for optimal access to services (Catarino *et al.*, 2015). The result of this is long queues and waiting times which are frustrating to women and ultimately discourages them to undergo treatment (Bukirwa *et al.*, 2015). In terms of shortage of healthcare providers another study conducted in western Kenya recommended hiring and training additional staff to offer effective cryotherapy treatment (C. M. Page *et al.*, 2020)

Just as observed in regional primary care services, inadequate health education and promotion is also observed in the uptake of the cryotherapy treatment services. In this particular, study majority of the women reported to have heard of the disadvantages (myths and misconceptions) of cryotherapy such as being very painful, fear that their uterus would be removed during treatment among others but it did not influence their decision to go for cryotherapy as most went for cryotherapy including those referred from other health facilities because of their knowledge on the benefits of both screening and cryotherapy. This finding agrees with those of a study conducted in western Kenya which determined that better knowledge on benefits led to good uptake of cryotherapy as opposed to the influence by myths and misconceptions of cryotherapy (Rosser *et al.*, 2015a).

The study also revealed that a better knowledge on the benefits of cervical cancer screening and cryotherapy was positively associated with proper uptake of cryotherapy among the women of reproductive age. These findings didn't agree to those of a study conducted in Brazil and Burkina Faso where it was identified that there was poor knowledge on these benefits as information rarely reach hard to reach communities thus a larger population lack the correct information (Compaore

*et al.*, 2016; Girardi *et al.*, 2017). The possible explanation to this variation might be the difference in the location of the study areas as the studies in comparison were conducted in rural areas where access to the information on these benefits of cervical cancer screening and cryotherapy is a challenge.

From a study conducted in Nigeria, higher reproductive health education was positively associated with good uptake of cryotherapy services among the women. Accordingly, women whose educational status was secondary school and above were about two times or more likely to have good uptake and utilization of cryotherapy as compared to those who had no formal education. The study further showed that health education on cervical cancer screening and cryotherapy uptake and post treatment care was a significant factor in determining the level of knowledge among the women of reproductive age (Abiodun *et al.*, 2014). This can be explained by the fact that educated women might have better awareness on benefits of cryotherapy and thus good utilization of the same.

The study highlighted the need for health education and promotion to be intensified for cryotherapy as it is for other healthcare services. From the health belief model, if a woman could perceive the importance of cryotherapy then this might have a positive impact on the uptake of the service (Rosenstock *et al.,* 1988). It also suggests that people's beliefs about health problems and the perceived benefits of action and barriers to action explain engagement in health promoting behavior. Cue to action such as health education might trigger a health promoting behavior (Rosenstock *et al.*, 1988). According to (Rosser *et al.*, 2015c) this barrier was lessened with a more extensive educational intervention than what was provided by community health volunteers.

Although cryotherapy was decentralized, our study identified the need for centralizing cryotherapy services for easy access by women when in need. In a study conducted in Botswana, the women received transport reimbursement anytime they'd seek cryotherapy services and the ministry of health also provided mobile treatment that led to proper adherence to cryotherapy and effective treatment (T. G. Matenge *et al.*, 2018).

# CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

## 6.1 Conclusions

On barriers before cryotherapy, only three factors were found to influence the utilization of cryotherapy among the women, namely, knowledge on cryotherapy, myths and misconceptions like the use of a speculum during examination enlarges the vagina and male partner involvement.

Lack of involvement of community health volunteers (CHVs) to provide necessary information about cryotherapy affected women's knowledge levels on cryotherapy.

Among the barriers at the time of cryotherapy treatment, the study only found the following two factors that majorly influenced cryotherapy treatment provision at MSCH which were unavailability of cryotherapy services at all times and long waiting time before service delivery.

Finding in the study depicted that majority of the women just went for their routine cervical cancer screening where they were identified to have precancerous lesions. Therefore, the treatment outcome for cryotherapy appears good and this may be contributed to both patients and healthcare providers.

On the relationship between knowing both the benefits of screening and cryotherapy there was a statistically significant association between knowing both the benefits of screening and cryotherapy.

## 6.2 Recommendations

The study recommends continued health education and creation of awareness among the women in the hospital and community to maintain the high levels of information on cervical precancer screening and cryotherapy. It also recommends engagement of more CHVs to educate and support women at the community level to seek screening and cryotherapy services. The Ministry of Health should formulate a policy that ensures all women of reproductive age who visit a health facility for MCH, ANC and Family planning services are routinely screened for Cervical Cancer as per

the current stated guidelines. Those identified to have precancerous lesions should be treated with cryotherapy immediately.

The County Government of Kisumu should set aside adequate funds for cryotherapy in Health facilities to ensure the necessary commodities like gas, speculum, vinegar, lubricants, gloves and machine maintenance funds are readily available to facilitate proper adherence and efficient cryotherapy service delivery. Healthcare personnel offering cryotherapy to be increased in number and trained on Cryotherapy to reduce staff burnout and the time patients have to wait before service delivery thus ensuring delivery of quality treatment.

Women on cryotherapy treatment for cervical precancer should be informed on the significance of adherence to post treatment care instructions to avoid other complications such as smelly vaginal discharge and abdominal pains. The ministry should introduce follow-up (TCA) as an indicator on the Cryotherapy register in order to enable the health care personnel bi-annually track/follow up the women who had been treated with Cryotherapy and examine them to determine their treatment outcome.

### 6.3 Recommendation for future research

The researcher recommends that an analytic study be conducted with a bigger sample size for more rigorous findings on the barriers of cryotherapy treatment and cervical cancer.

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# APPENDICES

**Appendix I: Informed Consent**

**STUDY TITLE:** BARRIERS TO THE CRYOTHERAPY TREATMENT OF CERVICAL CANCER IN MIGOSI SUB-COUNTY HOSPITAL.

**INSTITUTION:** JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY.

**LOCATION:** KISUMU COUNTY

**INVESTIGATOR:** LORINE KEMUNTO KANGWANA

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**SUPERVISORS:** George Ayodo, PhD and Jane Owenga, PhD

**INFORMED CONSENT**

Consent form for participation in research (English)

My name is Lorine Kemunto Kangwana, a student at Jaramogi Oginga Odinga University of Science and Technology doing a study on cryotherapy for the purpose of completing my Master of Science degree in Epidemiology and Biostatistics.

This is a cross-sectional study aiming at finding the barriers to cryotherapy treatment of cervical precancer among women of childbearing age. You will not include your name on the questionnaire and so there is no disclosure of information that specifies you. The data that will be collected will be analyzed and the results will be provided in tables and graphs. I will also publish the results and will also share the information with my school and also Migosi Sub-County Hospital. I am targeting women who have received cryotherapy treatment of cervical precancer. All women who fit for inclusion will be included (old and newly diagnosed) in the study.

Before signing this form, kindly read through the points below that sign at the bottom of this form. If you have any questions concerning the study you may ask the research assistants after they have finished explaining to you.

Your Name.....

I being over the age of 15/18 years hereby assent/consent to participate as requested in the research project titled above.

I have understood all the information provided.

I agree to the recording of my information and participation.

3. I understand that:

I may not directly benefit from taking part in this research.

I am free to withdraw from the project at any time and decline to answer particular questions.

While the information gained in this study will be published as explained, I will not be identified, and individual information will remain confidential.

Whether I participate or not, or withdraw after participating, will have no effect on any treatment or service that is being provided to me.

Whether I participate or not, or withdraw after participating, will have no effect on my progress in my course of study, or results gained.

I may ask that the interview be stopped at any time, and that I may withdraw at any time from the session or the research without disadvantage.

4. I agree to this information being made available to other researchers who are not members of this research team, but who are judged by the research team to be doing related research, on condition that my identity is not revealed.

Participant's signature……Date……...

I certify that I have explained the study to the volunteer and consider that she/he understands what is involved and freely consents to participation.

Researcher’s name…….…….....

Researcher’s signature……. Date…….

**PURPOSE OF THE STUDY**

This study will provide information to Migosi Sub- County Hospital on the barriers to the cryotherapy treatment of cervical cancer. It will also create improvement in policy measures on treatment of cervical cancer at early stages and proper investment on health equipment in our facilities, adequate budgetary allocation, community awareness creation and capacity development

**PONTENTIAL RISKS AND DISCOMFORTS**

There is no risk to potential participants given that there will be no invasive methods used.

**CONSENT**

I have read all the sections of this consent form and now volunteer myself to take part in his study

Participant's signature _____ Date _____

Investigator's signature _____ Date _____

**Appendix II: Questionnaire**

Please answer the questions appropriately by placing a tick [√] against your option or by filling in the blank space provided.

1. **Demographic Information**

1. What is your age?

a. 15-19 years
b. 20-24 years
c. 25-29 years
d. 30-34 years
e. 35-39 years
f. 40-49 years

2. What is your marital status?

a. Single
b. Married
c. Widowed
d. Divorced/separated

3. What is your highest level of education?

a. Never been to school
b. Primary level
c. Secondary level
d. College
e. University

4. What is your occupation?

a. Employed
b. Business
c. Farmer
d. Any other (specify)

5. Is your household income usually regular and dependable?

a. Yes
b. Possibly
c. Uncertain
d. No

**2. Barriers before cryotherapy**

1. How did you know you had abnormalities in your cervix?

a. Through screening at the facility
b. Others, specify

2. After screening, what was the advice?

a. Go for further treatment
b. No advice

3. On the day of diagnosis, what prompted your visit to the health facility?

a. Abnormal vaginal bleeding
b. Abdominal pains
c. No pain, just went for cervical cancer screening
d. Others, specify

4. In the last 12 months, have you ever gone for screening?

a. Yes
b. No

5. Is it possible for you to remember the month?

a. Yes
b. No

6. If yes, which month?

……

7. When did you come to know you had this condition?

a. Less than 6 months ago
b. More than 6 months ago

8. After knowing you had cervical cancer, what action was taken?

a. Treated with cryotherapy on site
b. Referred for cryotherapy to another facility
c. Others, specify

9. If referred to another facility, what was the reason?

a. Cryotherapy machine not functioning
b. No health care provider to operate the machine
c. Gas Stock out

10. After cryotherapy what was your experience?7
a. Severe vaginal bleeding
b. Abdominal pains
c. Smelly vaginal discharge
d. No pains

11. Did you fully adhere to the following post treatment care instructions?

a. Avoid vaginal douche or tampons Yes (1) No (2)
b. Abstinence from sexual intercourse 1 month post treatment Yes (1) No (2)
c. Use of condoms during sexual intercourse if a must 2 weeks post treatment Yes (1) No (2)
d. Honoring appointment dates Yes (1) No (2)

**3. Barriers at the time of cryotherapy**

1. Where did you get your cancer screening services?

a. Health facility
b. Outreach/medical camp

2. Where did you get your cancer treatment services?

c. Health facility
d. Outreach/medical camp

3. If health facility, how far is the facility from your home?

a. Less than 5kms walk
b. More than 5 kms walk

4. What is your usual mode of transport to this health facility?

a. Walking
b. Motorbike
c. Matatu

5. Is the service readily available wherever one visits the health facility?

a. Yes
b. No

6. If no to question five above, why?

a. Cryotherapy machine not functioning
b. No health care provider to operate the machine
c. Gas Stock out
d. Others, specify……

7. How long do you have to wait for the services?

a. 15 – 30 min
b. 30 – 1 hour
c. More than 1 hour

8. What didn't make you happy if any during screening or treatment?

a. Service providers are impolite
b. Attended by a male provider
c. Long waiting time
d. Lack of screening and treatment supplies
e. All the above
f. Others, specify……

**4. Barriers to effective healing process**

1. Are you aware of the benefits of cervical cancer screening?

a. Yes, state any ……
b. No

2. Are you aware of the benefits of cryotherapy treatment of cervical cancer?

a. Yes, state any……
b. No

3. Have you ever heard of the any advantages or disadvantages about cryotherapy treatment?

a. Yes
b. No

4. If yes to question three above, have they influenced your decisions on whether to seek treatment or not?
a. Yes
b. No

5. What are some of those disadvantages?

a. Treatment makes women unable to reproduce
b. Use of the speculum enlarges the vagina
c. Fear that the uterus would be removed during treatment
d. Others, specify

6. When screening was done, were you able to share the information with your partner?

a. Yes
b. No

7. If yes, what were you advised to do?
a. Seek treatment immediately
b. Give him time to think about it
c. Others, specify ……

8. Did you pay any amount for screening and cryotherapy?
a. Yes
b. No

9. If yes, how much?

…….....

**THANK YOU SO MUCH**

**Appendix III: Key Informant In-depth Interviews (Facility Healthcare staff)**

1. What are the strategies that can be put in place to encourage women to come for regular cervical cancer screening?

2. What are the strategies that can be put in place to improve prompt diagnosis and treatment of Cervical Cancer?

3. List the things that are happening at the health facility that make women not to visit the hospital for cryotherapy

4. List the challenges you are facing in the facility that are hindering effective cryotherapy treatment of cervical cancer

5. What are the practices that encourage late visit, diagnosis and treatment of cervical cancer in the health facility?

6. What are the socio-economic factors that are attributable to late care seeking?

7. What strategies have you put in place to refute the myths and misconception on cryotherapy cervical cancer treatment

**Appendix IV: Facility Demographic Information for the Year 2019**

| INDICATOR | POPULATION (%) | TOTAL POPULATION(n) |
|---|---|---|
| Catchment population | 100 | 22153 |
| Females | 51 | 11298 |
| Males | 49 | 10855 |
| 6-11 months population | 1.8 | 399 |
| under 1 population | 3.5 | 776 |
| Under 5 population | 16 | 3545 |
| 12-59 months population | 90 | 3191 |
| Total number of households | 5 | 1108 |
| Under 15 population | 40 | 8862 |
| 15-24 population | 23.9 | 5295 |
| WCBA (15-49YRS) | 26 | 5760 |
| Over 60 population | 3.4 | 753 |
| Est. no. of pregnant women | 4 | 886 |
| Est. deliveries | 4 | 886 |
| Est. live births | 4 | 886 |

**Source: Migosi sub county hospital 2019**

**Appendix V: Total no. of women who received Cryotherapy treatment services both at the health facility and during outreach in MSCH between 2018 and 2019**

| MONTH | HEALTH FACILITY(n) | OUTREACH(n) |
|---|---|---|
| January | 6 | 1 |
| February | 5 | 0 |
| March | 4 | 2 |
| April | 4 | 2 |
| May | 3 | 1 |
| June | 7 | 0 |
| July | 8 | 0 |
| August | 5 | 4 |
| September | 11 | 0 |
| October | 9 | 0 |
| November | 3 | 1 |
| December | 4 | 0 |

**Source: Migosi sub county hospital cryotherapy register 2018**

## Appendix VI: JOOUST ETHICAL APPROVAL

**JARAMOGI OGINGA ODINGA**
**UNIVERSITY OF SCIENCE AND TECHNOLOGY**

**DIVISION OF RESEARCH, INNOVATION AND OUTREACH**
**JOOUST-ETHICS REVIEW OFFICE**

Tel. 057-2501804
Email: erc@jooust.ac.ke
Website: www.jooust.ac.ke

P.O. BOX 210 - 40601
**BONDO**

**OUR REF**: JOOUST/DVC-RIO/ERC/E2

**28th October, 2020**

Lorine Kemunto Kangwana
SHS
**JOOUST**

Dear Ms. Kangwana,

**RE: APPROVAL TO CONDUCT RESEARCH TITLED "BARRIERS TO THE CRYOTHERAPY TREATMENT OF CERVICAL CANCER AMONG WOMEN OF REPRODUCTIVE AGE IN MIGOSI SUB- COUNTY, KISUMU COUNTY"**

This is to inform you that JOOUST ERC has reviewed and approved your above research proposal. Your application approval number is **ERC/28/10/20-2.** The approval period is from 28th October, 2020 – 27th October, 2021.

This approval is subject to compliance with the following requirements:

i. Only approved documents including (informed consents, study instruments, MTA) will be used.
ii. All changes including (amendments, deviations and violations) are submitted for review and approval by JOOUST IERC.
iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to NACOSTI IERC within 72 hours of notification.
iv. Any changes, anticipated or otherwise that may increase the risks of affected safety or welfare of study participants and others or affect the integrity of the research must be reported to NACOSTI IERC within 72 hours.
v. Clearance for export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days upon completion of the study to JOOUST IERC.

Prior to commencing your study, you will be expected to obtain a research permit from National Commission for Science, Technology and Innovation (NACOSTI) https:oris.nacosti.go.ke and also obtain other clearances needed.

Yours sincerely,

Prof. Francis Aiga'wa
**Chairman, JOOUST ERC**
Copy to: Deputy Vice-Chancellor, RIO Director, BPS Dean, SHS

## Appendix VII: NACOSTI PERMIT

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **793989**

Date of Issue: **18/November/2020**

**RESEARCH LICENSE**

**This is to Certify that Miss.. LORINE KEMUNTO KANGWANA of Jaramogi Oginga Odinga University of Science and Technology, has been licensed to conduct research in Kisumu on the topic: BARRIERS TO THE CRYOTHERAPY TREATMENT OF CERVICAL CANCER AMONG WOMEN OF REPRODUCTIVE AGE IN MIGOSI SUB-COUNTY, KISUMU COUNTY for the period ending : 18/November/2021.**

License No: **NACOSTI/P/20/7718**

**793989**

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

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