UNIVERSITY of RWANDA

DISSERTATION

KNOWLEDGE, UTILIZATION AND BARRIERS OF CERVICAL CANCER SCREENING AMONG WOMEN ATTENDING SELECTED DISTRICT HOSPITALS IN RWANDA

By

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College of Medicine and Health Sciences

School of Nursing and Midwifery

Master of Sciences in Nursing (Oncology)

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June, 2019

DECLARATION

I hereby declare that this thesis is the result of my own original work and has not been presented in any other university.

Candidate's Signature………………………

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ABSTRACT

Background: The cancer of cervix is placed third among common cancers attacking women globally. Rwanda is among countries belonging in Easter Africa where cancer of cervix was ranked on second place among other cancers attacking women. However, regular screening is among preventive majors for the cancer of cervix. Despite that, the screening services in African is estimated between 10 and 70%. Furthermore, individual, community, service provider, and health system related barriers limiting the use of screening services in HICS and LICS. In Rwanda, there is a limited literature on utilization of screening services.

Aim: To assess knowledge, utilization and barriers limiting women to attend cervical cancer screening services in district hospitals selected by the researcher.

Methods: The research used quantitative study (cross-sectional) among selected district hospitals of Rwanda. To select the respondent, the study used a sampling method of systematic random. Researcher distributed to the respondent a structured questionnaire for collecting demographic attributes, level of knowledge and utilization rate and barriers limiting screening services. Before data collection, ethical clearance has been obtained from IRB. After survey, data collected was screened and analyzed by use of SSPS software.

Results: This study involved 329 women sampled among women attending gynecology services in the selected district hospitals in the month of May. A half of respondents had high score knowledge level to the screening services of cervical cancer. Respondent undergone screening were 28.3%. The multivariate analysis had found out good association between utilization and knowledge on screening among women on probability of 0.000. Individual, community, health provider and systems barriers limit the access of beneficiaries of screening.

Conclusion: The half of respondent whose higher score knowledge on cervical cancer, only 28.3% got screened. A number of barriers prevent women from getting screened. Global effort should encourage screening for the cancer of cervix coverage and reducing barriers.

Keys words: cervical cancer, screening, utilization, knowledge, barriers

DEDICATION

The present work was dedicated to:

- My beloved husband;
- My son and daughter;
- My parents, brothers and sister
- My classmates, lectures and staff;
- All who helped in achievement of this task.

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LIST OF ACRONYMS AND ABBREVIATIONS

AIDS: Acquired Immunity Deficiency Syndrome;

ACS: American Cancer Society;

ASCCP: American Society for Colposcopy and cervical Pathology;

ASCP: American Society for Clinical Pathology

ASR: Age Standardized rate;

AU: African Union;

CCS: Cervical cancer screening;

CIN: Cervical Intraepithelial Neoplasia;

DNA: deoxyribonucleic acid;

FIGO: Federation of International Gynecology and Obstetrics;

GAHFs: Government-Assisted Health Facilities;

HBM: Health belief model;

HICS: High Income countries;

HIV: Human immunodeficiency virus;

HPV: Human Papilloma Virus;

IRB: Institutional Review Board;

LEEP: loop electrosurgical excision procedure;

LICS: Low Income countries;

LMICs: Low and Middle Income Countries;

MDGs: Millennium Development Goals;

NCDs: Non communicable diseases;

OPD: Outpatient department;

SDGs: Sustainable development Goals;

SPSS: Statistical Package for Social Studies;

USPSTF: US preventive service Task Force Recommendation Statement;

VILI: Vision Inspection with Lugol Iodine;

WHO: World Health Organization.

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CHAPTER ONE: INTRODUCTION

1.1. Introduction

The cancer of cervix is an important burden on population health globally (Bray *et al.*, 2018). In low income countries, cancer of cervix causes mortality and morbidity to the women (Ferlay *et al.*, 2019). Effects of cervical cancer are more dangerous in Africa (Abate, 2016). Cervical cancer ranks the 3rd globally; 2nd in Africa, among women's cancers and was the first major causes of mortality among African women (Bray *et al.*, 2018; Ferlay *et al.*, 2019). In the East and Middle region of Africa, cervical cancer is common among women in the age group of 15 to 40 years (Ferlay *et al.*, 2019). In this region, the year 2018 presented new cases of cervical cancer estimated at 52,633 with 37,017 associated deaths (Ferlay *et al.*, 2019). The current estimate of cervical cancer incidence in Rwanda is 31.9 cases per hundreds thousands women every year, and this incidence approaches the one in Eastern Africa counted at 40.1 cases per hundred thousand women (Bray *et al.*, 2018; Ferlay *et al.*, 2019). However researchers found that, with an early and regular screening, the cervical cancer incidence, may be reduced and women lives saved (Ly, 2016; Aranda *et al.*, 2017; Stewart, Moodley and Walter, 2018). Despite to what mentioned above, there is a low adoption of cervical cancer screening in Sub-Saharan African (Schiffman, 2017).

1.2. Background

Worldwide, cervical cancer is third among cancers affecting women (Bray *et al.*, 2018; Ferlay *et al.*, 2019). Worldwide, cancer of cervix is third among cancers affecting women (Ferlay *et al.*, 2019). The main cause of cervical cancer was identified as the Human Papilloma virus (de Sanjosé, Brotons and Pavón, 2018). Although, researchers found that screening of cervical cancer is a quick response intervention for the incidence reduction to the Human Papilloma Virus precancerous lesions (Stewart, Moodley and Walter, 2018). However, in poor countries, screening based on searching Human Papilloma Virus DNA or cytology based are still not affordable (Stewart, Moodley and Walter, 2018; Mukanyangezi *et al.*, 2018). The screening methods include a visualization of precancerous lesions by use of Lugol´s iodine (VILI) and the visual inspection by use of acetic acid (VIA) and cytology-based screening or HPV test (Stewart, Moodley and Walter, 2018; Bray *et al.*, 2018). Health providers trained (nurses, midwifery and doctors) are able to do such procedure of VIA and VILI (Ruzigana *et al.*, 2017; Mukanyangezi *et*

al., 2018).

According to Makuza (2015) it was proven that effective visual inspection while detecting precancerous lesions of cervical cancer is by use of acetic acid and Lugol´s iodine (Makuza *et al.*, 2015). Interpretation of cytology is difficult as cytologists are not easily available in periphery (Stewart, Moodley and Walter, 2018; Bhattacharyya et *al*, 2015). Screening methods focus on detecting precancerous lesions, which, could lead to cancer if not treated (Ruzigana *et al.*, 2017). WHO recommend women to start cervical cancer screening at 30 age old (Santesso *et al.*, 2016; Bray *et al.*, 2018). The intervals period between screening vary from three to five years, for women with negative screening on VIA or cytology (Curry *et al.*, 2018). In the other hand, women found with cervical abnormal lesions on screening, are scheduled for further regular check, diagnosis and treatment. Further and regular follow up prevent the growth of cancer and even allow their treatment on early stage which increases chance of healing (Stewart, Moodley and Walter, 2018).

Despite that, an early detection of cervical cancer is associated with an increased survival rate (Bray *et al.*, 2018); Schiffman (2017) showed how females from sub-Saharan Africa still have advanced cases of cancer which are untreatable (Schiffman, 2017). Late detection of cervical cancer usually deny women from early curative treatment, thus increases morbidity and mortality rates (Riedel, 2015; Stewart, Moodley and Walter, 2018). In reference to the study conducted in some African Countries on screening services of cervical cancer, the rate among women using screening services were low in undeveloped and developing countries. Studies reported a screening rate of 0.8% ,5% and 5.3% in in coastal part of Ghana, Sudan and in Nigeria respectively (Almobarak *et al.*, 2016; Kokuro, 2017; Ebu *et al.*, 2014) against 75% in developed countries (Ba-break *et al.*, 2015).

Regarding screening services in Rwanda, there is no research findings published yet (Ruzigana *et al.*, 2017). However, based on research findings from the neighboring countries of Easter Africa, there are still low rate of cancer screening. According to Kangmennaang (2018), Kenya stand on 14% of women in a reproductive age, the rural area of Ethiopia at 0.4% and 20.2% in Democratic Republic of Congo (Kangmennaang *et al.*, 2018; Almobarak *et al.*, 2016). Researchers in developed, developing and underdeveloped countries reported different barriers affecting cervical cancer screening. Those barrier are mostly related to the client (patients

seeking for cervical cancer services), provider (health care providers), and system (health polices, accesses and availability of services within a given county) (Racey and Gesink, 2016; McFarland, Gueldner and Mogobe, 2016; Bateman *et al.*, 2019; Kangmennaang *et al.*, 2018). In Rwanda, Benemariya (2018) demonstrated the following factors which delay the consultation of the cancer of cervix. Those are related to the patients, services providers of health services and the health care systems (Benemariya *et al.*, 2018).

1.3. The problem statement

Among other cancer, cancer of cervix was ranked globally as a major killer and a higher burden is in the undeveloped and developing countries (Stewart, Moodley and Walter, 2018). In Rwanda the cervical cancer ranks first in cancer attacking women at an estimated rate of 1304 new women diagnosed and 921 deaths in the year 2018 (Ferlay *et al.*, 2019). The adoption of screening practices have slowed down effect of cervical cancer in the developed countries (Stewart, Moodley and Walter, 2018; Curry *et al.*, 2018). The research finding shows that cervical cancer detection at early stage increases survival rate of patient (WHO, 2019; Kangmennaang et al., 2018). However, most women in undeveloped and developing countries are still presenting in advanced and often untreatable cervical cancer disease (Riedel, 2015); Bhatla *et al.*, 2018; Denny *et al.*, 2017) and screening of cancer of cervix utilization is still not sufficient in sub-Sahara countries of Africa (Stewart, Moodley and Walter, 2018).

Available data in Rwanda do not provide a real figure on knowledge level, utilization rate and screening barriers among women beneficiaries (Ferlay *et al.*, 2019). Even if cervical cancer screening services exist in Rwanda since 2012 (Binagwaho *et al.*, 2013), there was few asymptomatic women presented for cancer of cervix screening services within the year 2016 (Ruzigana *et al.*, 2017). Furthermore, a population risk factor analysis estimated, cervical cancer coverage among Rwandan women, in range from 10 to 50% (Stewart, Moodley and Walter, 2018).

The identified reason preventing beneficiaries to use screening services are poor knowledge with a limited financial status for the HIV-positive women (Mukanyangezi *et al.*, 2018). Findings of the study done in 2017 among patients attending Butaro hospital shown that, even if the cervical cancer treatment program was feasible in poor villages, half of patients attend hospitals at stage III and IV of the disease and this continue to be an existence of challenge (Davey *et al.*, 2017). In

the same context, factor related to the patients, professionalism of service providers and barriers related to the health system were highlighted by Benemariya (2018) as major reasons affecting the delays of consultation for cancer of cervix and their treatment in Rwanda (Benemariya *et al.*, 2018). From the above mentioned, the present research assessed level of women knowledge, utilization and barriers found in cervical cancer screening services. Present research was conducted on women attending gynecological services from selected district hospitals in Rwanda.

1.4. The main objective of the study

The present research was conducted for assessing knowledge, utilizations and barriers on the services of cancer screening to the women attending selected district hospitals in Rwanda.

1.5. The specifics objectives of the study

1) Assessing knowledge of women on screening services of cancer of cervix to the women attending selected district hospitals in Rwanda;
2) Assessing utilization rate of screening services to the cancer of cervix to the women attending selected district hospitals in Rwanda;
3) Evaluate linkage between knowledge level, demographics and services for cancer of cervix screening;
4) Identify individual, community, health system and service provider related barriers to the screening services of cancer of cervix among women attending selected district hospitals in Rwanda.

1.6. The questions for research

The present research pursued to answer on:

1. Do women attending selected district hospitals have adequate knowledge on cancer of cervix screening?
2. To which rate cancer screening services are utilized at district hospitals by women attending selected district hospitals?
3. Is there relationship between level of knowledge, demographics and screening services utilization?
4. Are there barriers for cancer screening among service beneficiaries?

1.7. The Study significance

1. 7.1 In nursing practice

This study aims to inform both health providers and decision makers on knowledge, screening services utilization by women and the associated barriers. Study findings are expected to help decision makers in adjustment and improvement screening services in selected district hospital. Also, study findings will engage Rwanda Ministry of Health to increase uptake and removing barrier to the eligible age groups.

1. 7. 2. In nursing research

Nursing sector is a diverse sector with more specificity in reference to the country context. The present study finding shall open research windows in Rwanda oncology nursing for a better service delivery to the clients. The results will also help in identification of research gaps in need of other research work. As a researcher I will highlight where more researches are needed for a brought new future education in oncology nursing sector, especially on cervical cancer.

1. 7.3. In nursing education

Among the expected findings, the study shall demonstrate obstacles affecting different services of cervical cancer screening in Rwanda. From those barriers, service providers and educators will know where they have to put more emphasis in the future. The research findings will help to strengthen the curriculum by including topic related to cervical cancer screening.

1. 7.4. In nursing administration

The findings of this study will contribute in policy formulation process. The present study findings will also contribute in the development of programs, polices and laws governing nursing sector in the country and abroad.

1.8. Key definition of the study concepts

1.8.1. Cervical cancer

The dictionary of NCI defines cervical cancer as an uncontrolled division of abnormal cells in the cervix of uterus. Normally cancer of cervix starts to develops slowly and it may not have symptoms. It is only visible through regular screening. Cancer of cervix is mostly known to be caused by human papillomavirus (HPV) and it is mostly transmitted via sexual intercourse (NCI,

2018). In this study, cervical cancer is an uncontrolled growth of cervix uterine cells which induces local and distant tissues invasion (metastases).

1.8.2. The screening services of cervical cancer

These tests are done for women at risk of getting cancer of cervix. Screening tests include even women with no symptoms. The test consists to find out lesions of precancerous which may read to cancer when not treated (WHO, 2018). In this study, screening services of cervical cancer include all practices used to detect early the cancer of cervix.

1.8.3. Utilization

Cambridge Dictionary define utilization as the act of using something in an effective way (Cambridge Dictionary, 2016). In this study, utilization is defined as the use of service by person for the purpose of cervical cancer early detection.

1.8.4. Barriers

Cambridge Dictionary define barrier as something that prevent something else from happening or makes it more difficult (Cambridge Dictionary, 2016). In this study, barrier refer to anything such as obstacles, factors or problem that prevent an individual gaining access to cervical cancer screening service.

1.8.5. Knowledge

Cambridge Dictionary define knowledge as being aware, having clear understanding or information by personal experience or study (Cambridge Dictionary, 2017). In this study, knowledge is awareness and familiarity on cervical cancer and screening acquired through experience or education.

1.9. The study organization

The present thesis is divided into chapters with headings and subheadings. Those chapters include an introduction to the study, literature review, methodology, instrumentation, data collection, data analysis, discussion and conclusion.

1.10. Conclusion to chapter one

The ultimate objective of this research is to assess level of knowledge, utilization plus different barriers of screening services among women attending selected district hospitals in Rwanda. It is

a cross section study that emphasize on evaluate the Rwandan women knowledge, how are utilizing screening services and limiting factor for the effective utilization of the above-mentioned service.

CHAPTER TWO: LITERATURE REVIEW

2.1. Introduction

The literature review chapter reviews different literature related to the cervical cancer screening services of cervical cancer at global, regional and country levels. The present study has reviewed the historical background of cervical cancer screening, level of knowledge among the screening services users, motivation factors to the screening and barriers affecting the attendance to the screening services. In this chapter, researcher have drawn a theoretical framework of the research.

2.2. Theoretical literature

2.2.1. Cancer of cervix

Cancer of cervix is known to be, an uncontrolled cellular growth in a cervix of uterus of women body in uncontrolled manner (Bhatla *et al.*, 2018; Mukanyangezi *et al.*, 2017). It is characterized by different local tissue invasion and distant metastases (Bhatla *et al.*, 2018; Abate, 2016). In general cervical cancer cells develop from normal cells whose, DNA has been damaged (Abate, 2016; de Sanjosé, Brotons and Pavón, 2018). As reported by WHO (2015), the high incidence and burdens for the cancer of cervix in developing countries takes an advantage on ineffective screening programs and poor utilization of screening services (Stewart, Moodley and Walter, 2018). Invasive cervical cancer is a result of behaviors of body organs (precancerous lesion) which can be discovered through a regular screening of Human Papilloma Virus (HPV). Those precancerous lesions may be able to be treated effectively and prevent invasive cancer for the future (WHO, 2015; Bhattacharyya et *al.*, 2017).

2.2.2. Human Papilloma virus (HPV)

Cancer of cervix is due to the infection of human papilloma virus (HPV) (de Sanjosé, Brotons and Pavón, 2018; Mukanyangezi *et al.*, 2017). HPV is transmitted via sexual relation between an infected and uninfected person (de Sanjosé, Brotons and Pavón, 2018). At some point of life, Battacharyya (2017) and De Sanjosé (2018) have demonstrated how almost half of sexually active people are supposed the fore mentioned virus (Bhattacharyya, Nath and Deka, 2017; de Sanjosé, Brotons and Pavón, 2018).

The human papilloma virus is presented in more than 200 different genotypes. In reference to their genome structure and tropism to human epithelial tissues, genotype of human papilloma virus is divided into four types. Those are Beta, Nu/Mu, Alpha and Gamma. Some types are harmless others cause genital warts while others are source of cancer (Mukanyangezi *et al.*, 2017). The human papilloma virus affect both men and women with a high burden on men due to cervical cells susceptibility on HPV infection (de Sanjosé, Brotons and Pavón, 2018). Apart from cervical, they also affect anus, vagina, vulva, penis, mouth and throat. The human papilloma virus infections on the above mentioned organs cause different type of cancers. The cancer of cervix is known to take source from around twelve (12) different type of high risk genotype of Human Papilloma Virus (Vici *et al.*, 2014; de Sanjosé, Brotons and Pavón, 2018). Among those viruses, Human Papilloma Virus 16 and Human Papilloma Virus count seven (7) out of ten (10) of all incidences of cervical cancers (de Sanjosé, Brotons and Pavón, 2018; Vici *et al.*, 2014). It was discovered that most Human Papilloma Virus infections clear up naturally. The most pre-cancerous lesions become solved in a spontaneously way (Vici *et al.*, 2014). Trend for the development of invasive cancer of cervix from pre-cancerous lesions take between 15 to 20 years with normal immune systems while, for patients with a weakened immunity, it takes only five (5) to ten (10) years (Binagwaho *et al.*, 2013; J.A. *et al.*, 2014; de Sanjosé, Brotons and Pavón, 2018).

2.2.3. Cervical cancer screening services

This is a quick response intervention exists for the incidence reduction to the Human Papilloma Virus. However, in poor countries, screening based on searching Human Papilloma Virus DNA or cytology based are still not affordable (Mukanyangezi *et al.*, 2018; Eng, Gan and Dahlui, 2013). According to Binagwaho (2013) there four method of cancer screening. Those are Pap smear or conventional cytology, monolayer cytology, human papillomavirus testing (HPV), and visual inspection with Lugol iodine or Acid acetic intended to detect pre-cancer and cancer lesions (Binagwaho *et al.*, 2013). According to WHO, 2014 guideline, VIA is recommended in women younger than 50 years old, as the transformation zone is not visible in the women older than 50 years (WHO, 2014). The introduction of above mentioned screening methods in developed and developing countries has significantly decreased new and existing cases and deaths in the last 20 years (Nwabichie, Manaf and Ismail, 2018). Health providers trained (nurses, midwifery and doctors) are able to do such procedure of VIA and VILI (Ruzigana *et al.*,

2017; Binagwaho *et al.*, 2013). Researchers have proved how cancer testing using acetic acid and Lugol´s iodine are effective in detecting precancerous lesions (Makuza *et al.*, 2015). Interpretation of cytology is difficult as cytologists are not easily available in periphery (Bhattacharyya, Nath and Deka, 2017).

Screening methods focus on detecting precancerous lesions, which, could lead to cancer if not treated (Ruzigana *et al.*, 2017). Different guidelines were set on screening of cancer of cervix. WHO, USPSTF, ACS, ASCCP and ASCP screening and guidelines to the screening of pre-cancerous lesions for preventions, recommends to start undergoing for screening at the age of 30 or older in HIV negative women. When screening found normal or negative, the next screening is scheduled in five (5) years (Keller, 2016; WHO, 2014; Curry *et al.*, 2018; Saslow *et al.*, 2012). The same guideline highlight that in HIV positive women, and in HIV endemic region all sexually active girls and women should start attending screening within the first year after engaging in regular sexual activities even below 21 years (Keller, no date; (Santesso *et al.*, 2016). This particularity is due to fact that seropositive women have higher HPV rate in terms of infections (cervical cytology which is abnormal and cancer of cervix) than seronegative women (Keller, no date; Viviano *et al.*, 2017). In this higher risk group of women, cervical screening is scheduled three (3) yeas after a negative or normal screening of cervix (Viviano *et al.*, 2017; Santesso *et al.*, 2016). Women found with cervical abnormal lesions on screening, are recommended to do regular follow up, diagnosis and treatment for the sake of preventing the development of cancer or treating it at early stage (Stewart, Moodley and Walter, 2018).

2.3. The empirical literature of the study

2.3.1. The burden of cancer of cervix at global level and in Rwanda

The cancer of cervix is ranked the third at the global scale among other women's cancer. This goes with the estimates of 569,847 and 311365 new cases and deaths respectively during the year 2018 (Ferlay *et al.*, 2019). HPV information Centre have reported 119,284 new women infected and 81,687died in Africa due to cervical cancer for the same year. These estimates put cervical cancer on 2nd rank among cancers of women in Africa and 1st leading cause mortality among African women (Bray *et al.*, 2018).

In the East and Middle region of Africa, the cancer of cervix cervical cancer continue to be the dangerous women cancer belonging in age group of 15-44 years (Ferlay *et al.*, 2019). This imply

an estimation of 52,633 for the new declared cases with associated case of deaths of 37017 people in Eastern Africa countries for year of 2018(Bray *et al.*, 2018). In Rwanda, cancer of cervix remains common among female aging 15-44 years with estimates of 1304 new women attacked and the deaths of 921 people during the year 2018. (Riedel, 2015; (Ferlay *et al.*, 2019). The current incidence in Rwanda is 31.9 cases of cancer of cervix per hundreds thousands women each year. In Easter Africa, incidence is at 40.1 cases per hundred thousand women (Ferlay *et al.*, 2019).

2.3.2. Knowledge on cervical cancer screenings

Researchers in different countries have demonstrated the effect of being literate to the use of screening services (Compaore *et al.*, 2016). According to Ncube (2015) in his research by use of health belief model applied in Portland and Jamaica; patients have no adequate information on screening services. In the above countries, the determining factor for cervical cancer screening was age. This imply that younger people (in the age group of 19 to 29 years) do not use screening services compared to other people belonging in older group ages (Ncube *et al.*, 2015). Research in Malaysia by Gan (2013) have highlighted that cervical cancer use is limited to the lack of information at the level of 47%. It is followed by fear of being tested at 47%, the need of more time to be listened by a health practitioner at 41% and the fear of having the test results at 37% (Eng, Gan and Dahlui, 2013). Also, pap smear participation was shown to be associated with women awareness on program of screening services (Liebermann *et al.*, 2018).

In other way, risk factors for cervical cancer was identified by HPV information Centre and other researchers have identified tobacco smoking as a higher risk factor for cervical cancer attack. Smoking is coupled with the absence of formal education, use of hormonal contraceptive in long-term, HIV, chlamydia trachomatis and herpes simplex virus type-2, coinfection, no use of condom during sexual intercourses, uncircumcised male and certain dietary deficiencies (Bray *et al.*, 2018; Stewart, Moodley and Walter, 2018; J.A. *et al.*, 2014). Being unware on screening services of cancer in connection with not knowing where this services are being given has been found in many studies to be the important barrier for screening (Compaore *et al.*, 2016; Almobarak, 2016). Research done in Sub-Saharan Africa on barriers for cervical cancer screening, different articles confirmed poor awareness and knowledge on screening services (McFarland, Gueldner and Mogobe, 2016).

In study done in Zambia on practices, attitudes and knowledge of prevention of cancer of cervix among women in Zambia, findings shown that respondent had poor knowledge on causes and prevention measures to the cancer of cervix. The research confirm how fundamental are awareness and knowledge to prevent cervical cancer attacks. In practice, prevention method includes vaccination and screening. Still in the same context, strategies to improve awareness in Zamia identified to be health provider, social media (internet, television, and radio) (Nyambe, Van Hal and Kampen, 2016). However, in Rwanda Mukanyangezi (2018), identified, lack of knowledge to the test and financial issues for the cancer of cervix as most common reason preventing patients who are HIV-positive to go for screening (Mukanyangezi *et al.*, 2018). Furthermore, research identified that, with the existing knowledge (public awareness, early diagnosis and treatment, drug affordability, capacity building, scientific and technical infrastructures improvements) it's utterly possible to drastically, technically and humanely scale down the cancer disaster in African developing countries and save thousands of human lives (Ly, 2016; Aranda *et al.*, 2017).

2.3.3. The utilization of cancer screening services

Research findings have proven that the earlier detection for the lesions of pre-cancerous, prevent the development of cancer of cervix. In regardless to the availability of different method of screening; there is a disparity in area where cancer of cervix is highly remarkable in middle income countries than the developed countries (McFarland, Gueldner and Mogobe, 2016). In developed countries coverage for cervical cancer screening range from 40% to 90%, while in developing countries a percentage below 5% of women use cervical cancer screening (Almobarak *et al.*, 2016). As an example, Watson (2016) reported 81.1% of all women who are eligible that have already undergone in a period of three years Pap test in America (Watson *et al.*, 2017). In undeveloped country for example Senegal, participation is estimated at the rate 1.9% to the women above 40 years and 6.9% among women aged between 18-69 (Andrew Dykens et *al* 2017).

There is a low rate in SSA on cancer screening (Lim and Ojo, 2017). Research reported that the screening uptake ranged between 2% to 20.2% in cities and 0.4% to 14% in African rural seating (Viviano *et al.*, 2017). However, a recent population based risk factor in Sub-Saharan Africa conducted in 2018 on late stage presentation of cancer of cervix has found that screening coverage in Africa is below to

10% in countries including Ethiopia, Malawi and Uganda and 50% and 70% respectively in Zambia and South Africa (Stewart, Moodley and Walter, 2018). Data from neighbor countries such as Sudan found that in urban area of Khartoum about 15.8% of research participants have undergone cervical cancer screening (Almobarak *et al.*, 2016). Still, the rate of screening among women living in rural area are much lower than the above mentioned (Lim and Ojo, 2017). Data in Easter Africa countries among to which Rwanda belongs, shown a low screening rate of cancer of cervix. Research conducted by Kileo (2015), 28% of women aged from 20 to 29 years have attended cervical cancer screenings. Among them, 22% are married women and 24% are from the educated women (Kileo *et al.*, 2015). In Kenya, Dutta and Kenya national Bureau of statistic report the rate of cervical cancer screening to range to be 14 up to 18% of women attended (Kangmennaang *et al.*, 2018; Dutta, Haderxhanaj and Agley, 2018).

2.3.4. Relationship between knowledge level, socio-demography and use of screening services

Researchers have demonstrated relationship between knowledge to the screening of cancer of cervix and other barriers, more specifically to the use of screening services. Research conducted from Kenya shown that screening uptake is associated with improved knowledge of women users (Rosser, Njoroge and Huchko, 2015). The same results were found in a study done in Ethiopia among HIV positive female in Addis Ababa city, the same as in Kenya patient knowledge is a prerequisite to practices and adhere to cervical cancer screening (Shiferaw *et al.*, 2018; Geremew, 2018).

In the other hand, education level, age, marital status, profession, working in clinical institution offering screening services of cancer of cervix were found associated on higher level with the uptake of screening services in female health care workers of Ethiopia (Dulla, Daka and Wakgari, 2017) . Meanwhile data from Nepal for a group of women with high literacy and high level of education demonstrated a lower uptake cervical cancer screening services. In this context the socio cultural attributes like lack of female empowerment, lack of awareness, lack of family member support and shyness, demonstrated as reason of less practices of cervical cancer screening (Thapa, 2018; Geremew, 2018).

2.3.5. Barriers to cervical cancer screenings services

Different researches have demonstrate multiple barriers for screening services for the cancer cervix. Presence of multiple barriers are classified into the following five categories:

1) Individual factors:

The individual factors are client (or any person seeking screening services) related barriers preventing women beneficiaries to participate in pap smear screening. The most commonly known are barriers related to the lack of information, low level of knowledge or lack of awareness to the available services (women not aware about the location for screening) (Kibicho, 2014), (Benemariya *et al.*, 2018). Secondly women age and birthing experience was identified by researchers to be individual barrier. People in younger ages (the group of 19 to 29 years old) do not use screening services compared to other people belonging in older group of ages (Ncube *et al.*, 2015; Kangmennaang *et al.*, 2018). Meanwhile third level individual barrier is related to the family resources. Women from limited resources families are less user of screening services if compared with others; the last common individual barrier is the emotional defined as fear or shyness, embarrassment, painful procedure, possible violation of privacy and reliance on prayer with the onset of illness (Dutta, Haderxhanaj and Agley, 2018). These are known as barriers of early detection of cervical cancer (Kangmennaang *et al.*, 2018).

2) Interpersonal

The second category is for interpersonal or family related factors preventing to undergo for screening. In this category, Jassim et *al* (2018) in their research entitled "knowledge, attitudes and practices regarding cervical cancer and screening among women visiting primary health care centres in Bahrain" reported that 9.3% of women are discouraged by their husband or relatives (Jassim, Obeid and Nasheet, 2018). On another hand the study conducted by Lim (2016) in Sub-Sahara Africa on factor limiting the use of screening services due to the lack of partner (husband) support, low family supports or societal stigmatization, were demonstrated as preventing factors to the screening of cancer of cervix (Lim and Ojo, 2017; Tripathi *et al.*, 2014).

3) Community

Third category is a category of community related barriers. In this category, cultural beliefs, gender norms, cultural norms and community organization and myth preventing the use of

screening services among patient women (Benemariya *et al.*, 2018; Bukirwa *et al.*, 2015). Found by Kangmennaang (2018) rural women in Kenya have less chance of assessing cervical cancer screening services in comparison with women living in urban area. This are due to cultural beliefs, norms and myth (Kangmennaang *et al.*, 2018).

4) Health provider and system related barriers

The forth category is a category of health system and service providers. This prevent healthcare providers to offer in an effective way Pap smear services. Among their barriers we can include, when a male doctor performed (Jassim, Obeid and Nasheet, 2018), health care personnel attitude (Kibicho, 2014), poor health education, poor advice or encouragement, the test, physicians not recommend Pap smears and perception of service providers to patients. The inaccessibility, unavailability and policies related to the screening are the major factors (Ebu *et al.*, 2014; Bukirwa *et al.*, 2015). Majority of women mentioned the lower coverage of health insurance, long distance to the screening centers, lower financial means and lack of adequate health infrastructures as barriers inhibiting cancer screening services among women with limited resources (Kangmennaang *et al.*, 2018).

Other access barriers included having poor organization of service, poor access to health facilities and lengthy of time (Bukirwa *et al.*, 2015). In some localities, Pap smear or screening services were reported unavailable. Regarding the polices, some societies recommend 30 years as the minimum age of women allowed for free screening service (Ebu *et al.*, 2014; McFarland, Gueldner and Mogobe, 2016; Lim and Ojo, 2017).

2.4. Research gap identification and the critical review

Literature review on knowledge of screening for the cancer cervix, utilization and barriers was obtained in a combination of findings from different researcher's papers. The authors worked in the different countries, conditions and methodological research. However, their findings and recommendation in Rwanda setting have some loop holes even if they complement each other. Existence of limited data is a result of less performance and inconsistence control of quality for cancer screening services among screening centers in Rwanda. Findings of the study conducted in Butaro district hospital had identified challenges in characteristic and early outcome of cervical cancer patients about half of patient present with stage 3 and 4 at first intake (Davey *et al.*, 2017). Thus, the gaps identified are combined with insufficient information for cervical

cancer screening services. Methodological gaps identified was related to representativeness of research participants, where population based survey on women knowledge on cancer of cervix, screening service utilization and barriers, are unavailable. The present study will provide a figure of the women attending selected district hospitals in Rwanda on screening knowledge, utilization and barriers.

2.5. Framework of screening use and barriers

Social Ecological Model (SEM) is a theory developed by Bronfenrenner. This theory incorporates individual, interpersonal, institutional/health systems and structural factors while examining access to the utilization of health care services. The theory helps to understand multiple and interactive barriers of health that operate at different levels. Also, this model helps to understand multifaceted and interactive effects of personal and environmental factors. The model has five hierarchical levels which are: Individual, interpersonal, community, organizational, and policy/enabling environment. It incorporates the interactive aspects in all levels looking at population's access and utilization of health care services and understanding multiple and interactive health barriers from all levels.

Individual level: these are personal factors like characteristics of the demography, people's perceptions, beliefs, attitudes and socioeconomic status.

Interpersonal level: Are factors influencing families like level of satisfaction and social support.

Community level: these are cultural and gender norms. This plays an important role since they motivate people to use or not using healthcare services.

Institutional/health systems level: these are factors like health care parameters, service providers, cost of services; health insurance coverage and distance to the health facility.

Structural factors: the wealth inequalities and place of residence drive the health care services accessibility.

The above conceptual framework is adapted by the researcher from the Social Ecological Model by Bronfenrenner which was published as theory in 1980.
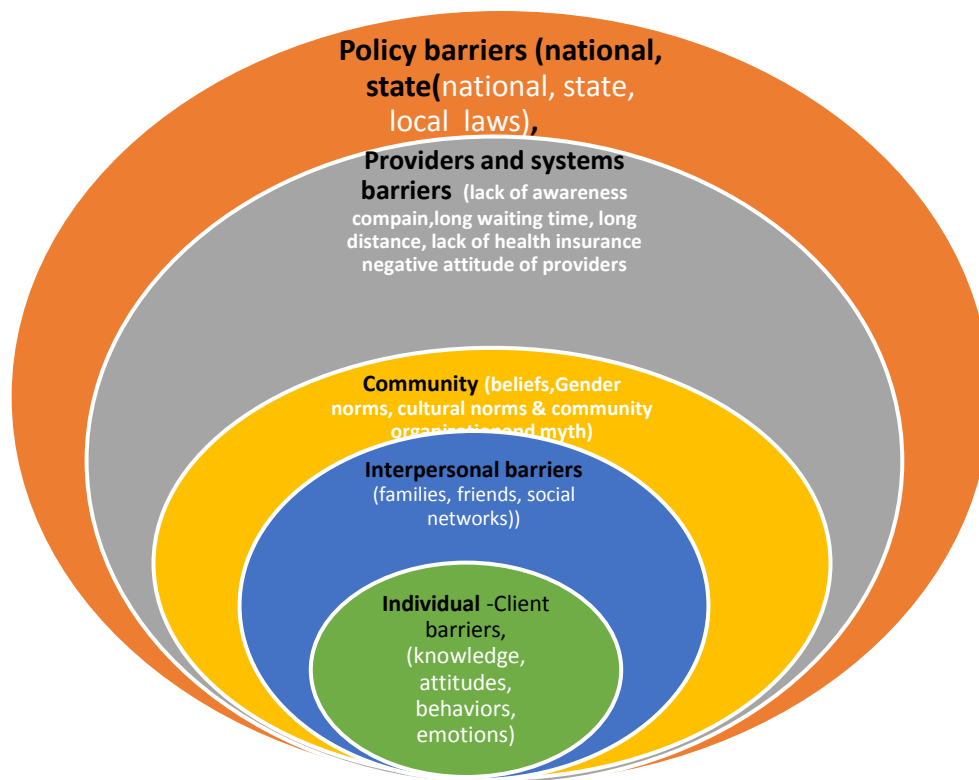
(Kangmennaang *et al.*, 2018)

Figure 1: The Social Ecological Model

Different researchers have used this model to identify different individual, interpersonal, community, health provider and policy factors associate with health care service access. Study conducted in Australia by use of socio ecological model demonstrated factors influencing engagement of women refugees or migrant engagement in reproductive and sexual activities. In the mentioned research being a migrant was an individual factor, gender roles, interpersonal factors, while lack of resources, time and cost of service were system related barriers to access of sexual and reproductive health (Mengesha *et al.*, 2017). In study done in Zambia on prevention of cancer of cervix among Zambian women and men by use of social ecological model demonstrated how low level of awareness and knowledge of causes and prevention for the cancer of cervix identified highlight the importance to do sensitization of population on prevention measures to the cancer of cervix (Nyambe, Van Hal and Kampen, 2016).

In this thesis more focus was on knowledge, utilization and individual, community, service providers and systems as barriers of cervical cancer screening. At the end of this study, relationship between variables have been identified. It was observed that screening services of

cervical cancer is associated with individual knowledge. Furthermore, research findings confirmed that individual, community, service provider and system related barriers prevent women to utilize cervical cancer screening services.
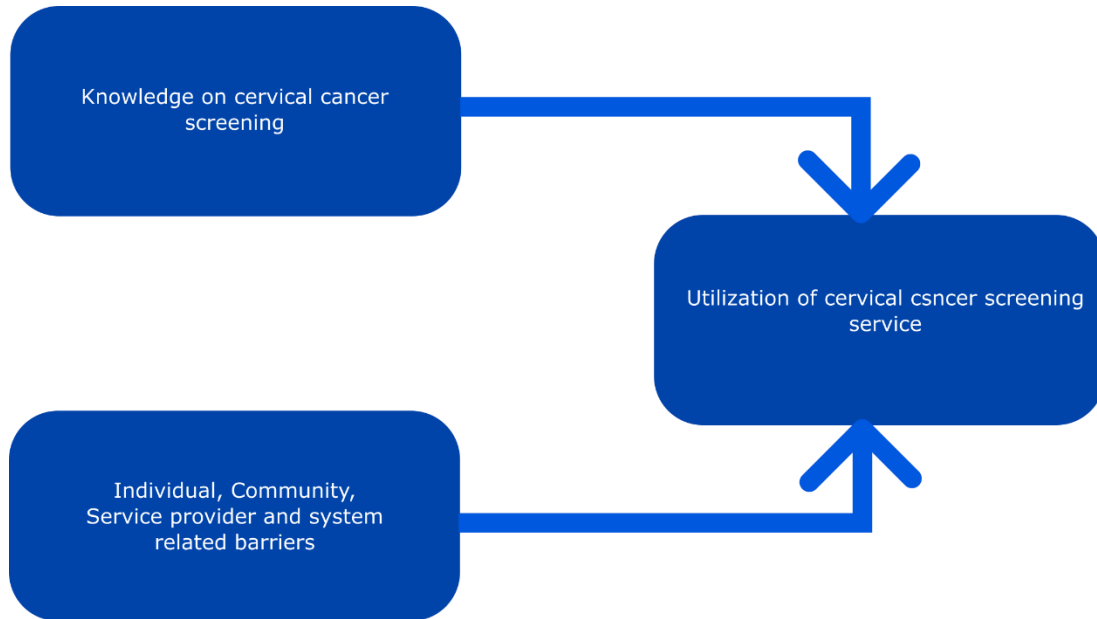
Figure 2: The relationship between variables

2.6. The summary for literature review

This literature review includes coherent findings on screening services for the cancer of cervix knowledge, utilization and barriers at global level and narrow down up to the local perspective. The areas reviewed include an overview of cancer of cervix screening, knowledge and utilization and barriers to the screening base on different level of social ecological.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1. Introduction

This chapter represent scientific and systematic way to solve research problems (Almalki *et al.*, 2016). It explains the process and methods used to conduct the study. Methodology of this thesis includes an introduction, research area, study population, research design and sampling methods, data collection and analysis, limitation of the study, ethical consideration and conclusion.

3.2. Research design

Research designs are types of plans within quantitative, qualitative and mixed methods approaches to answer research questions (Polit and Beck, 2009). This study is descriptive cross sectional. The non-experimental design of research known as cross sectional descriptive design is a research design that collect at one-time period (Creswell, 2014). The present research design was used in order to assess knowledge, utilization as well as barriers of cancer screening. This research was designed as a study due to the factor it was aiming to study. The data was to be collected at a specific point and time among the defined population (Omair, 2015).

3.3. Research approach

This is the plans and procedures researchers uses. They indicate processes followed in analysing a broad assumption. Research approach give describe how data were collected, analysed and interpreted (Almalki *et al.*, 2016). Among other approaches, quantitative approach was used by the researcher in this thesis. Quantitative approach used performs the detailed analysis of research questions (description of the existing phenomena, testing the relationships, assessment of the differences, explanation of the causes and effect relationship between variables and test for intervention effectiveness (LoBiondo-Wood and Haber, 2014). The study describes cervical cancer screening services phenomena, assess knowledge and utilization and evaluate barriers to cervical cancer screening services.

3.4. Setting of the research

Generally, research setting is defined as a site to which research a research is conducted. Research site is selected on basis of research question and the availability of the targeted respondent (Polit and Beck, 2009). The study was carried out on patients visited three district hospitals wich are Muhima in Nyarugenge, Kibagabaga in Gasabo and Masaka in Kicukiro. The catchment area of those

hospitals are three urban districts of Kigali city. In those three district hospitals the cervical cancer screening service is functioning since 2012 as well as in the affiliated health centers. The mentioned hospitals have been chosen because it is easy to access them considering time management and resources limited.

3.5. Population

The targeted population of a scientific research is determined as an entire set of cases may can attract researchers for more useful data (Polit and Beck, 2009). The target population was women looking for gynecology services on the district hospital above mentioned. Accessible population are cases from target population, that are accessible to the researcher as study participants (Creswell, 2014). The accessible population of this study include women attending gynecology services aged from 30 years to 60 years old at Muhima, Masaka and Kibagabaga districts hospitals. The study population were outpatient women attending gynecology services aged from 30 years to 60 years old. We decided to exclude women aged below 30 as they might not have received their first screening invitation, according to different guideline, that recommends to start the screening at the age of 30 years and over 60 years (Keller, 2016) (WHO, 2014).

3.6. Sampling

This is a process as well as a strategy for selecting different categories of respondent in order to represent the entire population the whole research area (Polit and Beck, 2009). Sample size are normally determined while catering to the number of observations in need (Kibicho, 2014).

3.6.1. Determination of sample size

In the study researcher used Cochran formula for finite population correction of proportions in determining size of research sample (Israel, 1992).

$$n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}} \qquad n_0 = \frac{Z^2 pq}{e^2}$$

Where:

n_0: Represent initial sample size;

Z2: This is the abscissa of the normal curve that cuts off an area at the tails (this is equal to the confidence level of 95%).

P: This represent the proportion of an attribute of the population, and **q** is equal to 1-p.

N: This represent study population.

n: Represent the sample size which is equal to 329 total participants.

3.6.2. Sampling criteria

Inclusion criteria: The study included women aged between 30 to 60 years old attending gynecological service during study period. Those women must be attending Gynecology service during the study period and not diagnosed to have cervical cancer or other type of malignancy before.

Exclusion criteria: Women excluded meet the case definition but did not sign the consent form. They have history of hysterectomy or confiscation of the cervix and clients with mental disorder that cannot consent.

3.6.3. Sampling strategy

The accessible population of the study are women attending gynecology services in a period of May 2019 at those selected district hospitals. In the data base of the mentioned district hospitals; an average of 2,292 women attend the gynecology services in the month (Hmis, 2019. This is defined as eligible population of the study. Sample selection of the research have used a systematic sampling technique. The sample has been collected by use of systematic sampling technique. The total of 329 women between 30 years and 60 years of age were selected among women attending the hospitals in gynecology service. They have been selected based on sampling interval of each seventh women presented. Respondent has been selected as they came in, those who meets the criteria has been asked to participate until the sample size has been attained.

Table 1: Proportional sampling strategy

Hospitals concerned by the study	Average of women attending Gynecology per month	Proportional sample for per month
Masaka	936	329*936/2292=134
Muhima	806	329*806/2292=116
Kibagabaga	550	329*550/2292=79
Sum of all hospitals	**2292**	**329**

3.7. The research instruments validity and reliability

3.7.1. Research instrument validity

Validity of the data is a degree to which measurement instrument is supposed to measure (Polit and Beck, 2009). There different type of data validity. The following are among the most known:

Face validity: This is type validity use expert opinion for judging the accuracy of an instrument (Polit and Beck, 2009). In this study, after the development of the instrument, the questionnaire has been given to the experts thus, get wide consultation of researcher's experts and supervisors to judge its accuracy.

The content validity index: This indicate a level of instrument for the appropriate measurable sample (Polit and Beck, 2009). For the content validity, the researcher gave the developed tool to the expert and non-expert person in the field of oncology for them to test if the content of the tool was valid and if it would produce the consistent relevant results.

Construct validity: Construct validity is the method that the researcher can use to determine instrument capability to measure the research concepts or constructs (Polit and Beck, 2009). In this study, the research checked the agreement between the theoretical concept of the study and the designed measuring tool (instrument).

Table 2: Construct validity table

Specific objectives	Components of the conceptual framework	Section in the tool
Assess the knowledge of women on screening for the cancer cervix.	Knowledge to the cancer of cervix, adherence on fundamental to the cancer of cervix screening,	Section II (Items 1-10).
Assess the utilization rate of screening services to the cancer cervix among women.	Strongly linked to individual factors and utilization for the screening of cancer cervix.	Section II (Items 1-3)
Identify individual, community, health system and service provider related barriers on screening services among women.	Individual, community, health provider and health systems barriers to the screening of the cancer of cervix.	

3.7.2. Reliability of the instrument

To insure on measurement taken, measurement is repeated on the same variable, at different point of time (Polit and Beck, 2009). For the case of the present study, researcher tested the instrument as well as pre-testing using Cronbach's alpha test which is an SPSS software package. According to Tavakol (2011), acceptable values of alpha range from 0.70 to 0.95 (Tavakol and Dennick, 2011). In the study, Cronbach's alpha of the research instruments was calculated and the value of alfa equals to 0.8. Referring to that, reliability for the instrument was confirmed. In order to meet the study purpose, the same exercise is repeated for the appropriateness, meaningfulness and usefulness of the instrument.

3.8. The data collection

3.8.1. The instruments for data collection

A questionnaire on knowledge, utilization and barriers to the screening elaborated based on other researcher findings published previously and conducted Sub-Saharan African countries. The questionnaire includes six (6) questions about socio demographic characteristics of participants,

ten (10) questions on knowledge of screening and three (3) questions focused to the utilization of screening services. The last question, emphasizes on individual barriers, community related barriers, health system and service provider related barriers toward cervical cancer screening services.

3.8.2. The procedure for data collection

A structured questionnaire was used for collecting quantitative and qualitative data required. It contains information related to the demography, knowledge, knowledge, utilization and barriers for screening services among respondents. Used questionnaire was formulated in a way to capture specific information from all respondents and well explain in order to avoid rumors or unnecessary and irrelevant information. Data collection has been done by the researcher aided by data enumerators. For the sake of data quality, relevant information for the study was explained to the respondents. After, they have been asked to give their consent by signing the form to participle in the study. Study respondent was selected among the outpatient women attended selected district hospitals. Questionnaire was completed the researcher and trained enumerator. The interpretation was done correctly and accurately by the researcher.

3.9. The analysis of data

After data collection, questionnaires were sorted, then coded in the datasheet created in SPSS version17, 2016 software. After data entry, descriptive analysis such as frequency and Likert mean has been done. Pie chart, tables and histograms was used in the description of results and their analysis. For further analysis, the inferential statistics Pearson correlation was used. The researcher used descriptive analysis to analyze data for the first and third parts and on second part researcher added Pearson correlation package. To establish the knowledge score, Dummy variable has been calculated, where 1 stand for the correct answer, and 0 stand for the wrong answer. The overall score was the sum of ten dummy question. The results became the five category of knowledge score. The last section of questionnaire regarding barriers got analyzed by Likert scale mean, to identify, the most apparent barrier to cervical cancer screening.

3.10. Ethical considerations

Before data collection, ethical clearance was issued by the university. In a course of data collection, relevant information for the study were given to the respondent in order to make a

decision for participating in the study. The above mentioned allows them to accept research consent before start responding. Finally, on voluntary basis, those willingly participated in the study.

3.11. Data management

In accordance to the consent between researcher and the respondent, confidential information was kept anonymous.

3.12. The dissemination of research findings

Research finding shall be published in the journal for the university of Rwanda and any other place deemed necessary. Soft copy has been published in the online journals and hard copies will also be available in the library of University of Rwanda.

3.13. Limitations and challenges

Some of the limitations include the low coverage of country due to the limited time and resources. Secondly, research was conducted to the female from selected district hospitals whom may differ each other's. This would have not been a good representation of respondent country wide. Nearly 50% of women recruited in this study did secondary school or university studies. This is an indication that selected respondent are literate and conscious on their health if compared with other groups of women in rural areas. However, present results need a cautious interpreted before their generalization on entire population of the country.

The use of screening services on cancer of cervix was linked with women social belief and stigma related to sexually transmitted diseases. The feelings, attitude, social interaction and poor capacity to respond on some part of the questionnaire among respondent was due to the personalities, culture and values. To overcome their inconvenience, researcher and data enumerators kept the confidentiality to the respondent. As presented in the framework of the study, researcher planned to explore all barriers including the interpersonal barriers. However, time allocated to the research and financial capacity of the researcher did not allow to cover some of the barriers. Those are including interpersonal barriers (families, friends, type of work and social network) and policies related barriers.

3.14. Conclusion to chapter three

Research methodology has combined primary and secondary data. Questionnaire administration helped to know more information that what was expected to be collected on questionnaire. The additional information helped in the analysis and interpretations of the data.

CHAPTER FOUR: THE RESEARCH FINDINGS

4.1. Introduction

This chapter narrate all research findings. The demographic characteristics are classified variable by variable while research findings are classified in respective to each specific objective of the study. The descriptive analysis, inferential statistics and Pearson correlation were used in data analysis and results presentation.

4.2. Demographic characteristics of respondents

Present research has included 329 respondents of which 46.5% were aged 30-35 years. The second most representative group is a group of women in the age of 36-40 years with the average percentage of 26.4%. This result shows that most respondent (73%) are in the age prone to the cervical cancer. The results also presented in table 1 indicated the women attending cervical cancer screening by religion. Results showed that 31% are catholic and there followed by Pentecostal believers the rate of 28%. The other 41.1% are for Protestant, Muslims, Seventh Day Adventist and others nonaffiliated to any religion. The result revealed that majority of women (44.1%) used screening services have a level of primary education. This class if followed by women completed the upper secondary education at 21.3%, then women with lower secondary education 14%, 13.4% completed bachelor degrees and 7.3% for no formal education. Among respondents, 65.7% live in urban area. Out of the total number of respondents, 77.5% women are married, 22.2 are still single, 7.6 widowed and 2.7 are separated/divorced. Almost half of the respondents (55.9%) belong in the third class of Ubudehe category followed by second category represented by 31.9 and the first category represented at 12.2%. Most of respondents 65.7% live in urban area and other 34.3% live in rural area.

Table 3: Demographic characteristics

Demographic variables *(N=329)*	Frequency	Percent
Age of respondents		
30-35	153	46.5
36-40	87	26.4
41-45	39	11.9
46-50	25	7.6
51-55	25	7.6
Religion of respondents		
Catholic	102	31
Protestant	50	15.2
Muslim	17	5.2
Pentecostal	92	28.0
SDA	50	15.2
Other	18	5.5
Education level		
None	24	7.3
Primary (P1 to P6)	145	44.1
O level (S1 to S3)	46	14.0
A level (S3 to S6)	70	21.3
Tertiary education/University	44	13.4
Marital status		
Single	40	12.2
Married	255	77.5
Widowed	25	7.6
Divorced/Separated	9	2.7

Ubudehe category		
Category 1	40	12.2
Category 2	105	31.9
Category 3	184	55.9
Place of residence		
Rural sector	113	34.3
Urban sector	216	65.7

Source: Primary data, 2019

4.3. Results presentation

The study assessed barriers for cancer screening, women knowledge on cancer of cervix and level of screening use among women attending selected district hospitals in Rwanda. This was achieved through the specific objectives like assessing the level of knowledge of women, utilization rate, individual related barriers, community related barriers, health system and service providers. This was achieved through the adoption of social economic model.

4.3.1. The level of knowledge on cervical cancer screening

Table 2 indicates the results on awareness and knowledge of cancer of cervix. Research purpose was to assess knowledge of the patients about the cause of cancer among selected hospitals. The research findings showed that patient who knows Human Papilloma Virus are 49.5% and 50.5% doesn't know about the Human Papilloma Virus. Also findings indicated that a great number of respondent (83.0%) said that cancer treatment is possible when it is detected earlier.

In all district hospitals, cervical cancer screening is a free service. High level of attendance to the screening services determine a level of understanding to how is important to treat cancer at alley stage. Analysis indicated that 90.3% of respondents knows how cervical cancer is curable when detected earlier. A good number of 71.4% knows that prevention of cervical cancer when detected at early stage is possible.

Also, present research demonstrated that 71.4% of respondents knows where they can attend cancer screening services. Most reported places providing screening services are health centers with high attendance of 71.1%, followed by the district hospitals with 25.5 and then after the

referrals hospitals with 3.4% of attendance. The 91.4% of respondent reported that really good time of cervical cancer screening is below 30 years old. However, a large number of respondents (78.4%) do not know when is real time for next screening. The major three symptoms of cervical cancer are vaginal bleeding reported by 26.4%, foul smelling vaginal discharge reported by 21.5% and abdominal pain reported by 17.3%. Among most three reported risk factors for being attacked by cancer of cervix are having many sexual partners at 15.8%, early onset of sexual activity at 14.6% and sexually transmitted diseases at 11.3%.

In the above mentioned findings, researcher showed that there is no significance correlation between knowledge level on what causes cancer of cervix and place of residence (rural or urban sector) at r=0.06 and p= 0.24. On the other side there is a significant correlation (at 0.01 level) between level of knowledge and education level at r= -0.27 and p=0.000). This knowledge is significantly correlated with level of education among the respondent at r=-0.15 and p=0.005. However, their level of knowledge was not significantly correlated with place of residence of respondents at r=-0.6 and p=0.2.

Table 4: Summary of knowledge of cervical cancer

(N=329)	Frequency	Percent
Cause of cancer		
Human Papilloma virus	163	49.5
Cervical cancer be prevented		
Yes	273	83
Is cancer of cervix curable if detected at early stage?		
Yes	297	90.3
Cervical cancer preventive measures		
Early screening	194	43.5
Avoiding smoking	29	6.5
Vaccination	182	40.8
There is no intervention	3	0.7
Don't know	34	7.6
Avoiding sexual intercourse	4	0.9
Awareness of cervical cancer screening service in Rwanda		
Yes	235	71.4
Cervical cancer screening service place in Rwanda		
Health center	167	71.1
District hospital	60	25.5
Referral hospital	8	3.4
Age to start screening of cervical cancer		
Below 30 years	299	91.4
At 30 years	12	3.7
Above 30 years	16	4.9

Time for next cervical cancer screening		
Before 3 years	67	20.4
After 3 years	4	1.2
Don't know	258	78.4
The symptoms for the cancer of cervix		
Vaginal bleeding	257	26.4
Post-coital bleeding	159	16.4
Weight loss	159	16.4
Foul smelling vaginal discharge	209	21.5
Abdominal pain	168	17.3
Malignancies	20	2.1
The risk factors for the cancer of cervix		
Don't know	6	0.4
Smoking	136	9
Many sexual partners	238	15.8
Human papilloma virus (HPV)	143	9.5
Sexually transmitted diseases	170	11.3
HIV	127	8.4
Undergone for early sexual relation	220	14.6
Family history of cervical cancer	150	10
Male who are not circumcised	163	10.8
Long time use of contraceptive pills	153	10.2

Source: Primary data, 2019

As above summarized in the table 1 and 2, table 3 summarize the relationship between knowledge of women participated in the study with their social demographic status. Research findings demonstrated an association of knowledge level and the source of cervical cancer. Also,

knowledge on prevention of cancer of cervix is associated with level of education for the women respondent.

Regarding knowledge of women for if cancer is curable in case it is detected on early age, findings shown that the scenario is associated with age of respondent on a probability of 0.003, religion at 0,014, marital status at 0.039 and the education at 0.052 levels. There is a very good association of awareness on cancer screening and the demographic status for women attending gynecological services of district hospitals. The relationship on age cervical cancer screening start id fairly associated with education level of women (at a probability of 0.06). Finally, research findings indicated a significant association between aspect of socio democratic and level of knowledge for women using the screening services (when to start screening and when it to repeat it).

Table 5: Association of knowledge of cervical cancer and demographics

(N=329)	Freq.	Percent	Association with demographics (values)					
			Age group	Religion	Education	Marital status	Ubudehe	Residence
Cause of cancer			0.690	0.166	.000	0.919	0.129	0.246
Human Papilloma virus	163	49.5						
Don't know	166	50.5						
Can cervical cancer be prevented?			0.22	0.41	0.00	0.66	0.96	0.37
Yes	273	83.0						
No	22	6.7						
Don't know	34	10.3						
Is cervical cancer treatable when detected at early stage?			0.003	0.014	0.052	0.039	0.415	0.974
Yes	297	90.3						
No	12	3.7						
Don't know	20	6.1						
The preventive measure for the cancer of cervix								
Early screening	194	43.5						
Avoiding smoking	29	6.5						
Vaccination	182	40.8						
No possible intervention	3	0.7						
Don't know	34	7.6						
Avoiding sexual intercourse	4	0.9						
Aware of cervical cancer screening service in Rwanda			0.02	0.52	0.00	0.13	0.71	0.27
Yes	235	71.4						
No	94	28.6						

Cervical cancer screening service place in Rwanda								
Health center	167	71.1						
District hospital	60	25.5						
Referral hospital	8	3.4						
Age at which screening for cervical cancer can start			0.89	0.75	0.06	0.61	0.24	0.46
Below 30 years	299	91.4						
At 30 years	12	3.7						
Above 30 years	16	4.9						
Time for next cervical cancer screening			0.61	0.38	0.24	0.17	0.53	0.18
Before 3 years	67	20.4						
After 3 years	4	1.2						
Don't know	258	78.4						
Symptoms of Cervical cancer								
Vaginal bleeding	257	26.4						
Post-coital bleeding	159	16.4						
Weight loss	159	16.4						
Abnormal vaginal smell	209	21.5						
Abdominal pain	168	17.3						
Malignancies	20	2.1						
Factor affecting cancer of cervix								
Don't know	6	0.4						
Smoking	136	9.0						
Many sexual partners	238	15.8						
Human papilloma virus (HPV)	143	9.5						
Diseases transmitted in sexual relations	170	11.3						

HIV	127	8.4
Early engagement in sexual relations	220	14.6
Family history of cervical cancer	150	10.0
Non circumcised people	163	10.8
Use contraceptive pills for a long time	153	10.2

Source: Primary data, 2019

The figure number 2 describes respondent knowledge on cancer preventive measures. Variables used are avoidance of sexual intercourses, early screening, avoidance of smoking, vaccination, if nothing done and when there is no knowledge about it.
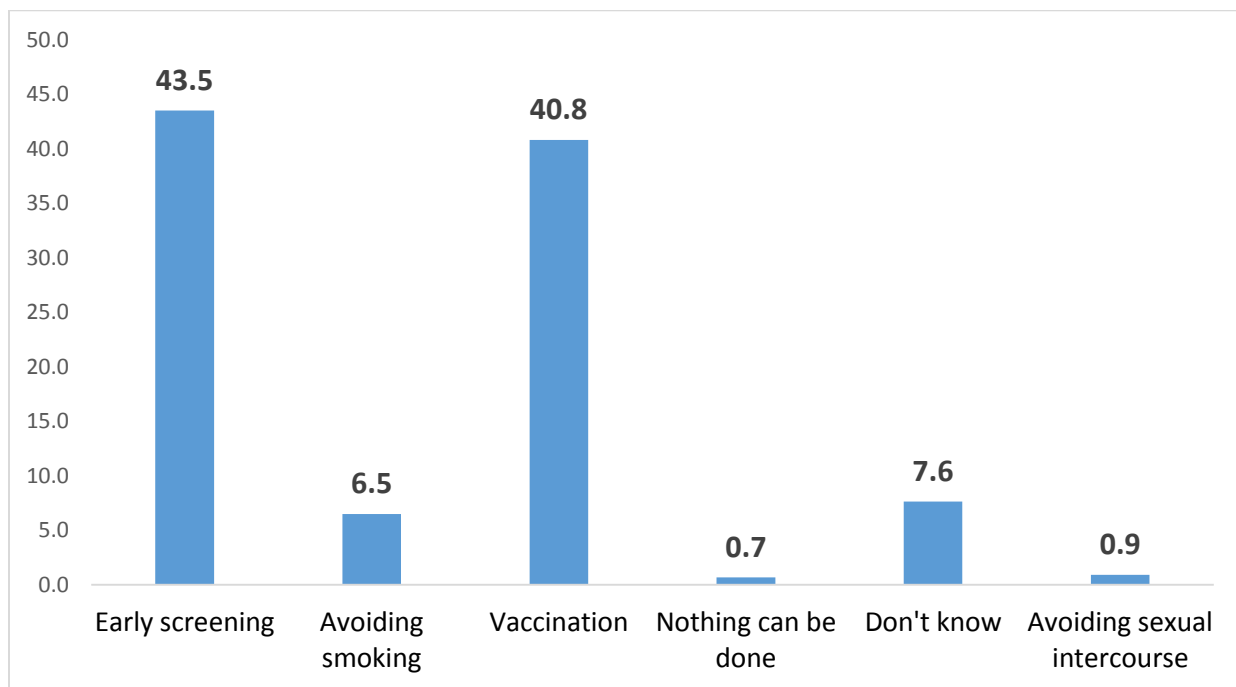
Figure 3: Respondent knowledge on cancer preventive measures (Primary data, 2019)

Findings have informed that early screening measure is the most reported at 43.5 percent followed by vaccination (40.8 percent), avoiding smoking (6.5 percent), and avoiding sexual intercourse (0.9) as the lowest.
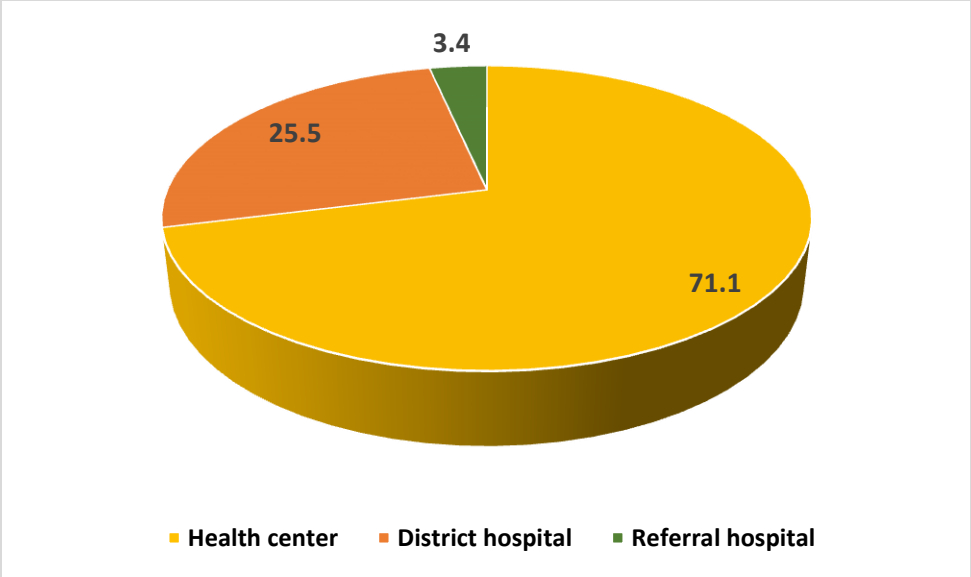
Figure 4: Places most known for screening services (Primary data, 2019).

The figure 3 highlighted most known places for screening services among in Rwanda. Results indicated that health centres are far more utilized by women at the late of 71.1%. Next are the district hospitals with 25.5%. The referral hospitals are very less utilised at the late of 3.4%.

4.3.2. The rate of utilization of cervical cancer screening service

Respondents in the present research were asked on screening services use. Among them 71.7% haven't attended screening before and only 28.3% were screened. The rate of 95.7% of women undergone to the screening services used public health centers and 4.3% used private health facilities. In the same figure of women who attended cervical cancer screening, 73.12% gone for screening before the age of 40 and 26.88% gone after 40 years.

Table 6: Utilization rate of cancer screening

(N=329)	Freq.	Percent
Have you undergone for cancer screening		
Yes	93	28.27
No	236	71.73
Place of cancer screening		
Public health center	89	95.7
Private health center	4	4.3
Age at which cervical cancer screening has been done		
Under 40 years	68	73.12
Above 40 years	25	26.88

Source: Primary data, 2019

4.3.3. Relationship between use of cervical cancer screening and the demography

In table number 5 Chi-square test of independent determined a good association between utilization of screening in women attending screening services in the selected district hospitals with their education level(P=0.000), age groups(P=0.022), belief or religion (P=0.022) and their place of residence (P=0.048). In contrary there is no association between screening for the cancer of cervix and being having a partner or not (P=0.071), and Ubudehe social groups (P=0.782), of women using gynecological services in the selected district hospitals. The detailed figures are in the table number 5.

Table 7: Linkage for cervical cancer screening use and population demography

	The use of screening services			
Variables	Yes (no, %)	No(n,%)	χ 2	value
Age group				
[30-35]	34(36.6)	119(50.4)		
[36-40]	25(26.9)	62(26.3)		
[41-45]	11(11.8)	28(11.9)	11.4084	0.022
[46-50]	13(14.0)	12(5.1)		
[51-55]	10(10.8)	15(6.4)		
Religion				
Catholic	23(24.7)	79(33.5)		
Protestant	20(21.5)	30(12.7)		
Muslim	2(2.2)	15(6.4)	13.1858	0.022
Pentecostal	22(23.7)	70(29.7)		
SDA	17(18.3)	33(14.0)		
Other	9(9.7)	9(3.8)		
Education				
None	0(0.0)	24(10.2)		
Primary (P1 to P6)	43(46.2)	102(43.2)		
O level (S1 to S3)	5(5.4)	41(17.4)	25.9296	0.000
A level (S3 to S6)	24(25.8)	46(19.5)		
Tertiary education/University	21(22.6)	23(9.8)		
Marital status				
Single	6(6.5)	34(14.4)		
Married	81(87.1)	174(73.7)	7.0282	0.071
Widowed	4(4.3)	21(8.9)		
Divorced/Separated	2(2.2)	7(3.0)		

Ubudehe category				
First group	10(10.2)	30(12.7)		
Second group	32(34.4)	73(30.9)	0.4907	0.782
Third group	51(54.8)	133(56.4)		
Place of residence				
Rural sector	29(31.2)	84(35.6)	0.5755	0.488
Urban sector	64(68.8)	152(64.4)		

Source: Primary data, 2019

Findings on association between knowledge scores in the demographics characteristics with the use of screening services shown a very good association for the educational level and good knowledge (P=0.000) of respondent, being having a partner or not (P=0.006) and age category (P=0.073). Statistics test demonstrated a very good association of knowledge and screening services use (P=0.000).

Table 8: Association between knowledge scores in the demographics characteristics and screening service use

	Very low	Low	Moderate	High	Very high	X2	p_value
Age group							
[30-35]	1.31	11.76	26.8	52.94	7.19		
[36-40]	0	13.79	41.38	37.93	6.9	24.823	0.073
[41-45]	0	15.38	28.21	46.15	10.26		
[46-50]	0	8	16	76	0		
[51-55]	0	8	16	56	20		
Education							
None	0	8.33	62.5	29.17	0		
Primary (P1 to P6)	0	12.41	40.69	42.07	4.83		
O level (S1 to S3)	0	17.39	13.04	60.87	8.7	66.545	0.000
A level (S3 to S6)	2.86	11.43	17.14	62.86	5.71		
Tertiary education/Un	0	9.09	9.09	56.82	25		
Status							
Single	5	15	35	37.5	7.5		
Married	0	12.55	27.06	52.94	7.45	27.557	0.006
Widowed	0	0	32	52	16		
Divorced/Separated	0	22.22	55.56	22.22	0		
Ubudehe group							
First group	0	25	25	50	0		
Second group	0	5.71	34.29	53.33	6.67	17.198	0.028
Third group	1.09	13.04	27.17	48.37	10.33		

Place of residence

Rural sector	0	10.62	31.86	52.21	5.31	3.415	0.419
Urban sector	0.93	12.96	27.78	49.07	9.26		

Utilization

Yes	0	0	10.75	74.19	15.05	54.968	0.000
No	0.85	16.95	36.44	40.68	5.08		

Source: Primary data, 2019

4.3.4. Individual, community, health provider and health system related barrier on cervical cancer screening among selected district hospitals

Findings on individual barriers to cervical cancer screening from the study setting shown poor knowledge on availability of cervical cancer screening service as a barrier limiting the use of service at 67.5% (mean=3.6). This is followed by the lack of information on the importance of cervical cancer screening agreed on 63.5% of the respondent (Likert scale mean =3.3). In the same context 54.2% (Likert scale mean =3.3) of respondents confirmed that the worry and fear of cervical cancer screening practice prevent women to use the mentioned service. In the other hand the perception that cervical cancer screening practice is not necessary for healthy women, may be painful procedure and much money needed for treatment, were agreed by few of respondent respectively; 15.4% (Likert scale mean = 2), 15.8% (Likert scale mean = 2.6) and 16.6% (Likert scale mean = 1.9).

Regarding community related barriers on cancer screening, research respondents confirmed that living in rural area was perceived as community barrier to cervical cancer screening services at the rate of 51.9% (Likert scale mean =3.1). The social stigmatization related to cancer disease was reported to be a community barrier at 49.4% (Likert scale mean =3.2) among the respondent. Regarding gender and cultural norms, belief, community organization and myth; were not found to be barrier of cervical cancer screening. More than two third disagreed to the gender norms (68.8%), cultural norms (68.8%), some belief (73.6%) and community organization and myth (72.1%) to be among barriers to cervical cancer screening.

Still in the present study, findings revealed related barriers to service provider for cancer screening. The most apparent were lack of awareness campaign on cervical cancer screening at 59.0% (Likert scale mean of 3.1) and a negative attitudes of service providers toward clients which was agreed at 46.5% (Likert scale mean =3.2). For health provider who do not recommend cervical cancer screening, this was perceived as barrier by 42% of respondents, while lack of female provider screening for cervical cancer, was not barrier for 62.2% of respondents.

Finally, respondent reported the issue of waiting long time in order to perform the cervical cancer screening. This was reported by 64.1% of the participant (Likert scale mean=3.6). Next to the long-time of waiting the service, there is also a very closer associated barrier which is a long distance covered by women before reaching centers for cervical cancer screening. This was reported by the respondent at 58.7% (Likert scale mean mean=3.2). Lately but not the least, is an issue of health insurance was reported as barrier to cervical cancer. The 51.4% (Likert scale mean mean=3.2) of the respondent reported that women without a health insurance experience barrier to use cervical cancer screening.

Table 9: Perception towards barriers to the screening services

	Disagree %	Not sure %	Agree %	Mean	Std. Dev.
Individual barriers					
Being not information on why to go for screening	33.7	2.7	63.5	3.3	1.6
Being aware on available screening centers	27.1	5.5	67.5	3.6	1.3
Feeling painful while screening	41.2	43.0	15.8	2.6	1.0
It is embarrassing to go for screening services	46.1	19.2	34.7	2.9	1.2
Participating in cancer screening make one worry	27.8	18.0	54.2	3.4	1.2
Much money needed for treatment	76.1	7.3	16.6	1.9	1.2
Physically healthy women do not need cervical cancer screening	80.4	4.2	15.4	2.0	1.1
Community related					
Having some belief	73.6	10.4	16.1	2.0	1.2
Gender norms	68.8	12.5	18.7	2.3	1.1
Cultural norms	68.8	11.4	19.9	2.2	1.1
Community organization and myth	72.1	15.4	12.5	2.2	1.1
Social stigmatization	42.8	7.8	49.4	3.2	1.5
Living in rural area	43.0	5.1	51.9	3.1	1.4
Service provider related barriers					
Lack of awareness campaign on screening	38.2		59.0	3.1	1.6
Health provider who don't recommend screening of cancer of cervix	52.1		42.0	2.6	1.6
Negative attitudes of providers toward clients	32.1		46.5	3.1	1.2
The lack of screening services in health facilities	62.2		16.7	2.3	1.2

Health system related barriers

Health facilities located far from home (long distance)	35.9	58.7	3.2	1.2
Poor trust to the services offered in health facilities	55.2	30.5	2.6	1.3
Unavailability of screening services	51.7	37.4	2.6	1.3
Lack of health insurance	39.8	51.4	3.2	1.2
Absence of treatment at nearest facility	60.2	28.9	2.7	1.3
Lack of health materials for cancer treatment	43.8	39.8	3.0	1.1
Waiting time for screening	25.0	64.1	3.6	1.3

CHAPTER FIVE: DISSCUSSION

5.1. The level of knowledge among respondent on different causes for the cancer of cervix

Research findings revealed that 49.5% of respondent know the real cause of cancer cervix, 83% knows that cancer of cervix is preventable, 90% assume that cancer cervix is curable if detected early. The main prevention measures known by respondents are early screening at 43.5 percent and vaccination at 40.8. 71.4 percent confirm availability of cervical cancer screening in Rwanda, while 91 percent suggest to start cervical cancer screening below 30 age. The most known symptoms of cancer cervix are vaginal bleeding, foul smelling vaginal discharge with 26.4 and 21.5 percent respectively. The following are factor affecting screening services: performing sexual relations with many partners, start sexual relation at early age, and sexual transmitted infection are known at the percentage of 15.8, 14.6 and 11.9 percent. In general part of the respondents have good knowledge on cancer of cervix and their screening. Those results are different from those found in Nepal 38 % had adequate knowledge on screening services (Thapa *et al.*, 2018).

Finding agrees with another study conducted in Cameroun which showed that 37% of research participants, confirmed human papilloma virus as a main cause of cervical cancer (Halle-Ekane *et al.*, 2018). The present findings contrast research conducted in Tanzania which found out that many of the study participants did not elucidate or recognize what causes cancer of cervix. But in the same study, many respondents confirmed how cancer of cervix is cured by the time is detected on early stage which is the same as what we have found (Bateman *et al.*, 2019). Regarding factors affecting cervical cancer screening, the present research findings are similar to what have been published in Tanzania where many sexual partners, early sexual activities, sexual chlamydia, prolonged use of contraceptive pill and weakened immune system were the most known risk factors for cancer screening (M.M. *et al.*, 2018). Also, the study finding agrees with a similar study conducted in Cameroun showed that having sexual relation with many different people, regular sexual relation from early age and history of sexual transmitted infection were highlighted by participants as factors affecting cancer of cervix (Halle-Ekane *et al.*, 2018). Findings on symptoms of cancer of cervix known by respondent are similar to what found in Tanzania where persistent smelling vaginal discharge, persistent pelvic pain, vaginal bleeding

and discomfort during sexual activity were the most known symptoms of cervical cancer (Mabelele, 2018).

5.2. The Level of use of cervical cancer screening services

This research shown that 28.3% of women have used cervical cancer screening services. Among them, 95.7% of women used screening services were served in Public health facilities. According to Stewart, data from Sub-Saharan Africa indicated attandance ranging from 10% to 50% percent of women using cervical cancer screening in Rwanda (Stewart, Moodley and Walter, 2018). Another study conducted in Nepal shown that 86.4% of population are not aware about screening services (Thapa *et al.*, 2018). On another side, present research findings contrast with what was published from a study on individual and country level predictors of cervical cancer screening in Texas state. This study has found that the rate of cervical cancer screening reported the year 2014 and 215 are respectively 78.7% and 81.1% (Akinlotan, Weston and Bolin, 2018).

The present study finding contradict other study findings from Cameroun where 4.8% of University students confirmed their participation in Pap smear cervical screening (Halle-Ekane *et al.*, 2018). In the same angle, research findings in Sub-Saharan Africa, showed that coverage of cancer screening range from 0.0 to 70 %.(Stewart, Moodley and Walter, 2018).

Reported by Liebermann *et al.*, 2018, there is a good association between participation in Pap smear level of income among respondent. Also, rural resident women was found to be significant predictor of Pap smear screening than the urban women duelers. Therefore, women with elementary or lower educational level are at higher risk for being limited to pap smear (Liebermann *et al.*, 2018). The employment and level of knowledge are factors affecting good adoption of screening services (Compaore *et al.*, 2016). This is a reasons of having higher number of younger women in urban areas with a very good participation (68%) in cancer screening if compared with women living in semi-urban and urban areas.

5.3. Relationship between knowledge, utilization and other variables

The research finding demonstrated that cancer screening services use was associated significantly at education level, (P=0.000) and marital status (P=0.071). The present research findings are similar to what was observed in Nepal where adequate knowledge of respondents

are related to Pap smear test, and the literate female have an increased rate in cervical cancer screening (Thapa *et al.*, 2018).

Research finding demonstrated that good score on knowledge of cancer screening is associated with the level of education, age, marital status, and utilization rate. This study finding are similar with a research conducted on Indonesia women on determinants factor on awareness of cancer screening. Findings demonstrated that socio economic values including level of education, expenditure at household level, health insurance coverage, menopausal status and morbidity was found to be associated with Pap smear participation (Anwar *et al.*, 2018). The research finding are also similar to a study on knowledge towards cervical cancer prevention and screening practices among women who attended reproductive and child health clinic, conducted in Tanzania. It was demonstrated that formal employment, marital status, high number of parity, access to health insurance are the demographic characteristics associated with the level of knowledge on cervical screening (M.M. *et al.*, 2018). There is a higher percentage in a group of educated women than women belonging in uneducated group. It means that education is associated with higher awareness about pap smear. This has confirmed research findings from Sudan where education is the most important predictor of knowledge about pap smear test even once in life (Almobarak *et al.*, 2016). Also, this finding are similar to a study conducted Latin American and Caribbean Countries demonstrated a significant association between knowledge of cervical cancer screening guidelines and Pap smear participation in multivariate analysis (Liebermann et *al*, 2018). According to Compaore (2016), the absence or poor awareness on the effects of cancer of cervix is a main barrier to their screening. Poor awareness is followed by poor knowledge on screening services are offered, diagnosed with cervical cancer and the financial support (Compaore *et al.*, 2016).

Research findings for a study conducted in Burkina faso demonstrated that level of knowledge affect women's addoption on cancer screening (Compaore *et al.*, 2016). In sub-Saharan Africa Research findings on women from sub-Saharan Africa about risk factors for late-stage presentation to the cancer screening have demonstrated how in Nigeria, half of women go for screening due to their level of education. The same study was repeated in Ethiopia and findings indicated that a high number of women have participated in cancer screening due to their level of knowledge. In Tanzania (more specifically the Kilimanjaro region), Botswana and Southeast

Nigeria; attendance to the screening services are reduced by poor knowledge of women (Stewart et al. 2018).

Research findings in Burkina Faso on barriers of cancer screening among immigrant female and minority group of people are lack of awareness on screening services (Compaore *et al.*, 2016). In addition to the lack of awareness; Sub-Saharan Africa, non-formal education, high parity, level of HIV positive and non-use of condom are also the limiting factors (Stewart, Moodley and Walter, 2018).

5.4. Individual community, health provider and health system related barriers for screening

5. 4. 1. Individual related barrier to the screening

Research findings in different district hospitals of Rwanda have demonstrated number of individual barriers for cancer screening among women attending gynaecological services. Findings were confirmed by others researchers from different countries and in different research settings.

The individual barriers to go for screening services are highly represented due to poor access on information and low level of knowledge. In Cameroun, research conducted on women student from University of Buea showed that lack of access to screening services, treatment and accurate information are associated with HIV prevalence (Bateman *et al.*, 2019; Halle-Ekane et *al.,2018).*

As above mentioned, a systematic study on barriers affecting limiting screening services in Sub Sahara Africa demonstrated the same results (Lim *et al.*, 2016). Also, Nwobodo (2016) presented the same results in a study conducted from Nigerian. This was obteined after analysing the determinants of low cancer screening in Nigeria (Nwobodo and Ba-Break, 2016). In Rwanda, the same findings from an exploratory qualitative study was published factors affecting the delay of cancer consultation among selected district hospitals (Benemariya *et al.* (2018).

The age and women with birthing experience were also determined as cancer screening barriers. People in younger ages (the group of 19 to 29 years old) do not use screening services compared to other people belonging in older group of ages. The same findings was demonstrated in Portland and Jamaica (Ncube *et al.*, 2015). Other researchers confirmed those findings in Kenya a (Kangmennaang *et al.*, 2018).

Family resources is another barrier constraining the full attendance of women in screening of cancer. It means that women from limited resources families are less user of screening services when compared with others women from families with enough resources. The household expenditure and health insurance were identified in Indonesia as barriers affecting screening services use (Anwar *et al.*, 2018). For the general case of health insurance system in Rwanda, the more you have resources, the more afford to access a good health insurance providing the advanced services.

The last individual barrier determined by the present study are worries associated with women's privacy. Research findings of Dutta et *al.* (2018) conducted in Kenya demonstrated that emotional (defined as fear or shyness), embarrassment, painful procedure, possible violation of privacy and reliance on prayer with the onset of illness are the major factors (Dutta, Haderxhanaj and Agley, 2018). Another research in Kenya determined knowledge of cancer of cervix as determinants of early detection of cervical cancer screening (Kangmennaang *et al.*, 2018). Systematic review done in Sub Sahara Afric on barriers to the use of cancer screening have obteinedm the same results (Lim and Ojo, 2017).

5.4.2 Community related barrier to cervical cancer screening

The present research indicated that social stigmatization and quality of life in rural area affect cancer screening services. Those findings resemble to the findings in Texas on research done to the individuals and country predictors of cancer of cervix screening. Findings shown a strong association on use of Pap smear test with place of residence (Aknolton 2018). In Tanzania a similar study shown how cancer of cervix is associated with stigma and isolation. These are due to women fear and worries of participating in cancer screening (Bateman *et al.*, 2019).

Different society have different cultural and beliefs at individual, couple and family levels. Those differences turn into screening barriers by use of Pap test. In the same ways, social and cultural factors influence to the barriers for Pap smear screening. From other studies, the common screening are embarrassment, fear, perceived pain of the Pap and others (Liebermann *et al.*, 2018).

5.4. 3. Service provider and health system related barrier on cancer screening

In the research findings 59% of women respondent are limited to cancer screening by the absence of awareness campaign. Other 41% is contributed by others factors. This is the same burden of cancer screening in countries where use of cytology system is prohibited in cancer screening services. This are due to the lack supporting appropriate infrastructures, human and financial resources (Stewart, Moodley and Walter, 2018). Mukanyangezi (2018), identified poor access to the information and financial capabilities the most common reason preventing the HIV positive women to perform cancer screening (Mukanyangezi *et al.*, 2018). Likewise, patients, health providers, health care system were denoted by Benemariya (2018) as factors affecting delays of consultation for the cancer of cervix and their treatment in Rwanda (Benemariya *et al.*, 2018). From the above mentioned, the present study findings confirm to what other researchers have demonstrated.

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.1. Introduction

Provision of cervical cancer screening services in Rwanda have a major objective to improve women's wellbeing in particular and entire population in general. Regular screening services increase chance of success on cancer treatment. However, lucky of knowledge and other barriers are root causes of poor cervical cancer screening, treatment.

6.2. Conclusions

The present research was conducted on women attended selected district hospitals in Rwanda and more specifically in the gynecology services. The major characteristic of respondent was determined as high level of educational among participants. Among them, less than a half, have accurate knowledge on cervical cancer, HPV, and screening program for the cancer of cervix. However, majority of women interviewed had not screened before. Long term education should be started in order to provide all necessary information, impose positive external values, motivation of women and facilitation on cancer screening at all level of health care facilities.

6.3. Recommendations

- **To the nursing practice**

The district hospital must recognize and fix most presented barriers to go for cancer screening services. However, it was revealed that there is a need to increase awareness in public events, media, community activities, and adequate training of human resources dealing with cancer screening. In district hospital of Rwanda, there is a need to establish policies and strategies which will support in the areas where there is a weakness on cancer screening and the increase of utilization coverage.

- **To the Nursing administration**

Apart from the low utilization rate of screening, many individual, community, health staff and health system related barriers for the screening of cancer of cervix. Heath education is a key for the adoption of cervical cancer screening. To increase population's knowledge on cancer screening, there is a high need of awareness campaign. Availability and appropriate screening services guidelines and protocols on neonatal jaundice are mostly encouraged. Ministry of

Health must focus on the results from this study for enhancing the training of general nurses working in cervical cancer screening service. And with the time, the trained health provider in screening should increase in number and get enough time to provide education and to do screening to improve screening service uptake.

- **To the nursing research.**

There is a need of conducting further researches on screening, utilization, barriers and level of knowledge in other districts of Rwanda as it remains a challenging health problem and researches conducted in Rwanda are very few and yet the problem is there. Although, more detailed studies based on larger sample size including rural areas are suggested, should be conducted to see the utilization rate of screening services in all district hospitals of Rwanda and discovering motivating factors for women undertaking cervical cancer screening. This will help in making more appropriate decisions by the planners, policy makers, administrators and screening services users in order to achieve optimal consumption of health services.

- **In nursing education**

Existing curriculum on care of cancer of cervix need a more emphasize. To provide a much time to the student to integrate the theory to the practice. Workshops and continuous training of the lectures on new practices on screening is highly needed for providing enough and current knowledge to the students. The university should organize the campaign where students can reach the community and teach the community about cervical cancer prevention screening

- **To the health institution**

For health institution, there is need to emphasize reducing the waiting time for cancer screening, provide related education and mass campaign of awareness, encourage health providers to recommend for cancer screening to the clients, and make screening service permanent.

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women+who+attended+reproductive+and+child+health+clinic+at+Magu+district+hospital%2C+ Lake+Zone+Tanzania%3A+A+cross-sectional+study&stitle=BMC+Cancer&title=BMC+Cancer&volume=18&issue=1&spage=&epage=&aulast=Mabelele&aufirst=Mabula+M.&auinit=M.M.&aufull=Mabelele+M.M.&coden=BCMAC&isbn=&pages=-&date=2.

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APPENDICES

Appendix I- Approvals letters

A. Ethical clearance

UNIVERSITY OF RWANDA   **COLLEGE OF MEDICINE AND HEALTH SCIENCES**

CMHS INSTITUTIONAL REVIEW BOARD (IRB)

Kigali, 20/03/2019
Ref: CMHS/IRB/**116**/2019

NIYONSENGA Gaudence
School of Nursing and Midwifery, CMHS, UR

Dear Gaudence,

RE: ETHICAL CLEARANCE

Reference is made to your application for ethical clearance for the study entitled « *Utilization and barriers of cervical cancer screening among women attending selected district hospitals in Rwanda* "

Having reviewed your application and been satisfied with your protocol, your study is hereby granted ethical clearance. The ethical clearance is valid for one year starting from the date it is issued and shall be renewed on request. You will be required to submit the progress report and any major changes made in the proposal during the implementation stage. In addition, at the end, the IRB shall need to be given the final report of your study.

We wish you success in this important study.

Professor Gahutu Jean Bosco
Chairperson Institutional Review Board,
College of Medicine and Health Sciences, UR

Cc:
- Principal College of Medicine and Health Sciences, UR
- University Director of Research and Postgraduate studies, UR

A. Approuval fro District hospitals

REPUBLIC OF RWANDA   16/04/2019
REF 33.1./MSK/DH/2019

KIGALI CITY
DISTRICT KICUKIRO
HOPITAL MASAKA
B.P 3472 KIGALI
E-mail: masaka.hospital@moh.gov.rw

To: NIYONSENGA Gaudence

Re: **PERMISSION TO CONDUCT DATA COLLECTION**

Dear Madam,

Reference made by decision of Director General of Masaka district hospital on your research proposal entitled *"Utilization and barriers of cervical cancer screening among women attending selected district hospitals in Rwanda"* The management of Masaka District Hospital is pleased to inform you that, you have authorization to conduct a study in our hospital.

Sincerely

Dr. Marcel UWIZEYE
Director General Masaka Hospital

REPUBLIC OF RWANDA   Kigali, April 12th 2019

KIGALI CITY
NYARUGENGE DISTRICT
MUHIMA HOSPITAL
P.O. BOX 2456 KIGALI
Tél. /Fax : +252 50 37 7
E-mail : muhima.hospital@moh.gov.rw

NIYONSENGA Gaudence

<u>Re:</u> **Your request to conduct research**

Dear Gaudence,

Reference made to your letter received on April 4th 2019 requesting to conduct research at Muhima District hospital for your research project entitled: *Utilization and barriers of cervical cancer screening among women attending selected hospitals in Rwanda.*

I would like to inform you that your request is approved and at the end the administration of Muhima hospital shall need to be given the final report of your study.

Yours sincerely,

MANIRAGUHA YEZE Aimée Victoire

Chief Ethic Committee

Cc:
- Clinical Director
- Director of Nursing

B. Approval of District hospitals

NIYONSENGA Gaudence
niyosavior@gmail.com
Phone: +250783121674
On 2nd, April, 2019

TO: Director General of KIBAGABAGA District Hospital

RE: Application to conduct research

Dear Sir,

I would like to conduct research as my thesis project for completing my Master of science in nursing, Oncology track, in college of medicine and health sciences at University of Rwanda. The project is entitled, **Utilization and barriers of cervical cancer screening among women attending selected district hospitals in Rwanda.**

The study will be done from April to May 2019 in selected district hospitals of Kigali city. The study population will be women attending selected district hospitals. The participation will be voluntary after signing informed consent form. A self-administered questionnaire will be used to collect data and these who are not able to read themselves the researcher, and enumerator will fill the questionnaire. The participants' response will be confidential and anonymous. Attached is a copy of ethical clearance from college of medicine and health sciences, and an authorization of research from Ministry of Health.

Yours Sincerely,

NIYONSENGA Gaudence

Appendix II- Research instrument

Assessment of limiting factor for cervical cancer screening among patent women from gynecological services in selected district hospitals.

Principal investigator: **NIYONSENGA Gaudence**

Contact**: O783121674/0737110290**

Dear patient, you have been selected to participle in a research study entitled: Knowledge, utilization and barriers of cervical cancer screening among women attending selected district hospitals in Rwanda. We wish to let you understand the following concepts which are compulsory to all respondents. Participation is voluntarily

  i.   Participation in on voluntary basis;
 ii.   The study is intended to contribute on reduction of factor affecting limited use of cervical cancer screening at Muhima, Kibagabaga and Masaka District hospitals.
iii.   There is no negative effect to anyone who refuse to participate in the study;
 iv.   We encourage all participant to ask questions for more clarification on this study after you have read the questionnaire.
  v. By the time you are not comfortable to continue with this study, you still have right to withdraw.

Assurance of confidentiality of volunteers' identity

Researcher shall keep confidential all of the information you shall provide in the research study. Those include but not limited to record of your participation and names. Before you respond to the questionnaire, data enumerator will provide a copy of this form for your approval It is your rights to contact the main researcher if more clarification to this form are needed before signing. I acknowledge receipt of the consent form with all necessary explanations.

Name of respondent: _____

Signature: _____

Research instruments for knowledge, limiting factors and level of utilization of cervical cancer screening among women attending selected district hospitals in Rwanda

Questionnaire number: …….

Date of interview: …. /…. /2019

Eligibility: Respondent should be aged from 30 to 60 years.

Section I: Respondent demography

No	Question	Response	Comments
1.1.	How old are you?	…… Years	
1.2.	Are you belonging in any religion belief among the following?	1. The roman Catholic; 2. Protestant church of Rwanda; 3. Muslim; 4. Pentecostal evangelical church; 5. Seventh Day Adventist church; 6. Other.	
1.3.	What is the highest level of education you attained	1. None 2. Primary (P1 to P6) 3. O level (S1 to S3) 4. A level (S3 to S6) 5. Tertiary education/University	
1.4.	Where do you stand in the following marital status?	1.Single 2. Married 3. Widowed 4. Divorced/Separated	

1.5.	Do you have a social class of Ubudehe? If yes, what is your category?	1.Category 1 2. Category 2 3. Category 3 4. Category 4 5. None categorized.	
1.6.	What is you place of residence?	1. Rural sector 2. Urban sector	

Section II: The level of knowledge on women screening to the cancer of cervix

N^o	Question	Response	Comments
2.1	Among the following; which one is the cause of cervical cancer?	1. Human Papilloma virus 2. Don't know	
2.2	Do you think that is possible to prevent cancer of cervix?	1. Yes 2. No 3. Don't know	
2.3	Do you think that cervical cancer is curable if detected early?	1. Yes 2.No Don't know	
2.4	Do you know any preventive measures of cancer of cervix? If yes, which ones?	1. Early screening 2. Avoiding smoking 3. Vaccination 4. Nothing can be done 5. Others _____ Don't know	
2.5	Are you aware on services of	1. Yes	

	cancer screening in Rwanda?	2. No	
2.6	If said yes to the question 2.5, Where?	1. Health center 2. District hospital 3. Referral hospital 4. Any other………..	
2.5.	At what age woman should start screening for cervical cancer?	1. _____ years 2. Don't know	
2.6.	How frequently should someone repeat cancer screening?	1. Every ___ Months (write 00 if less than 1 month) 2. Don't know	
2.9.	What are the symptoms of cervical cancer you are aware of? (**Tick all that apply**)	1. Vaginal bleeding 2. Post-coital bleeding 3. Weight loss 4. Foul smelling vaginal discharge 5. Abdominal pain 6. Malignancies 7. Other _____ 8. Is asymptomatic	
2.10.	Which of the following are the risk factors for cervical cancer? (**Tick all that apply**)	1. Smoking 2. Many sexual partners 3. Human papilloma virus (HPV) 4. Sexually transmitted diseases 5. Human immunodeficiency virus (HIV) 6. Early onset of sexual activity 7. Family history of cervical cancer 8. Uncircumcised male partner 9. Long time use of contraceptive	

Section III: Utilization of screening services for the cancer of cervix

3.1.	Have you attended an session of cervical cancer screening?	1. Yes 2. No	
3.2.	If yes to question 3.1, Where about have you attended?	1. In the public health center 2. In the private health centers 3. Other _____	
3.3	At which age have you gone for the first screened service?	1. Before 30 2. Over 30	

Section IV. Barriers to cervical cancer screening

a. Individual barriers for cancer screening

No	Barriers	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
1.	Poor access to the information for the importance of cervical cancer screening					
2.	Poor knowledge on available screening service.					
3.	Cervical cancer screening is painful					
4.	Doing cervical cancer screening is too embarrassing					
5.	Doing cervical cancer screening make one worry					
6.	Much money needed for treatment					
7.	Physically healthy women do not need cervical cancer screening					

b. Community related barriers

No	Barriers	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
1	People's belief					
2	Gender norms					
3	Cultural norms					
4	Myths for the Community					
5	Social stigmatization					
6	Living in rural area					

c. Health system and service provider related barriers

A. Service provider related barriers

No	Barriers	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
1	Lack of awareness campaign on cervical cancer screening					
2	Health provider do not recommend cervical cancer screening					
3	Negative attitudes of service providers toward clients					
4	Lack of qualified female screeners in health facilities					

B. Health system related barriers

No	Barriers	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
1	Long distance to health facility					
2	Lack of trust among women on health facility service					
3	Cervical cancer screening services not available					
4	Lack of health insurance					
5	Lack of treatment at nearest facility					
6	Long time patient wait for the screening services					

Thank you.

Gusuzuma ubumenyi, ikoreshwa n imbogamizi zo kwisuzumisha kanseri y'inkondo y'umura mu abagore bivuriza ku ibitaro by'uturere byatoranijwe mu Rwanda".

Uhagarariye ubushakashatsi**: NIYONSENGA Gaudence**

Aho abarizwa**: 0783121674/0737110290**

Watoranijwe mubagomba gukorerwaho ubushakashatsi. Ni ingenzi cyane gusobanukirwa imirongo migari izagenderwaho kubagira uruhare mu bushakashatsi bose.

- vi.   Kwemera gukorerwaho ubushakashatsi ni ubushake,
- vii.   Ubu bushakashatsi bugamije kugira uruhare mu kugabanya imbogamizi zikumira abantu mu kwisuzumusha kanseri y'inkondo y'umura mu ibitaro by'uturere byatoranijwe,
- viii.   Nta bihano bitangwa kumuntu udashaka gukorwaho ubushakashatsi,
- ix.   Wemerewe kubaza ibibazo byose nyuma yo gusoma imiterere y'ubu bushakashatsi kugirango urusheho kubwumva neza,
- x.   Wemerewe kuba wakwivana mubushakashatsi igihe cyose wakumva hari ibitakunyuze.

Ikizere cyo kubikirwa ibanga no kutagaragazaazina

Amakuru ajyanye n umuntu wagize uruhare mu bushakashatsi azabikwa mu buryo bw ibanga. Amazina yawe ntabwo azakoreshwa muri raporo y'ubushakashatsi. Uzahabwa kopi y'aya masezerano yo kwemera gukorerwaho ubushakashatsi.

Niba hari agace k'aya masezerano mugukorerwaho ubushakashatsi utumva neza, banza usobanuze neza ukusanya amakuru mbere yuko ubyemeza.

Ndizeza ko nakiriye aya mazezerano akubiyemo ubusobanuro kubwo nemera no kumenyesha ibyayo.

Amazina: _____

Umukono: _____

Ikusanyamakuru ry'ubushakashatsi ku Ubumenyi, ikoreshwa n'imbogamizi mu kwisuzumisha kanseri y'inkondo y'umura ku bagore bagana ibitaro by'uturere byatoranijwe mu Rwanda.

Nimero y'ubazwa: …….

Itariki y'ibazwa: …. /…. /2019

Abemerewe kwitabira ubushakashatsi: Ni abagore bagana ibitaro by'uturere byatoranijwe bari mu kigero cy'imyaka yo hagati ya 30 na 60.

Igika cya I: Ibiranga ubazwa

No	Ikibazo	Igisubizo	Icyongerwaho
1.1	Ufite imyaka inyahe?	Imyaka**:** ………..	
1.2	Usengera mu irihe dini / itorero	1. Gatolika 2. Abaporotesitanti 3. Abayisilamu 4. Abapantekote 5. Abadiventisite 6. Abandi	
1.3	Ni uruhe rwego rwo hejuru rw'amashuri wize	1. Ntayo 2. Abanza (P1 - P6) 3. Ay'imyaka 9 (S1 - S3) 4. Ay'imyaka 12 (S3 - S6) 5. Kaminuza 6. Ayandi	
1.4	Irangamimerere?	1. Ingaragu	

		2. Arubatse	
		3. Umupfakazi	
		4. Bratandukanye	
		5. Ibindi	
1.5	Ikiciro cy'Ubudehe?	1. Ikiciro cy'1	
		2. Ikiciro cy'2	
		3. Ikiciro cy'3	
		4. Ikiciro cy'4	
		5. Nta kiciro afite.	
1.6	Umurenge utuyemo	1. Umurenge w'icyaro 2. Umurenge w'umujyi	

Igika II: Ubumenyi kuri kanseri y'inkondo y'umura n'uburyo isuzumwa

No	Ikibazo	Igisubizo	Icyonge rwaho
2.1	Utekereza ko kanseri y'inkondoy'umura iterwa n'iki?	4. Human Papilloma virus 5. Uburozi 6. Ntabwo mbizi	
2.2	Utekereza ko kanseri y'inkondoy'umura ishobora kwirindwa?	3. Yego 4. Oya 7. Ntabwo mbizi	
2.3	Utekereza ko kanseri y'inkondoy'umura ishobora kuvurwa igakira iyo yabomwe hakiri kare?	2. Yego 3. Oya 4. Ntabwo mbizi	

2.4	Ni ubuhe buryo bwo kwirinda kanseri y'inkondo y'umura uzi?	6. Kwisuzumisha kare 7. Kwirinda kumywa itabi 8. Kwikingiza 9. Nta na kimwe cyakorwa 10. Ibindi _____ 11. Ntabwo nzi	
2.5	Hari service uzi zitangwa ku gusuzuma kanseri y'ikondo y'umura mu Rwanda?	3. Yego 4. Oya	
2.6	Niba ari yego, Ni hehe	5. Ibigo nderabuzima 6. Ibitaro by'akarere 7. Ibitaro by'icyitegererezo 8. Ahandi………..	
2.7	Ni kuyihe myaka umugore atangiriraho kwisuzumisha kanseri y'ikondo y'umura?	3. Imyaka _____ 4. Ntabwo mbizi	
2.8	Ni nyuma y'igihe kingana iki uwisuzumusije kanseri y'ikondo y'umura yongera kubikora?	3. Muri mezi _____ 4. Ntabwo mbizi	
2.9.	Ni ibihe bimenyetso bya kanseri y'ikondo y'umura (Hitamo ibisubizo byose by'ukuri)	9. Kuva amaraso mu gitsina 10. Kuva amaraso nyuma y'imibonano mpuzabitsina 11. Gutakaza ibiro 12. Gusohora imyanda inuka mu gitsina 13. Kubabara umugongo 14. Ibindi _____	

		15. Nta bimenyetso igira.	
2.10	Muri ibi bikurikira ni ibihe byongera ibyago byo kwandura kanseri y'ikondo y'umura? (Hitamo ibisubizo byose by'ukuri).	10. Kumywa itabi 11. Gukorana imibonano mpuzabitsina n'abantu benshi batandukanye 12. Human papilloma virus (HPV) 13. Ibyorezo by'indwara zandurira mu imibonano mpuzabitsina 14. Agakoko gatera SIDA 15. Gutangira gukora imibonano mpuzabitsina umuntu akiri muto 16. Indwara karande ya kanseri y'ikondo y'umuramu umuryango. 17. Kubana n'umugabo udasiramuye 18. Gukoresha imiti irinda gusama igihe kirekire	

Igika III: Kwisumisha kanseri y'inkondo y'umura

3.1	Waba warigeze wisuzumusha kanseriy'inkondoy'umura?	3. Yego 4. Oya	
3.2	Niba ari yego kuri 3.1, Ni hehe wisuzumushirije?	4. Mu ivuriro rya Leta 5. Mu ivuriro ryigenga 6. Ahandi _____	
3.3	Niba ari yego kuri 3.1, wisuzumishije bwa mber ufite imyaka ingahe?	1. Munsi y'imyaka 40 2. Hejuru y' imyaka 40	

Igika IV. Imbogamizi mu kwisuzumusha kanseri y'inkondoy'umura

a. Imbogamisi zishingiye ku umuntu kugiticye

No	Imbogamizi	Simbye mera na hato	Simby emera	Simbizi neza	Ndab yeme ra	Ndabye mera cyane
4.1.1	Kuburaamakuru ku mumaro wokwisuzumisha kanseri y'inkondo y'umura					
4.1.2	Ubumenyi buke ku birebana naho service zo gusuzuma kanseri y'inkondo y'umura ziboneka					
4.1.3	Gusuzumwa kanseri y'inkondo y'umura birababaza					
4.1.4	Kwisuzumisha kanseri y'inkondoy'umura birabangamye cyane					
4.1.5	Kwisuzumisha kanseri y'inkondo y'umura bituma umuntu ahangayika cyane					
4.1.6	Amafaranga menshi akenerwa mu kwivuza, hamwe n'ikicyiro cy'ubudehe					
4.1.7	Mfite ubuzima bwiza, ntampamvu mbona yo kwisuzumisha kanseri y'inkondo y'umura					

b. Imbogamizi zishingiye ku aho umuntu atuye n'abo aturanye nabo

No	Imbogamizi	Simbye mera na hato	Simby emera	Simbizi neza	Ndab yeme ra	Ndabye mera cyane
4.2.1	Imizirirzo ku myanya ndangagitsina					
4.2.2	Imyumvire ku buringanire					
4.2.3	Umuco gakondoutemera kuvuga ibijyanye n'igitsina					
4.2.4	Imyubakire y'umuryango gakondo n'ibyo uziririza					
4.2.5	Guhabwa akato n'abaturanyi					
4.2.6	Gutura mu gace k'icyaro					

c. Imbogamizi ziturutse kuri sisiteme z'ubuzima n'abatanga service zo gusuzuma kanseri y'inkondo y'umura

A. Imbogamizi zishingiye ku batanga service zo gusuzuma kanseri y'inkondo y'umura

No	Imbogamizi	Simbye mera na hato	Simby emera	Simbizi neza	Ndab yeme ra	Ndabye mera cyane
4.3.1	Kutaniganirizwaho n'abaganga					
4.3.2	Abakozibo mu by'ubuzima badatanga inama zo kwisuzumusha kanseri y'inkondo y'umura kubabagana					
4.3.3	Imyitwarire itaboneye y'abatanga					

	serivice ku babagana					
4.3.4	Nta baganga b'abagore basuzuma kanseri y'inkondo y'umura					

B. Imbogamizi zishingiye kuri sisisteme z'ubuzima

No	Imbogamizi	Simbye mera na hato	Simby emera	Simbizi neza	Ndab yeme ra	Ndabye mera cyane
4.3.5	Intera iri mu kugera ku ivuriro					
4.3.6	Kutagirira icyizere ahatangirwa service zo gusuzuma kanseri y'inkondoy'umura					
4.3.7	Kugera aho basuzumira kanseri y'inkondo y'umura biragoranye cyangwa ntahahari					
4.3.8	Kutagira ubwisungane mu kwivuza					
4.3.9	Kubura aho kwivuriza kanseri					
4.3.10	Kubura ibikoresho by'ubuvuzi					
4.3.11	Gutegereza igihe kirekire mbere yo kwisuzumisha					

Murakoze.