



**St. PAUL'S HOSPITAL MELLINIUM MEDICAL COLLEGE
SCHOOL OF PUBLIC HEALTH**

**Cervical cancer screening service uptake and its associated
factors among women who visit public hospitals, Addis
Ababa, Ethiopia**

By - Assefa Tesfaye (MD)

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By - Assefa Tesfaye (MD)

Advisors- Mr Belayneh Lulseged (MPH)

Mr Temesgen Geleta (MPH)

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Acronyms

ANC- Antenatal care

BMI- Body mass index

DNA- Deoxyribonucleic acid

DPH- Department of public health

HPV- Human papilloma virus

HIV- Human immunodeficiency virus

IPD- Inpatient department

IUCD- Intrauterine contraceptive device

OPD- Outpatient department

PAP- Papanicolaou

SPHMMC- St Paul's hospital millennium medical college

SPSH- St Peter specialized hospital

STI- Sexually transmitted infections

STD- Sexually transmitted diseases

VILI- Visual inspection under Lugol's iodine

VIA- Visual inspection under acetic acid

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Abstract

Background: Cervical cancer is the fourth leading common cause of cancer in the world. In Ethiopia alone, more than 27 million female of reproductive age group are at risk of developing this disease. Annually, more than 5000 deaths are accounted to cervical cancer, in Ethiopia. Despite this, it is only <1% of women who undergo the screening procedure.

Objective: The study is carried out to assess cervical cancer screening service utilization and the associated factors among women of age >30, who visit SPSH and SPHMMC general OPDs, Addis Ababa, Ethiopia.

Methods: Hospital based cross sectional study was conducted among 422 women of age >30 in SPSH and SPHMMC general OPDs, Addis Ababa, Ethiopia from December 1, 2020 to January 30, 2021. Study participants were selected using systematic random sampling method. Data was collected using pretested interviewer administered questionnaire. Data was entered using EPINFO and analyzed after cleaning using SPSS version 25 software package. Descriptive analysis was done followed by logistic regression to assess the association between the independent variables and the dependent variable. Odds ratio with 95% confidence interval and p-value less than 0.05 were used to declare statistical significance.

Results: among the 422 study participants, only 100 (23.7%) of them have been screened for cervical cancer. Women who had more than 6 children (AOR=6.463, 95% CI =1.2-33.43), getting advice from health professional (AOR= 8.54, 95% CI=4.70-15.51), women with favorable attitude towards cervical cancer screening (AOR=3.40, 95% CI=1.30-8.92), women having good knowledge about cervical cancer and its screening (AOR=2.61, 95% CI=1.04-6.53) were found significant positive predictors of cervical cancer screening service uptake. Being vaccinated for HPV (AOR=2.56, 95% CI=1.05-6.23) high perceived barriers to getting the screening, (AOR=0.3, 95% CI=0.17-0.55) were significant negative predictors.

Conclusion: Magnitude of cervical cancer screening service utilization is at 23.7% in the two hospitals included in the study. Number of children, HPV vaccination status, getting screening advise from health professional, availability of perceived barriers, attitude score and knowledge status were identified factors that had significant association with cervical cancer screening utilization. The ministry of health should design a program that can help improve the screening service utilization in the various health facilities of the country.

Keywords: Cervical cancer, Cervical cancer screening uptake, SPHH, SPHMMC.

1.Introduction

1.1 Background

Cervical cancer is cancer of uterine cervix which is caused by human papillomavirus. It is the only preventable cancer known to humans so far. The natural history, the causative agent, factors associated with the disease and progression of the disease are well known. The disease is treatable if caught in the early phase of its progression. Despite all these facts, cervical cancer still possess one of the biggest health threats to women of reproductive age and it is a globally significant public health problem(1).

Global statistics show that cervical cancer is the fourth common cancer accounting for 6.6% of all female cancers(1). In the last 3 decades, the incidence and mortality rate of cervical cancer has risen every year by about 0.6% and 0.46% respectively (2). The world health organization estimates that 40-50% of women in developed countries get screened for cervical cancer while it is only 5% of women that get screened in the poor countries of the world (3). In low income countries, it is the second most commonly diagnosed cancer and the third leading cause of cancer related death in women.

Developed nations have programs in place to screen women for cervical cancer and hence making most pre-cancerous lesions identifiable at early stages which warrant treatment. In such countries, 80% of cervical cancers is prevented with early treatment (4). On the contrary, only 5% of eligible women living in developing countries get cytology-based screening in a 5-year period. The reasons for these being, too few trained professions, unavailability of resources to sustain the program, confinement of the services to teaching hospitals and delay in reporting results among the long list of reasons (5).

In Ethiopia, more than 27.19 million females of age 15 or higher are at risk to develop cervical cancer (6). A recent study showed that more than 6,000 new cases and close to 5,000 deaths occur due to cervical cancer in Ethiopia (1).It is the second most common cancer among women of reproductive age in Ethiopia. Despite this fact, it is only <1% of women who undergo with cervical cancer screening every three years (7).

1.2 Problem statement

Cervical cancer kills close to 275,000 women every year and 528,000 new cases are reported worldwide. In low- and middle-income countries, it is the second largest killer cancer. It is worth noting here that cervical cancer is an entirely preventable cancer. Between the years 1979 and 2012, cervical cancer incidence has decreased by 50% (from 14.8/100,000 to 6.7/100,00) due to increased utilization of screening with pap smear and also early intervention in case of precancerous lesions (8).

Cervical cancer affects 528,000 women every year, globally. It also accounts for 12% of all female cancers in the less developed regions of the world. Cervical cancer is the fourth most common cause of cancer related mortality in women worldwide, accounting for 7.5% of all female cancer deaths (1).

In 2010, cervical cancer accounted for over 7 million disability adjusted life years lost (9). Had cervical cancer prevention programs been implemented globally, an estimated 10-230 million dollars and 1 trillion dollars in value of statistical life would have been saved (10).

Despite being preventable, close to 85% of the global burden and 87% of deaths secondary to cervical cancer occur in the undeveloped regions. With age standardized incidence of 42.7/100,000 population and mortality rate of 27.6/100,000, east Africa stands top in cervical cancer (9).

In the United States, the rate of mortality from cervical cancer has declined by nearly 70% between 1955-1992, and it is dropping by 3% annually. In the United Kingdom, the rate of cervical cancer has decreased by 70% in the year 2008 compared to 30 years back. These has been accounted to the effective screening and preventive ways that have been put in place in the developed countries mentioned above (11). The same cannot be said for developing countries, as the amount of cases and deaths following those has been on the rise. It is a very common thing to find patients with advanced stage of the disease at first presentation (12). The world health organization has made a prediction on cervical cancer stating that mortalities from it are to rise from the current figure of 274,883 to 474,000, among which 95% of these deaths are from developing countries (13).

Cervical cancer comprises 20-25% of all cancers among women in sub-Saharan Africa, which is twice that of women worldwide (14). The incidence in sub-Saharan Africa ranges from 30-40 per

100,000 (15). In Nigeria, roughly 10,000 new cases of cervical cancer are found yearly among which 8,000 of them end up dying (16).

Ethiopia has 27.19 million women of age >15 who are at risk of developing cervical cancer. 7095 women get cervical cancer diagnosis on yearly basis and 4732 die of it (17). Compared to other malignancies, the mortality rate from cervical cancer is higher in our country Ethiopia (18). It has been shown that, as the stage of cancer increases, so does the five-year mortality rate. A better survival has been shown in women who get early diagnosis due to the early treatment they can get (19). One of the causes for high mortality rate and low survival is the lack of screening practice at the early stage of the disease. Studies done in Addis Ababa have shown that lack of knowledge about the risk factors and prevention modalities have caused the low cervical cancer screening practice (20). In Ethiopia, only 1% of age eligible women receive effective screening for cervical cancer, among which 0.6% are in urban and 0.4% are in rural Ethiopia (21).

Ethiopia records some of the highest incidence rates with age standardized incidence of 18.9/100,000 in the year 2018. Following breast cancer, cervical cancer is the second common malignancy seen in the female population. In the same year, 6294 new cases and 4884 mortalities have been recorded. (22).

There are different factors that put Ethiopian women at higher risk of cervical cancer. Among these, median age at first sexual intercourse being at age 16, high HIV prevalence and low socioeconomic status are worth mentioning (23).

Cervical cancer is a significant health problem in low-income countries like Ethiopia. It is the second most common cancer and third leading cause of cancer-related deaths in women. Globally, it is the fourth common cancer. Mortality from cervical cancer is increasing by 0.46% on yearly basis in the past 30 years. cervical cancer screening uptake is low across Ethiopia which makes the preventive work very challenging. Data on factors associated with cervical cancer screening utilization in women is limited. There is lack of research in the study area mentioned, SPSH, about cervical cancer screening utilization. Despite national policies being in place, many hospitals don't have the services properly functioning due to many unexplored reasons.

1.3 Significance of the study

Cervical cancer screening uptake is <1% in our country. There are many reasons put on different literatures but there is a lot that is still not known about it as described in the literatures. We don't have concrete evidence to pinpoint as to what the major reasons are accounting to low cervical cancer screening utilization in Addis Ababa. As a metropolitan city, it is expected that people have better health knowledge, attitude and access. Despite this fact, data shows that the cervical cancer screening uptake is very low. In this research, we will see how patients visiting SPSH and SPHMMC medical and surgical OPDs fare with regards to cervical cancer screening. We will find out the cervical cancer screening service utilization and associated factors so that interventions can be put in place.

Studies have shown that the concerns of women relating to behavior of service providers is lacking. Other researches, done elsewhere, have shown that the behavior of service providers influences the uptake of cervical cancer screening. Hence the research will study this variable among the others and give guidance on how better to utilize the findings.

This research will inform decision makers, starting from hospital administrators to the ministry level, to look at the gap in the utilization of cervical cancer screening and act on it accordingly. Coupled with this, patients are at the receiving end of the research as it will show the overall gap in the utilization and hence remedies can be made easily. The research will help in the planning for cervical screening by incorporating the different factors that curtail the fulfilment of the screening programs put in place by different facilities.

2. Literature review

2.1 Overview of cervical cancer

The rate of world's cervical cancer is 15.1/100,000 and the world's crude mortality rate is 7.6/100,000 (24). More than 80% of cervical cancers are diagnosed at an advanced clinical stage, which often have very poor prognosis (25). Numerous studies have shown that a broad range of barriers to cervical cancer screening utilization in low- and middle-income countries in which socio-cultural, religious and structural barriers are foremost (26).

Pap smear screening every 3-5 years with appropriate follow-up can reduce the incidence of cervical cancer by 80% (27). Despite this fact, screening rates remain very low in vast majority of the world, especially in developing countries like Ethiopia.

Approximately, 85% of the world's death from cervical cancer occurs in the low- and middle-income countries, which is 18 times higher than what is seen in the wealthier countries. Some of the highest incidence rates occur in central and south America, Sub-Saharan Africa, south Asia and the Caribbean (28).

The federal democratic republic of Ethiopia, federal ministry of health recommends screening for cervical cancer to start by the age of 30. It also recommends for the screening to be carried out every five years following normal results irrespective of HIV status. If there is detection of abnormal results and/or treatment, the test must be repeated every one year. If the test during this follow-up screening is normal then the woman can return to the regular screening every five years. All women should have screening done at least once in their lifetime after the age of 35. The screening must continue till the age of 49 or 59 if resources permit. For women living with HIV, it is recommended to be screened at HIV diagnosis, regardless of age, as long as they are sexually exposed (29).

Infection with the human papilloma virus (HPV) is the most significant risk factor for cervical cancer which can be transmitted during sexual intercourse. Studies done in south Asia, detecting HPV in cervical samples, close to 8% of them were found to harbor cervical HPV infection, and 82.8% of invasive cervical cancers are attributed to HPVs 16 or 18. The other risk factors include early age at first intercourse, multiple sexual partners, poor sexual hygiene, repeated child birth smoking, immunodeficiency, having a history of cancer etc. (30).

There are different means of cervical cancer screening. The first one is Papanicolaou (pap) smear, which is a cytological cervical scrape smear which detaches or scratches over pre-cancerous lesions in the uterine cervix. This is the least used technique due to the material and trained human power scarcity to do it. Other options mostly used are simple visual inspection after application of acetic acid solution (VIA) or Lugol's iodine solution (VILI) (31). There is the option of testing women for HPV DNA, especially for those aged above 30. This is done along with the conventional pap test (32).

2.2 Factors associated with cervical cancer screening utilization

In study done in France in 2010, it was found out that there is strong association between educational level, occupational class or employment status with cervical cancer screening seeking behaviors. It also found that the cervical screening program was not free of charge and hence showed a lesser utilization from people with lower economic status and low knowledge compared to breast cancer screening which was provided for free (33).

In Canada 50%, of women with invasive cervical cancer have never had a pap smear test (34). In Canada, the single greatest risk factor for poor outcomes in women who develop cervical cancer is failure to participate in pap smear testing (35). Opportunistic screening for cervical cancer, in France, is recommended every 3 years among all women of age 25-65. In the year 2005, 80% of women, aged 25-65, in that country had a pap smear done in the previous 3 years. High rate of screening is observed among women with a higher socioeconomic position, whether assessed using education, occupational class or income (33).

Most low- and middle-income countries have some form of screening programs which are not well organized but rather opportunistic and hence fail to achieve their target (26). Factors for poor utilization of cervical cancer screening in many parts of sub-Saharan Africa can, partly, be accounted to demographic characteristics which include educational status, age and marital status (36). A systematic review conducted to identify the barrier to cervical cancer in low- and middle-income countries found out that 53% of the women included in the study reported that lack of knowledge and a poor understanding of the role of screening for cervical cancer as a key barrier for screening (37).

2.3 Sociodemographic characteristics

Marital status has been shown to impact cancer screening utilization, cancer outcomes and quality of treatment metrics. The rate of cervical cancer screening was higher among married women (83.9%) relative to divorced/widowed/separated (75.1%) and never married women (78.7%) (38). Study done among Hispanic women in the US showed that marriage had a significant influence on the utilization of cervical cancer screening methods (39).

Studies done in Jamaica showed that women living with a partner showed a higher rate of cervical screening utilization. Reasons suggested for such finding were the greater social support, a greater interest in their health in this group, and a safer economic circumstance. These women also have more regular gynecological visits (contraception, pregnancy). Married women were two to four times more likely to be screened for cervical cancer than those that were single (40). A study done in Malawi showed that married women were more likely to be screened for cervical cancer than single, widowed and divorced once (41).

Among the sociodemographic variables included in a study done on immigrant women in America, as predisposing factors, it is important to note that marital status and education were significant predictors of prior Pap testing. Married respondents were more likely to utilize a Pap test compared to unmarried respondents (42).

Women aged 35-39 were less likely to attend cervical cancer screening than those younger than that due to the low acceptance of screening in this age group for social and work-related reasons. Despite this fact, old women were more receptive to cervical cancer screening than younger women which could be explained by their availability at home and making it easier for them to get the screening service. It also revealed that housewives were more likely to be more receptive to get cervical cancer screening compared to those women with formal or informal work.

According to the national health sector transformation plan of 2016-2020, Ethiopia planned to increase cervical cancer screening using visual inspection (VIA) with acetic acid to 80% among women of age 30-49 years. Ethiopia preferred VIA technique because it doesn't require advanced testing requirements. VIA has been shown to have an average sensitivity of 77% and specificity of 76% to detect precancerous lesions and cancer of the cervix (43). In Ethiopia, cervical cancer screening is provided for free since 2016 but is not well known and used by the society. Utilization

has been shown to be in the range of 7.3%-23.5% (44). Health workers knowledge about cervical cancer risk factors and preventions are still low.

2.5 Professional advices and parity

In a study done in Nepal, it was shown that the reason why more than half of the women (69.6%) that had ever been screened for cervical cancer was an advice from health professional followed by personal initiative (27.5) % and family advice (2.9%) (45). In this study, it was shown that there is a significant relationship between cervical cancer screening behavior and education level of respondents. There was no significant association that was demonstrated between parity of women and cervical screening behavior despite the consideration that a higher parity woman has a higher probability of contact with the health personnel, hence increasing the recommendation of the screening (46). In the same study, there was no significant association between cervical cancer screening behavior and perceived severity nor perceived benefit.

In a study conducted at Finote Selam town, Ethiopia, it was found out that only 24.5% of the participants had heard of cervical cancer screening ever in their life. In this study, only 3% of the women had taken cervical cancer screening service in their life time. This result was lower than what was shown in Dessie, Mekele and Addis Ababa (47)(6). The study also showed that, women with gravidity greater than or equal to 5 were 80% less likely to get screened for cervical cancer compared to those women who had no prior history of pregnancy. It also showed that women with history of sexually transmitted disease were 12 times more likely to get cervical cancer screening service which was similar to study findings done in other parts of the world (6).

2.6 Knowledge and educational status

In Malawi, it was found out that knowledge of cervical cancer was very low. In the study, majority of asymptomatic women who participated in the interview could not describe anything about cervical cancer or what screening was for (48). It is also noted that some factors facilitate cervical cancer screening utilization such as education level, urban living, employment outside of home, marital status and age.

In a study done in Nigeria, it was shown that the awareness of cervical cancer and screening was low. The knowledge and perception were poor and hence the uptake of cervical screening was low. The vast majority of participants in the study had very poor knowledge about cervical cancer in general. This study also showed that following interventions, awareness of cervical cancer and

screening was high, the knowledge and perception was relatively better. In this study, it was also shown that health education had statistically significant effect on the awareness of cervical cancer and screening practice (27).

Women in Tanzania who seek the screening were found to have higher level of education. Higher education by itself is not a guarantee for women to seek screening because there are other factors associated with it such as marital status and age (14). Attitude towards the screening is also one factor associated with the utilization. In a study done in Thailand, female sex workers with negative attitude towards the screening were found to be less likely to ever have the screening compared to those who had positive attitude (49).

Women who were aware of facility that provides cervical cancer screening procedure were more likely to obtain screening. In Sudan, a study showed that poor awareness of services as a significant barrier to cervical cancer screening (50). A major finding in this study was that when many factors are examined simultaneously in relation to screening, it is only women's knowledge and accessibility of the screening facility that are significantly associated with screening status. fulfilling the two conditions, women are likely to get screened for cervical cancer despite demographic data and attitudinal factors speaking otherwise.

In a study done in Ethiopia, it was shown women who were educated until grade 12 had awareness about cervical cancer 3.6 times those who can only read and write. It was also shown that such women were 1.5 times more likely to accept the cervical cancer screening methods (6). This finding shows that educational status has a big influence on the utilization of cervical cancer screening.

2.7 BMI

A higher BMI was also associated with a lower rate of cervical cancer screening in different literatures (51). Reasons speculated for low rate among women with high BMI include, low self-esteem and technical difficulties in performing the screening among these obese women. Studies in France show that screening is less common among smokers while ex-smokers exhibit the best profile regarding cancer screening. Pap smear is less frequent among alcohol drinkers. These can be viewed as a global, unhealthy way of life.

Evidence based on several observational studies suggests an inverse association between obesity and cervical cancer screening. In other words, obese women are less likely to undergo cancer screening than women of normal weight. Therefore, nonadherence to routine cancer screening may put obese women at a greater risk of death from cervical cancer (52).

Another study done in Thailand showed that there was association between a high BMI and higher incidence of cervical cancer. The association was not statistically significant but it still showed an association that was explained. Obese women are less likely to undergo cervical cancer screening which puts them at a higher risk of having the disease or presenting to medical care at advanced stage of the disease once obvious symptoms have ensued (53).

2.8 Men's and women's attitude

In societies where majority of families are patriarchal, the negative attitude of men towards cervical cancer screening or treatment, is considered a key factor contributing to poor utilization of the services. Attending a higher education is not a guarantee for having a better cervical cancer screening utilization behavior. It was shown in Ghana, that only few college women were screened for cervical cancer despite their educational status. this can be attributed to their lack of knowledge on cervical cancer and its prevention specifically (14).

A woman's perception of her male partner's support significantly impacts her decision to participate in cervical cancer screening (54). Support from male partners in addition to effective contact with the health system and knowledge of cervical cancer risk factors, influence Pap utilization among low-income women living with HIV.

Attitude towards the screening is one key factor that can determine the rate of the screening process. Women who did not have a preference for the sex of health provider were more likely to have screened for cervical cancer compared to those who preferred a female health provider. This reason makes it very important that those who prefer a female health provider to do their screening, be provided one. Those women who thought the test was embarrassing, were less likely to get screened for cervical cancer. It is reasonable to think that it would make it a lot easier for women to show their private parts to a female health worker than a male one (55). The likelihood of getting cervical cancer screening is higher for those women who don't think that the screening procedure is painful. Such kind of women are, perhaps, more tolerant of the physical discomfort of the procedure (56).

A study done in Nigeria, concluded that 36.6% of women who were included in the study did not go for screening because of low risk perception. Perceived risk is shown to be very important determinant of health behavior of people (57).

One study done in Ethiopia, showed that majority of women (83.1%) perceived themselves not to be at risk of developing cervical cancer. A reason for this might be the lack of knowledge with regards to cervical cancer screening (58). Majority of women claimed that they had no spare time to go to health facilities to receive cervical screening service (59). It also showed that women from the rural side of the country are less likely to attend cervical cancer screening services due to the knowledge gap, distance to the service, cultural and societal views. The knowledge gap is pronounced in this part Ethiopia along with shortage of medical professionals along with the facilities (60).

Conceptual framework

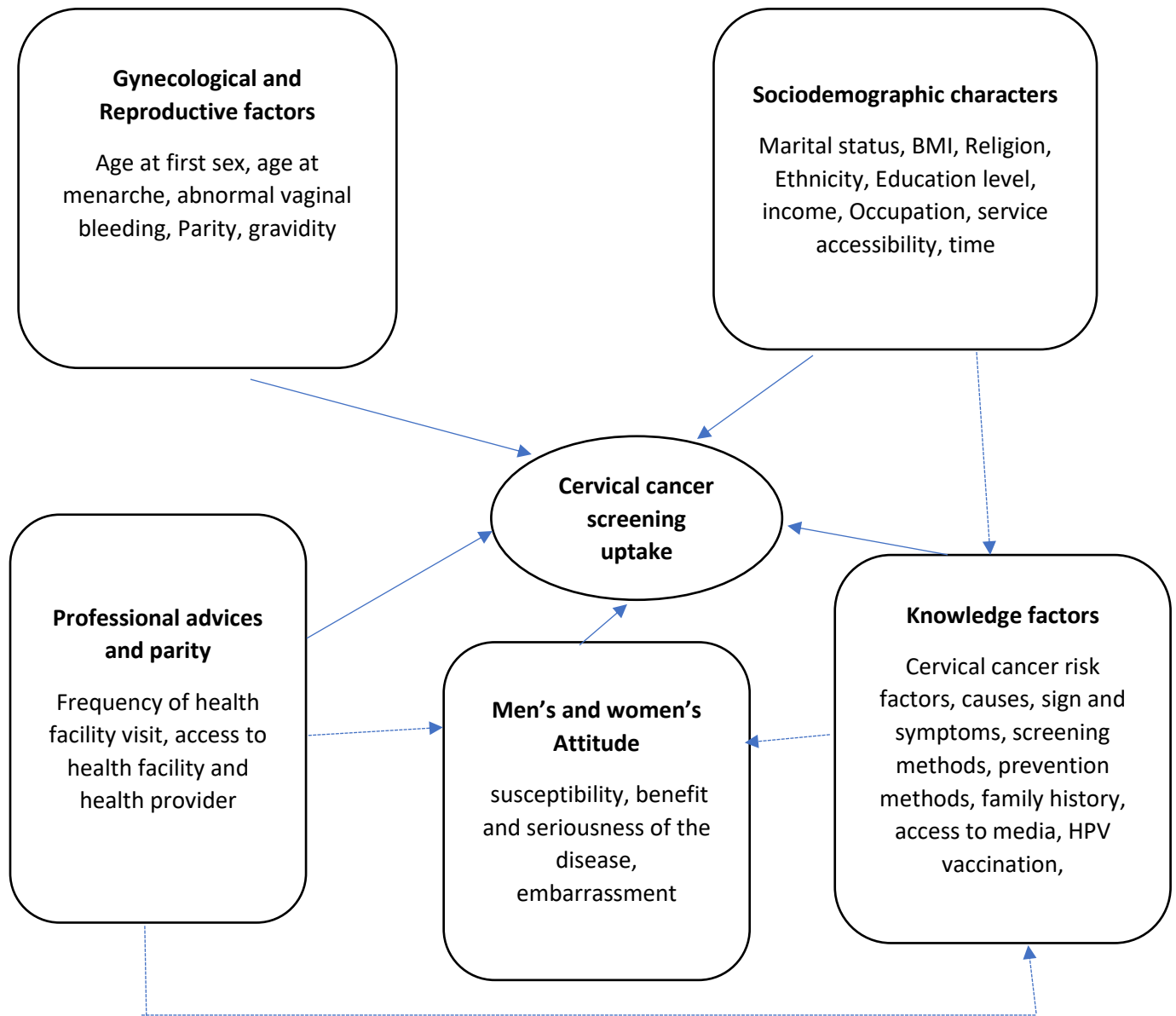


Figure 1: Conceptual framework for cervical cancer screening uptake

3. Objectives

3.1 General Objective: To assess cervical cancer screening service uptake and the associated factors among age eligible women who visit SPSH and SPHMMC general OPDs, Addis Ababa, Ethiopia.

3.2 Specific Objectives:

- To determine prevalence of cervical cancer screening service uptake among age eligible women who visit SPSH and SPHMMC general OPDs.
- To determine the factors associated with cervical cancer screening uptake among age eligible women who visit SPSH and SPHMMC general OPDs.

4. Methods

4.1. Study area

The study was conducted at SPSH and SPHMMC which are both located at the capital city of Ethiopia, Addis Ababa. SPSH is located at the Gulele kifle ketema, on the road to the new Entoto park. The hospital serves for nearly 4.5 million catchment area population. The hospital provides cervical cancer screening in form of visual inspection under acetic acid. It also provides different maternal cares spanning from elective surgeries to any type of emergency surgical procedure. The hospital is equipped with the necessary man power which includes specialist physicians and subspecialist physicians. In the year 2012, only 111 women received cervical cancer screening. The general OPDs will be included in the study.

SPHMMC is also located at Gulele kifle ketema on the Swaziland street. It serves for a catchment population of more than 5 million people. The hospital provides cervical cancer screening for women who visit the hospital. The hospital provides different maternal cares which are holistic much like what is seen at SPSH. The general OPDs will be included in the study. The study will be conducted from December 2020 to January 2021.

4.2. Study design

Hospital based cross-sectional study design was employed.

4.3. Source population

All women of age >30 who visit SPSH and SPHMMC.

4.4. Study population

All women of age >30 who visit the general OPDs of SPSH and SPHMMC and fulfilling the inclusion criteria during the data collection period.

4.5. Inclusion and exclusion criteria

Inclusion criteria: All adult women (age >30) who visit SPSH and SPHMMC general OPDs and who can give their verbal consent were recruited to participate in the study.

Exclusion criteria: Any women who are too ill to participate in the study, aged <30 and Women who had hysterectomy.

4.6. Sample size determination

Sample size was calculated using single population proportion formula based on previous similar studies done.

Specific objective one: Women (p)= 12%, z= standard score corresponding 95% confidence interval 1.96 and d=marginal error corresponding 5% (61). Sample size is calculated as:

$$n = [(z)^2 p(1-p)] / d^2 = 162$$

After adding 10% for nonresponse rate, the sample size became 178. Considering that the study is a cross sectional one the sample size is not adequate.

Specific objective two: Single population proportion formula was used again to calculate for the sample size for the factors associated with cervical cancer screening utilization (61). Since sample size was not adequate, it was calculated by considering maximum proportion of cervical cancer screening utilization among women at 50% to yield the maximum sample size.

Women (p)= 50%, z= standard score corresponding 95% confidence interval 1.96 and d=marginal error corresponding 5%. Sample size is calculated to be 384. After adding 10% for nonresponse rate the final sample size became 422

4.7. Sampling procedure /technique

Samples were selected using systematic random sampling method until the required sample size is fulfilled. K was calculated by dividing total women available at the required outpatient clinics in the hospital per month to the required sample size. By using lottery method, choice of the starting point was made and the next participant determined by the sampling interval. When the selected individual did not fulfill the inclusion criteria, the next client was replaced and the interval made to continue.

K= total number of patients seen at the OPDs in the month/study sample size

$$K = 2427/422 = 6$$

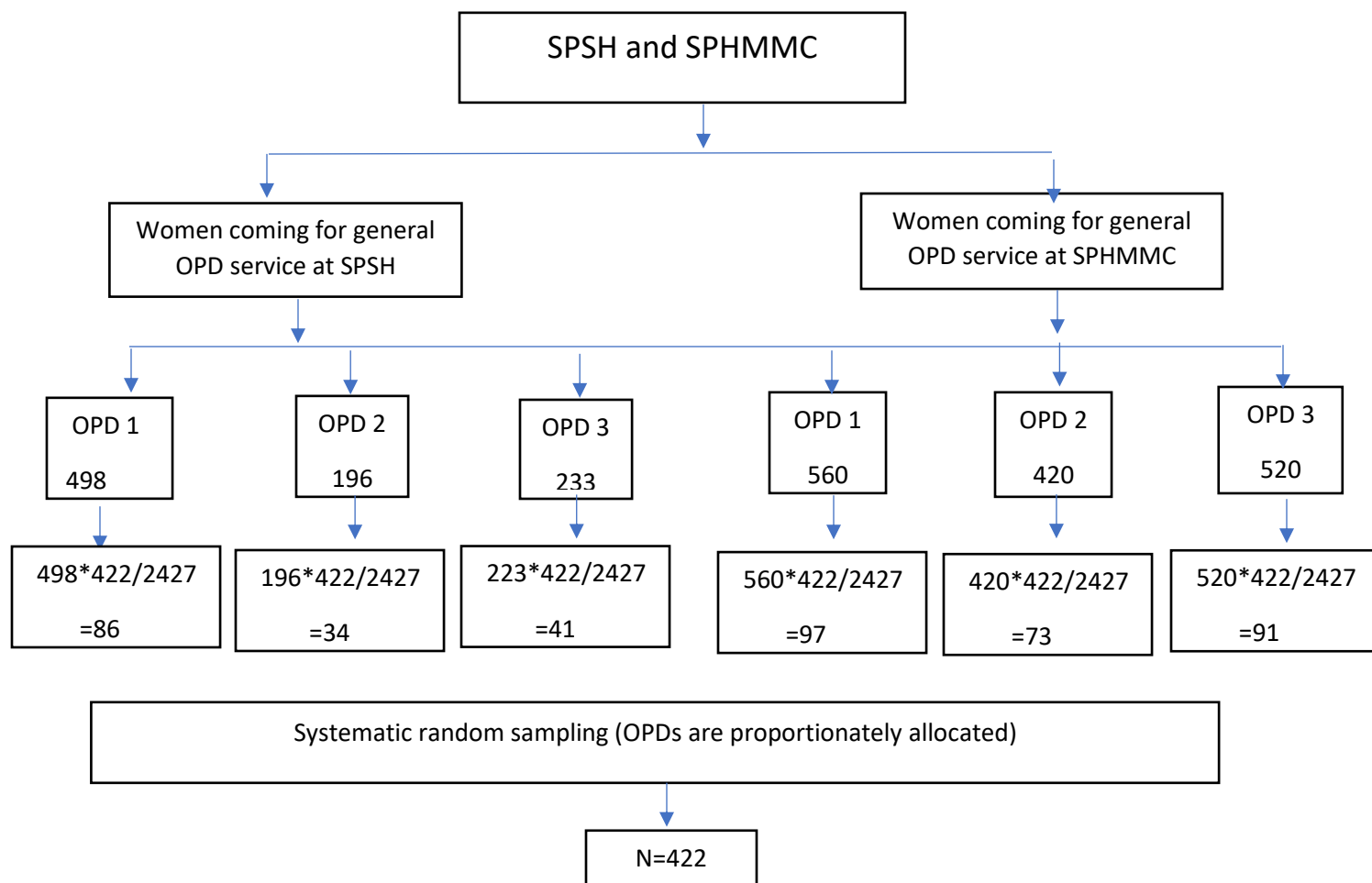


Figure 2. Flow chart of participant enrollment for the research.

4.8. Data Collection Tools and Procedures

Data was collected using interviewer administered questionnaire. It was adopted from different literatures reviewed here in. The questionnaire was prepared in English after reviewing existing literatures, it was then translated to Amharic and then back to English to check for consistency. The questionnaire consists of sociodemographic, gynecologic and obstetric factors, attitude, knowledge and practice of cervical cancer screening. Six trained nurses who are working in the study area were used to collect the data under the supervision of two general practitioners. They were trained on the data collection tool and also on cervical cancer and its screening methods using the Ethiopian guideline for cervical cancer prevention and control, January 2015.

4.9. Variables

Dependent variable: Cervical cancer screening utilization.

Independent variables:

Sociodemographic characteristics; age, place of residence, marital status, religion, educational level, employment status, monthly income, BMI.

Reproductive history; age at first sex, lifetime partners, number of children, HIV test and status, family planning usage, menstrual flow, HPV vaccination, family history, screening advice, smoking history.

Knowledge status of mothers, perception characteristics, attitude towards cervical cancer screening and perceived barriers to cervical cancer screening.

4.10. Operational definition

Cervical cancer screening uptake: refers to those women of age >30 who have been screened for cervical cancer ever in their lifetime using any one method of screening.

Good knowledge: participants who scored the mean and above value from the provided 13 questions about knowledge on screening (6).

Poor knowledge: participants who scored below the mean value from the provided 13 questions about knowledge on screening (6).

High perceived susceptibility: if respondents scored two or more of the mentioned susceptibility questions (47).

Low perceived susceptibility: if respondents scored less than two of the mentioned susceptibility questions (47).

Favorable Attitude: women who answered three or more attitude questions will be considered to have a favorable attitude.

Unfavorable attitude: women who answered less than three attitude questions will be considered to have a unfavorable attitude.

High perceived barriers: women who identified two or more perceived barriers will be considered to have high perceived barriers.

Low perceived barriers: women who identified less than two perceived barriers will be considered to have low perceived barriers.

Self-assessed health status: once feeling of self-health condition.

4.11. Data quality control

The questionnaire is initially prepared in English and was translated to Amharic. After that it was translated back to English to check for any inconsistencies or distortion in meaning and concepts of the words by other person. The questionnaire was pretested among 30 women attending cervical cancer screening center outside of SPSH and SPHMMC. Following the feedback gathered, adjustments and modifications were made. Training for the data collectors was carried out before the actual data collection period began, including the approach, objective of the research and ethical concepts. Questionnaires was checked for completeness by the principal investigator. Data cleaning was conducted at the end of the data entry phase.

4.12. Data analysis

Data analysis was carried out using SPSS 25 statistical software. Both descriptive and analytic statistics were carried out using this software. Frequencies, percent, tables and graphs were used to describe the population in relation to the relevant variables. In order to investigate relative importance of the variables in relation to the dependent variable, bivariate analysis was be used. For those that turn out to be significant (p-value of <0.25), they were fitted together to multivariate logistic regression to explore association between dependent and independent variables and to control confounding. Statistical significance was interpreted using crude and adjusted odds ratio with 95% confidence interval and P value <0.05 . The results are presented using texts, figures, tables and diagrams.

4.13. Ethical consideration

The proposal was approved by the research ethics committee of St Peter Specialized Hospital and St Paul hospital millennium medical college's institutional ethical review board. Verbal informed consent was secured from the study participants after they are assured that their information would be kept confidential and secured. Names of study participants are not included in the questionnaire. Participants were allowed to interrupt the interview on desire at any time of data collection. The data collectors gave advice and health education pertaining to

cervical cancer and its screening at the end of data collection if the participants had poor knowledge on the matter.

5. Dissemination plan

The results of the study will be presented in SPHMMC, School of Public Health as partial fulfillment of master's degree in public health. In addition to this, the final result document will be communicated to the two hospitals, Addis Ababa Health Bureau and the Federal ministry of health. Beside this, the findings of the study will be sent to peer reviewed journals for publication.

6. Result

6.1 Sociodemographic characteristics

A total of 422 women of age 30 and above were interviewed which resulted in 100% response rate. The participants were between age 30 and 62 with a mean age of 40 and interquartile range of 14. Around 252 (59.7%) of the respondents were between the age group of 30 and 39.

Orthodox Christian accounted for 68.7% of the total participants and Muslims accounted for 11.4%. Urban dwellers were 91.7% of the study participants. 62.3% of the study participants were married while 19.2% were not. Among the study participants 14.7% of them were illiterate while 12.8% were able to read and write, whereas 18.5% of them had primary education, while 29.4% of them had college or university education. 52.6% of the respondents had normal weight while 15.6% of them were obese. 43.1% of them were employed while 19.7% of them were house wife and 17.8% of them were unemployed. Majority of the respondents (46%) had monthly income of <2000 birr while 31% of them had monthly income of >4000.

Table 1: socio-demographic characteristic of age-eligible women, for cervical cancer screening (>30 years) in Addis Ababa, Ethiopia (n = 422), 2021.

Characteristics	frequency(n)	percent (%)
Age in years		
30-39	252	59.7
40-49	89	21.1
>49	81	19.2
Religion		
Orthodox	290	68.7
Muslim	48	11.4
Protestant	81	19.2

Catholic	3	0.7
Residence		
Urban	387	91.7
Rural	35	8.3
Marital status		
Not married	81	19.2
Married	263	62.3
Widowed	50	11.8
Divorced	28	6.6
Educational status		
No formal education	116	27.4
Primary education	78	18.5
Secondary education	104	24.6
College or university	124	29.4
BMI classification		
Underweight	29	6.9
Normal weight	222	52.6
Overweight	105	24.9
Obese	66	15.6
Employment status		
Unemployed	75	17.8
employed	182	43.1
Self-employed	70	16.6
student	12	2.8
housewife	83	19.7
Monthly income		
<2000	194	46
2000-4000	97	23
>4000	131	31

The overall prevalence of cervical cancer uptake in this study was 23.7%.

Reason for low uptake of cervical cancer screening service

Among women who did not get screened for cervical cancer 26.3% of them did not give a reason for not getting screened while 19.7% of them thought that they were healthy while 17.7% of them said they have no interest to get screened while 16.77% of them reported lack of information on cervical cancer and its screening. (See figure 1).

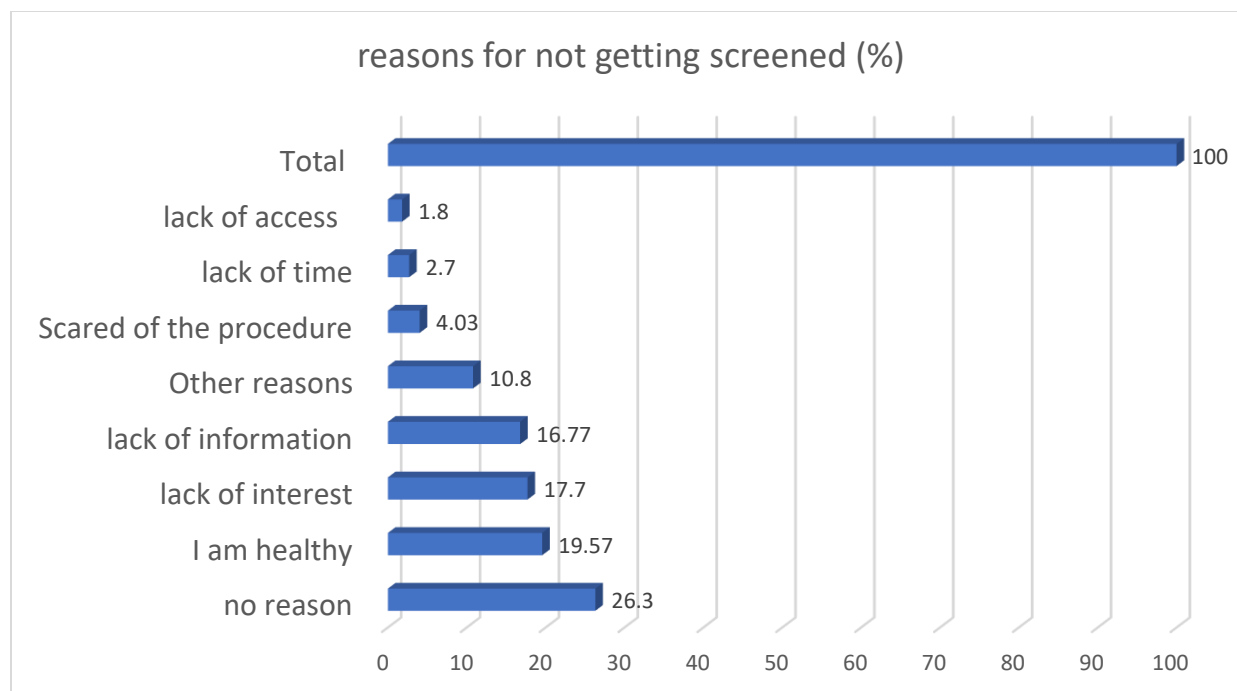


Figure 3. reasons for low uptake of cervical cancer screening services, (>30 years) in Addis Ababa, Ethiopia (n = 322), 2021.

6.2 Reproductive history

Among the study participants, 17.3% of them had first sexual encounter below the age of 15 while 45.7% of them had it after the age of 20 or were still virgin. 155 (36.7%) of the participants have two or more sexual partners during their lifetime. 74.9% of the study participants had one or more child. When asked about their experience of cervical cancer symptoms 232(55%) of them answered that they had at least experienced one symptom so far in their history. 89.6% of the participants had been tested for HIV among which 83.9% of them are negative.

Half of the study participants had used family planning methods previously (50.2%). When asked about their menstrual history 115 (27.3%) of them responded by saying that their flow has been irregular while 45.2% of them had regular flow and remaining were in their menopause. Majority of the participants (90.3%) have not been vaccinated for HPV. 372 (88.2%) of the respondents didn't have family history of cancer. 28.4% of the participants have been advised to get cervical cancer screening by health provider. Only 2.6% of the respondents have history of smoking or are still smoking.

Table 2: Reproductive history of study participants in Addis Ababa, Ethiopia (n = 422), 2021.

Characteristics	frequency(n)	percent (%)
Age at first sex		
<15	73	17.3
15-20	156	37
>20	177	41.9
Virgin	16	3.8
Lifetime partners		
1	251	59.5
More than 1	155	36.7
0 Partner	16	3.8
Number of children		
0	106	25.1
1 or 2	149	35.3
3 or 4	115	27.3
5 or 6	34	8.1
>6	18	4.3
Experienced symptoms		
no symptoms	190	45
at least one symptom	232	55
History of HIV test		
No	44	10.4
Yes	378	89.6
HIV test result		
negative	354	83.9
positive	25	5.9
status not known	43	10.2
Family planning		
No	210	49.8
Yes	212	50.2
Menstrual flow		
regular	191	45.3
irregular	115	27.3
menopause	116	27.5
HPV vaccination		
No	381	90.3
yes	41	9.7
Family history of cancer		
no	372	88.2
yes	50	11.8
Screening advise		

no	302	71.6
yes	120	28.4
Smoking history		
never smoked	411	97.4
Currently smoking	2	0.5
quit smoking	9	2.1

6.3 Knowledge

Among the total 422 people involved in the study, only 54(12.8%) of them knew that cervical cancer is caused by virus while 65.2% of them didn't know what causes it. more than 77% of the participants have previously heard about cervical cancer screening. The study showed that only 10.9% of the participants knew one or more methods of cervical cancer screening. Majority of the participants (96.4%) knew the benefits of cervical cancer screening. Study participants were able to mention their source of information for cervical cancer screening in 85.3% of the time. Only 13% of the study participants knew the right age of starting screening in our country and 94.3%% of the participants didn't know the frequency of getting cervical cancer screening.

Close to half (46.7%) of the study participants knew facilities that provided cervical cancer screening. Among the four symptoms listed in the questionnaire, 47.9% of the participants didn't know any single one of them while 52.1% of them knew one or more of the symptoms. 76.1% of the participants knew that cervical cancer is a preventable disease. The vast majority 89.1% of them also replied that the screening helps in early detection of the disease. 77% of the study participants knew that early changes found during early stage of the disease can be treated. Factors associated with cervical cancer were known by 52.1% of the study participants. Based on the knowledgeability score that was made by analyzing all the knowledge questions, 71% of the participants were found to have good knowledge about cervical cancer and it's screening while the remaining 29% were found to have poor knowledge.

Table 3: Knowledge about cervical cancer and cervical cancer screening among the study participants in Addis Ababa, Ethiopia (n = 422), 2021.

Characteristics	Frequency (n)	Percent (%)
Cause of cervical ca		
Don't know	275	65.2
Bacteria/fungus/genetics	93	22

virus	54	12.8
Heard about screening		
no	94	22.3
yes	328	77.7
Methods of screening		
no method known	376	89.1
≥1 method known	46	10.9
Benefits known		
don't know benefits	15	3.6
knows benefits	407	96.4
source of information on screening		
no source	62	14.7
source mentioned	360	85.3
Start of screening		
answered incorrectly	367	87
at the age of 30	55	13
Frequency of screening		
answered incorrectly	398	94.3
once every five years	24	5.7
Know facilities for screening		
no	225	53.3
yes	197	46.7
Symptoms of cervical cancer		
no symptom identified	202	47.9
1 or more symptoms identified	220	52.1
Preventability of cervical ca		
no/I don't know	101	23.9
yes	321	76.1
Early detection by screening		
don't know if screening helps	46	10.9
know screening helps	379	89.1
Treatability of early changes		
don't know it is treatable	97	23
know it is treatable	325	77
Factors associated		
no factor identified	202	47.9
know factors associated	220	52.1
Knowledgeability		
poor knowledge	122	71
Good knowledge	300	29

6.4 Perception

Among the 422 study participants, 370 (87.7%) of them had good self-assessed health status while the remaining 12.3% had bad self-assessed health status. Almost half (49.3%) of the study participants had regular health checkups, while the remaining didn't. only 14% of the study participants declared themselves susceptible to developing cervical cancer while the remaining 86% didn't think they are susceptible to developing the disease. Among the total participants, 88.3% of them had a low perceived susceptibility score while the remaining 11.7% had a high perceived susceptibility.

Table 4: Perception towards cervical cancer screening among the study subjects in Addis Ababa, Ethiopia (n = 422), 2021.

Characteristics	Frequency (n)	Percent (%)
Self-assessed health status		
good health status	370	87.7
bad health status	52	12.3
Regular health checkups		
no	214	50.7
yes	208	49.3
Self-assessed susceptibility		
no	363	86
yes	59	14
Perceived susceptibility		
Low	373	88.3
high	49	11.7

6.5 Attitude towards cervical cancer screening

Among the total women who took part in the study, 74.6% of them had interest in regular cervical cancer screening. 98.1% of them also thought that regular screening for cervical cancer is important or very important. 69% of the women in the study also said that cervical cancer is a serious disease. Majority of the women (74.2%) also responded by saying that cervical cancer is a lethal disease. Of all the women included in the study, 77.4% of them had a favorable attitude towards regular cervical cancer screening while the remaining 22.6% didn't.

Table 5: Attitude towards cervical cancer screening in Addis Ababa, Ethiopia (n = 422), 2021.

Characteristics	Frequency (n)	Percent (%)
Interest in regular screening		
no	107	25.4
yes	315	74.6
Importance of screening		
not important or harmful	8	1.9
important or very important	414	98.1
Seriousness of cervical cancer		
I don't know/ not serious	131	31
is a serious disease	291	69
Lethality of cervical cancer		
not lethal/don't know	109	25.8
is a lethal disease	313	74.2
Favorability of attitude		
unfavorable	95	22.6
favorable	327	77.4

6.6 Perceived barriers to cervical cancer screening

63% of the total women included in the study thought that cervical cancer screening is painful while 21.3% of them said that it is embarrassing to go through the screening procedure. 40% of the participants had a sex preference of female health providers while 55.2% of them had no preference. For the fair majority (78.7%) of the participants cervical cancer screening was culturally acceptable. In half (50.9%) of the study participants, they responded that their husband approved the screening. There was nearby screening health facility for the 43.8% of the study participants. In general, 33.8% of the study participants had a low perceived barrier to getting cervical cancer screening while 66.1% of them had a high perceived barrier.

Table 6: Perceived barriers to cervical cancer screening in Addis Ababa, Ethiopia (n = 422), 2021.

Characteristics	Frequency (n)	Percent (%)
Screening is painful		
no	156	37
yes	266	63

Screening is embarrassing		
no	332	78.7
yes	90	21.3
Provider sex preference		
male	20	4.7
female	169	40
no preference	233	55.2
Cultural acceptability		
no	90	21.3
yes	332	78.7
Husband approval		
no/no opinion/no husband	207	49.1
yes	215	50.9
Nearby screening facility		
no/I don't know	237	56.2
yes	185	43.8
Perceived barrier		
Low	143	33.8
high	279	66.1

[6.7 Factors associated with cervical cancer screening service uptake](#)

Bivariate logistic regression analysis was done individually to assess for any association between the individual independent variables and the dependent variable. Twelve variables showed association with cervical cancer screening service uptake at a 5% level of significance. They were namely: place of residence, marital status, BMI status, number of children, history of HIV test, HIV test result, HPV vaccination status, advice from health professionals, knowledgeability score, perception score, attitude score and perceived barrier score. For further analysis, these independent variables that had significant association at a $p < 0.25$ were taken and entered for multivariable logistic regression. This yielded in 6 variables showing association at $p < 0.05$.

Goodness of fit of the model was also assessed using Hosmer and Lemeshow test (Chi-square=13.6 and $P=0.09$) which showed well fitted model. Multicollinearity was also checked with tolerance and variance of inflation. Tolerance was above 0.25 and variance of inflation was less than 4.

Compared to women who had no children, those mothers who had more than six children were found to have a six times greater likelihood of getting cervical cancer screening (AOR=6.463,

95% CI =1.2-33.43). There was also a significant association with regards to HPV vaccination and cervical cancer screening uptake as well. Those who had been vaccinated for HPV were found to be 2.5 times more likely to get cervical cancer screening (AOR=2.56, 95% CI=1.053-6.236).

Another strong association that was found was with regards to getting advice from health professionals. Those women who have been advised by health professional to get cervical cancer screening were 8.54 times more likely to get screened compared to those women who did not get advice from health professional (AOR= 8.54, 95% CI=4.70-15.51). With regards to barriers and how they are perceived, those women who were found with high perceived barriers were 0.3 less likely to get cervical cancer screening compared to those who had low perceived barriers (AOR=0.3, 95% CI=0.17-0.55).

Women with favorable attitude were found to be 3.4 times more likely to get cervical cancer screening compared to those women who had unfavorable attitude (AOR=3.40, 95% CI=1.30-8.92). As for knowledge, those women who were found have good knowledge about cervical cancer and its screening methods were 2.61 times more likely to get screened compared to those women who had poor knowledge (AOR=2.61, 95% CI=1.04-6.53).

Table 7: results of bivariate and multivariate analysis for cervical cancer screening uptake and associated factors among women who visit SPSH and SPHMMC general OPDs.

Variable		Cervical cancer screening utilization		COR (95% CI)	AOR (95% CI)
		No	Yes		
Number of children	0	90(85%)	16(15%)	1	1
	1-2	114(76.5%)	35(23.5%)	1.72(0.89-3.31)	1.04(0.41-2.58)
	3-4	78(67.8%)	37(32.2%)	2.668(1.37-5.16) *	1.36(0.52-3.55)
	5-6	26(76.4%)	8(23.6%)	1.731(0.66-4.49)	0.99(0.26-3.69)
	>6	14(77.7%)	4(22.2%)	1.607(0.46-5.50)	6.46(1.2-33.43) **
HPV vaccination	No	302(79.3%)	79(20.7%)	1	1
	Yes	20(48.7%)	21(51.3%)	4.01(2.07-7.77) *	2.56 (1.05-6.23)**

Screening advise from professional	No	270(89.4%)	32(10.6%)	1	1
	Yes	52(76.4%)	68(23.6%)	11(6.59-18.45) *	8.54(4.70-15.51) **
Perceived barrier score	Low perceived barrier	85(59.4%)	58(40.6%)	1	1
	High perceived barrier	237(84.9%)	42(15.1%)	0.26(0.16-0.41) *	0.30(0.17-0.55) **
Attitude score	Unfavorable attitude score	87(91.5%)	8(8.5%)	1	1
	Favorable attitude score	235(71.8%)	92(28.2%)	4.25(1.98-9.13) *	3.40(1.30-8.92) **
Knowledgeability score	Poor knowledge	113(92.6%)	9(7.4%)	1	1
	Good knowledge	209(69.66%)	91(30.3%)	5.46(2.65-11.25) *	2.61(1.04-6.53) **

* Statistical significance in COR, **Statistical significance in AOR, CI confidence interval, COR crude odds ratio, AOR adjusted odds ratio

7. Discussion

Cervical cancer is the only preventable malignancy known to humans and the time it takes to develop is also long. This means, with adequate and proper screening procedures in place, its occurrence can be significantly reduced. In this research, it was about 23.7% of the women who have been screened for cervical cancer. This finding is consistent with what was seen in Tanzania which was about 22.6% (62). Various studies done in different parts of Ethiopia have shown that the range of cervical cancer utilization differed from 11.5% in the southern part of the country to 19.8% in the northern part of it (47), (63). Compared to these researches the percentage of women who have been screened for cervical cancer is high. Moreover, a study done in St Paul's teaching and referral hospital has shown that only 12.2% of women have been screened for cervical cancer(61). This might be due to differences in study setup and due to the fact that the vast majority of the study participants were urban dwellers which made a better screening access to the women. Both institutions included in the study have cervical cancer screening setups in place which might have contributed to its greater utilization.

It is shown in this study that women who had more than six children were more than 6 times likely to get cervical cancer screening compared to those women who had no children. This may be due to the fact that the chance of encountering health professional who would advise for screening increases as the number of deliveries and health facility visits increases. The number of health education that a woman gets increases as her number of visits to health facilities increases which makes screening much more likely. This is a bit higher but consistent with similar study finding that was done in Tanzania, which showed that multiparous women were three times more likely to get cervical cancer screening (64).

This study found association between history of HPV vaccination and cervical cancer screening. Those women who get HPV vaccination were 2.5 times more likely to get cervical cancer screening compared to those who had taken the vaccination. This may be due to the fact that women who get the vaccine are more likely to know about the disease compared to their counterparts. It is likely that women who get the vaccine are given information about the disease which is likely to raise their awareness and screening uptake.

Women who got screening advice from medical professionals were 8.54 times more likely to get screened than women who didn't, according to this study. This is similarly supported by a study done in Malawi (48). A study done in Wolaita zone showed that those women who had got advise from health professional had a better knowledge about the disease and hence better screening(65). This is possibly explained by the fact that women who get advice from medical professionals are likely to know about the disease and the benefits of getting screened as well as the information on where they could get the screening done. They are also likely to get the screening in the institution that they get the advice from. Women who get advice from health professionals are more likely to be more knowledgeable which in turn positively affects the rate of cervical cancer screening. Women who get their advices from health professionals are likely to act on the advice they got than those who did not get advice from health professionals.

One of the other associated factors identified was the issue of perceived barrier. It is shown here that those women who have high perceived barriers to getting cervical cancer screening were 0.3 times less likely to get screened. Perceived barriers encompassed the idea of cervical cancer being painful, embarrassing and culturally unacceptable as well as the presence of provider's sex preference, lack of husband's support and a lack of health facility nearby. Those women who

identified more barriers than their counterparts were found to be less screened for cervical cancer. A study done in Mekele showed that women who had no perceived barriers to cervical cancer screening were 2 times more likely to be screened than those who had perceived barriers(47).

Women who had favorable attitude were 3.4 times more likely to get screened for cervical cancer compared to those who had unfavorable attitude. Similar studies done in Ethiopia have shown that poor attitude contributed to the poor uptake of cervical screening. The poor attitude was mainly accounted to the poor knowledge that the study participants had (65). In this study, we saw that women who had unfavorable attitude score were less likely to seek screening. Attitude questions basically focused on women's interest on regular screening, understanding the seriousness of cervical cancer and the lethality associated with it.

Having good knowledge about cervical cancer and its screening methods was associated with better screening uptake. This is consistent with studies done in Addis Ababa, Uganda and Tanzania (6,55,66). This can be explained as, the more knowledgeable a woman is, there is a higher probably that she will tend to get screened for cervical cancer. Although behavior is affected by various sorts of reasons, one of the core factors affecting it is knowledge. In our case, it can be seen that better knowledge resulted in better cervical cancer uptake. Other studies have shown that as education increases from primary to tertiary level, women were found to be more knowledgeable about cervical cancer and hence the increased screening uptake (67).

8. Strengths and limitations of the study

Strengths

Data quality control was maintained through the vigorous training that was provided.

Since systematic random sampling method was utilized, it reduces the potential for bias in the information

Limitations

A qualitative study is not included which might generate further information with regards to the screening service utilization.

9. Conclusion

This study has identified the overall cervical cancer screening rate of women attending SPSH and SPHMMC. It has also determined the factors that are associated with cervical cancer screening uptake. Common reasons given by women for not undergoing screening were thinking that they were healthy, lacking the interest to get screened, lack of information, getting scared of the procedure and others.

Focusing vaccinating women for HPV and also improving women's knowledge status have shown to positively influence the overall cervical cancer screening uptake. Women with favorable attitude towards cervical cancer screening and those with low perceived barriers to getting screened are also shown to have better utilization. Moreover, providing women with health education whenever they come to visit health facilities is of paramount importance as this was shown to positively impact their screening uptake rate. The frequency of health facility visits which is associated with increased parity should be considered and better health education provided accordingly.

10. Recommendation

Women should be provided with adequate information about cervical cancer and its screening methods when they come for hospital visits. As more information is instilled into them, then the likelihood of them getting the screening services rises. Frequent visits bring frequent opportunities for women to get advised and screened for cervical cancer. The screening program should not exclude those who have less frequent visits and the screening service should be integrated into the care that is provided for age eligible women.

Since women who get HPV vaccination in their past had a significant cervical cancer screening utilization, it is important to vaccinate young women for HPV. This in turn will create a better knowledge and which will positively influence the behavior of the women. The HPV vaccination program should not only run as a campaign rather on a regular basis because its impact is felt in a large scale. I recommend the regional health office and the federal ministry of health to make HPV vaccination programs more robust and far reaching.

Health professional's advice to their patients is critical in changing the overall understanding of the disease. I recommend for health professionals to provide women who visit health facilities, adequate information on cervical cancer. This should be provided to the women even if they don't ask about it. Screening service should be available if the women getting the advice intend

to get it. Women were seen avoiding the screening procedures due to some perceived barriers. Majority of the barriers can be avoided with the proper medical advice from a health professional. So, I recommend that proper and timely medical advice is provided, especially to women of reproductive age.

Working towards improving the knowledge of women will increase their demand of the service. Information can be delivered via in person contact or through different main stream and social media platforms. The utilization of different mediums for health education is lacking in many health facilities such as using TV, leaflets, audio recordings and posters. The federal ministry of health has shortcomings coming to the utilization of main stream media for information provision purposes. So, I recommend that health facilities start utilizing already existing platforms and new ones to better instill knowledge to women who come to visit their facilities. I also recommend the federal ministry of health to utilize main stream media so that knowledge transfer is more robust.

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10. Annexes

Annex 1: Questionnaire

Hello! My name is Dr Assefa Tesfaye. I am carrying out a research which has the objective of cervical cancer screening utilization and associated factors among women of age 30 and above in St Peter Specialized Hospital and St Paul's hospital millennium medical college, Addis Ababa, Ethiopia. If you are visiting the general outpatient department of the hospitals, then you may be chosen to participate in the research. Therefore, you are kindly requested to participate in the study and provide the information required from you. Your participation is completely on voluntary basis so you have the right to refuse from participating. Your responses will be kept confidential and there will be no way of linking your individual responses to the final result of the study findings. We would like to inform you that the responses you provide to the questionnaire is very important in providing relevant information that will be insightful in improving the cervical cancer screening service utilization.

Are you willing to participate in this study to give your responses based on the questionnaire?

Yes _____ NO _____

Name and signature of the data collector _____

Name and signature of the supervisor _____

Date of answering _____ code number _____

	Section 1: sociodemographic characteristics of the woman	
S.no	Question	Alternative answers
101	What is your age in years?	
102	Current place of residence	1. Urban 2. Rural
103	Marital status	1.married 2.non-married 3.widowed 4.divorced
104	What is your religion?	1.orthodox 2.muslim 3.protestant 4.catholic 70.other(specify)
105	Educational level?	1.illiterate 2. can write and read 3.primary education 4.secondary education

		5.college or university education
106	What is your body weight?	_____
107	What is your height?	_____
108	What is your employment status?	1. Unemployed 2. Employed 3. Self employed 4. Student 5. House wife 70. other, specify _____
109	What is your average monthly income?	_____
Section two. Reproductive history		
201	What was your age at first sexual intercourse?	1. <15 2. 15-20 3. >20
202	Number of sexual partners in your life?	1. 1 2. ≥2
203	Number of children	1. 1-2 2. 3-4 3. 5-6 4. >6 5. 0
204	Have you ever had any of these symptoms in the past	1. Sores or bumps on the genitals 2. Unusual/odd smelling Vaginal discharge 3. Painful urination 4. Pain during sex 5. Lower abdominal pain
205	Have you ever been tested for HIV	1. Yes 2. No
206	If yes, what was your result?	1. Positive 2. Negative 3. I don't know my status
207	Have you ever used family planning methods, excluding the natural methods?	1. Yes 2. No
208	How is the pattern of your menstrual flow?	1. Regular 2. Irregular 3. Menopause
209	Have you been vaccinated for HPV?	1. Yes 2. No
210	Do you have family history of cancer?	1. Yes 2. No
211	Have you ever been advised to get cervical cancer screening by a health professional?	1. Yes 2. No
212	What is your smoking history?	1. Never smoked 2. Quit smoking 3. Currently smoking

	Section three. Knowledge related questions	
301	What is the cause of cervical cancer?	1. bacteria 2. virus 3. fungus 4. genetically/ from family 5. I don't know 70. other, specify _____
302	Have you heard about cervical cancer screening?	1. Yes 2. No
303	Which cervical cancer screening methods do you know?	1. PAP smear 2. VIA 3. HPV test 4. I don't know any methods 70. Others, specify _____
304	What are the benefits of cervical cancer screening?	1. To prevent cancer development 2. For early treatment 3. To improve survival 4. No benefits
305	What was your source of information about cervical cancer screening?	1. Social media 2. Main stream media 3. Health worker 4. Friend 5. Family member 70. Other, specify _____
306	When should cervical cancer screening be started?	1. As soon as a woman becomes sexually active 2. When menstruation starts 3. At the age of 30 4. After menopause 5. I don't know 70. other, specify _____
307	How frequently should cervical cancer screening be done?	1. Once every year 2. Once every three years 3. Once every five years 4. I don't know
308	Do you know health facilities that provide cervical cancer screening service?	1. Yes 2. No
309	What are the symptoms of cervical cancer?	1. Post coitus bleeding 2. Painful coitus 3. Vaginal bleeding 4. Foul smelling vaginal discharge 5. I don't know 70. Others (specify)-----
310	Is cervical cancer preventable?	1. Yes 2. No

		3. I don't know
311	Cervical cancer screening is good for early detection of the disease.	1. Agree 2. Disagree 3. I don't know
312	Early changes found during cervical cancer screening are curable.	1. Agree 2. Disagree 3. I don't know
313	What are the factors that cause cervical cancer?	1. Smoking 2. Multiple sexual partners 3. Family history 4. History of STDs 5. Early onset of sexual intercourse 6. I don't know any factors 7. Others (specify) ----- -----
Section four: Perception about susceptibility to cervical cancer		
401	Self-assessed health status	1. Very good 2. Good 3. Bad 4. Very bad
402	Do you have regular health checkups	1. Yes 2. No
403	Have you ever been screened for cervical cancer?	1. Yes 2. No
404	If you have never been screened for cervical cancer, what is the reason for that?	----- -----
405	Do you think you are susceptible to cervical cancer?	1. Yes 2. No
Section five: Attitude towards cervical cancer screening		
501	Do you want to have regular cervical cancer screening?	1. Yes 2. No
502	What do you think about regular cervical cancer screening?	1. Very important 2. Important 3. Not important 4. Harmful
503	Cervical cancer is not as serious as other cancers.	1. agree 2. disagree 3. I don't know
504	Cervical cancer is a killer disease.	1. Agree 2. Disagree 3. I don't know

	Section six: perceived barriers to cervical cancer screening	
601	Do you think cervical cancer screening is painful?	1. Yes 2. No
602	Do you think cervical cancer screening is embarrassing?	1. Yes 2. No
603	Which health provider should do cervical screening for you?	1. Male 2. Female 3. No preference
604	Is cervical cancer screening acceptable in your culture?	1. Yes 2. No
605	Does your husband approve screening for cervical cancer?	1. Yes 2. No 3. Has no opinion 4. Have no husband
606	Is there a nearby health facility that provides cervical cancer screening?	1. Yes 2. No 3. I don't know
607	What other barrier do you face to getting cervical cancer screening?	_____

ሰላም! ዶ/ር አሰፋ ተስፋዬ እባላለሁ። አዲስ አበባ ኢትዮጵያ በሚገኘው ቅዱስ ጴጥሮስ ስፔሻላይዝድ ሆስፒታልና ቅዱስ ጳውሎስ ሆስፒታል ሚሊኒየም ሜዲካል ኮሌጅ ውስጥ 30 ዓመት እና ከዚያ በላይ በሚሆናቸው ሴቶች ላይ ያተኮረ የ ማሕጸን ጫፍ ካንሰር ምርመራ ተግባራዊነት እና ተያያዥ ጉዳዮችን የሚዳስስ ጥናት እየሰራሁ እገኛለሁ። እርሶም በ ሆስፒታሎቹ የጠቅላላ ተመላላሽ ህክምና ክፍል አገልግሎት እያገኙ ከሆነ እዚህ ጥናት ላይ እንዲሳተፉ ሊመረጡ ይችላሉ። በመሆኑም በጥናቱ እንዲሳተፉ እና ከእርሶ የሚጠየቁትን መረጃዎች እንዲሰጡ በትህትና እንጠይቃለን። ተሳትፎው ሙሉ በሙሉ በበጎ ፈቃደኝነት ላይ የተመሰረተ በመሆኑ አለመሳተፍ ይችላሉ። ጥናቱ ላይ የሚሰጧቸው ምላሾች ምስጢራዊነታቸው የተጠበቀ ሲሆን፣ የእርሶ ምላሾችም ከአጠቃላይ የጥናቱ ውጤት ጋር አይገናኙም። ጥናቱ ላይ የሚሰጧቸው ምላሾችም ለ ማሕጸን ጫፍ ካንሰር ምርመራ ጠቃሚ መረጃዎችን በመስጠት ምርመራውን ለማሻሻል ወሳኝ ግብአት እንደሚሆኑ ለማስታወስ እንወዳለን።

በጥናቱ ላይ በመሳተፍ በመጠይቁ መሰረት ምላሽ ለመስጠት ፈቃደኛ ኖት?

አዎ _____ አይ _____

የመረጃ ሰብሳቢ ስም እና ፊርማ _____

የተቆጣጣሪ ስም እና ፊርማ _____

መጠይቁ የተሞላበት ቀን _____ የኮድ ቁጥር _____

	ክፍል 1፡ የ ሴቷ ማኅበራዊ መገለጫዎች	
ተ.ቁ	ጥያቄ	አማራጭ መልሶች
101	ዕድሜሽ ስንት ዓመት ነው?	
102	አሁን የምትኖሪበት ቦታ የት ነው?	1. ከተማ 2. ገጠር
103	የትዳር ሁኔታ	1.ያገባች 2.ያላገባች 3.ባሏ የሞተባት 4.በፍቺ የተለያየች
104	ሃይማኖትሽ ምንድነው?	1.ኦርቶዶክስ 2.ሙስሊም 3.ፕሮቴስታንት 4.ካቶሊክ 70.ሌላ (ይጠቀስ)
105	የትምህርት ደረጃሽ?	1.ማንበብና መጻፍ አልችልም 2. ማንበብና መጻፍ እችላለሁ 3.የመጀመሪያ ደረጃ ትምህርት 4.ሁለተኛ ደረጃ ትምህርት 5.የኮሌጅ ወይም ዩኒቨርሲቲ ትምህርት
106	የ ሰውነት ክብደትሽ ምን ያህል ነው?	_____
107	ቁመትሽ ምን ያህል ነው?	_____
108	የሥራ ሁኔታሽ ምን ይመስላል?	1. ሥራ የለኝም 2. ተቀጥሬ እየሠራሁ ነው 3. የራሴ ሥራ አለኝ 4. ተማሪ ነኝ 5. የቤት አመቤት ነኝ 70 ሌላ ይገለጽ _____
109	አማካኝ የወርሃዊ ደሞዝሽ ስንት ይሆናል?	_____
ክፍል ሁለት. የስነ ተዋልዶ ታሪክ		
201	ለመጀመሪያ ጊዜ የግብረ ሥጋ ግንኙነት ስትፈጽሟ ስንት ዓመትሽ ነበር?	1. <15 2. 15-20 3. >20
202	በህይወት ዘመንሽ ከስንት ሰዎች ጋር ወሲብ ፈጽመሽ ታውቂያለሽ?	1. 1 2. >2
203	የልጆች ቁጥር	1. 1-2 2. 3-4 3. 5-6 4. >6 5. 0
204	ከነዚህ ውስጥ ገጥሞሽ የሚያውቅ ምልክት አለ?	1. ብልት አካባቢ ማበጥ ወይም መቁሰል 2. ያልተለመደ ወይም መጥፎ ጠረን ያለው የማህጸን ፈሳሽ 3. ሽንት ሲሸና ማቃጠል 4. የግብረስጋ ግንኙነት ወቅት ህመም መስማት 5. የታችኛው የሆድ ክፍል ላይ ያለ ህመም
205	ለኤች አይ ቪ ተመርምረሽ ታውቂያለሽ ወይ?	1. አዎ 2. አይ

206	ተመርምረሽ ካወቅሽ ውጤትሽ ምን ነበር	1. ፓዘቲፍ 2. ኔጌቲቭ 3. መናገር አልፈልግም
207	ከተፈጥሯዊ መንገዶች ውጪ የቤተሰብ እቅድ ወይም የ ወሊድ መቆጣጠሪያ መንገዶችን ተጠቅመሽ ታውቂያለሽ?	1. አዎ 2. አይ
208	የወር አበባ ፍሰት ዑደትሽ ምን ይመስላል?	1. ጌዜውን የጠበቀ ነው 2. ይዘበራረቃል 3. የወር አበባዬ ቆሟል (እርጣት)
209	የ ኤችፒቪ ክትባት ወስደሻል?	1. አዎ 2. አይ
210	ከቤተሰብ ውስጥ ካንሰር ይዞት የሚያውቅ አለ?	1. አዎ 2. አይ
211	የጤና ሙያተኞች የማህጸን ጫፍ ካንሰር ምርመራ አድርጌ ብለውሽ ያውቃሉ?	1. አዎ 2. አይ
212	ሲጋራ አጭሰሽ ታውቂያለሽ?	1. አላውቅም 2. ማጨስ አቁሜአለሁ 3. እያጨስኩ ነው
	ክፍል ሦስት. እውቀት ነክ ጥያቄዎች	
301	የማህጸን ጫፍ ካንሰርን ምን ያመጣዋል?	1. ባክቴሪያ 2. ቫይረስ 3. ፈንገስ 4. በዘር/ ከቤተሰብ 5. አላውቅም 70 ሌላ የገለጽ _____
302	ስለ ማህጸን ጫፍ ካንሰር ምርመራ ሰምተሽ ታውቂያለሽ?	1. አዎ 2. አይ
303	የትኛውን የማህጸን ጫፍ ካንሰር ምርመራ ታውቂያለሽ?	1. ፓፕ ስሚር 2. ቪኦይኤ 3. ኤችፒቪ ምርመራ 4. የማውቀው የለም 70 ሌላ ይገለጽ _____
304	የማህጸን ጫፍ ካንሰር ምርመራ ጥቅሞች ምንድን ናቸው?	1. ካንሰሩን ለመከላከል 2. ቶሎ ህክምና ለማድረግ 3. በህይወት የመቆየት እድልን ለመጨመር 4. ምንም ጥቅም የለውም
305	ስለ ማህጸን ጫፍ ካንሰር ምርመራ መረጃ ከየት አገኘሽ?	1. ከማኅበራዊ ሚዲያ 2. ከ ቲቪ፣ ራዲዮ ወይም ጋዜጣ 3. ከጤና ባለሙያ 4. ከጓደኛ 70 ከሌላ _____
306	የማህጸን ጫፍ ካንሰር ምርመራ መቼ መጀመር አለበት?	1. የግብረሰጋ ግንኙነት እንደተጀመረ 2. የወር አበባ መታየት እንደጀመረ 3. 30 አመት ሲሞላ 4. የወር አበባ መምጣት ካቆመ በኋላ 5. አላውቅም 70 ሌላ ይገለጽ _____
307	የማህጸን ጫፍ ካንሰር ምርመራ በየስንት ጊዜ መደረግ አለበት?	1. በየአመቱ አንዴ 2. በየሶስት አመት አንዴ 3. በአምስት አመት አንዴ 4. አላውቅም
308	የማህጸን ጫፍ ካንሰር ምርመራ የሚያደጉ የጤና ተቋማትን ታውቂያለሽ?	1. አዎ 2. አይ
309	የማህጸን ጫፍ ካንሰር ምልክት የሆኑትን ለዩ	1. ከግብረ ሰጋ ግንኙነት በኋላ መድማት 2. ህመም የሚፈጥር ግብረ ሰጋ ግንኙነት

		3. ከማህጸን መድማት 4. መጥፎ ጠረን ያለው የማህጸን ፈሳሽ 5. አላውቅም 6. ሌላ ካለ ይገለጽ
310	የማሕጸን ጫፍ ካንሰርን መከላከል ይቻላል?	1. አዎ 2. አይ 3. አላውቅም
311	የማሕጸን ጫፍ ካንሰር ምርመራ በሽታውን ቀድሞ ለመለየት ይጠቅማል	1. እስማማለሁ 2. አልስማማም 3. አላውቅም
312	የማሕጸን ጫፍ ካንሰር ምርመራ በሚደረግበት ጊዜ ቀድመው የሚታዩ ለውጦች መታከም (መፈወስ) ይችላሉ	1. እስማማለሁ 2. አልስማማም 3. አላውቅም
313	የማሕጸን ጫፍ ካንሰር የሚያስከትሉ ምክንያቶችን ለዩ?	1. ሲጋራ ማጨስ 2. በዙ የወሲብ ጓደኞች 3. ከቤተሰብ መሐል ከዚህ በፊት የተያዘ ሰው ካለ 4. ከዚህ ቀደም በአባላዘር በሽታ መያዝ 5. ግብረ ስጋ ግንኙነትን በልጅነት መጀመር 6. ምክንያቶቹን አላውቅም 7. ሌላ (ይጠቀስ) -----
ክፍል 4 : ስለ ህመሙ ሁኔታ ያለ አመለካከትና እና ስለ ማሕጸን ካንሰር ተጋላጭነት ያለ ግንዛቤ		
401	ስለራስሽ የጤና ሁኔታ ምን ይሰማሻል?	1. በጣም ጥሩ 2. ጥሩ 3. መጥፎ 4. በጣም መጥፎ
402	መደበኛ የጤና ምርመራ ታደርጊያለሽ	1. አዎ 2. አይ
403	የ ማሕጸን ጫፍ ካንሰር ምርመራ አድርገሽ ታውቂያለሽ?	1. አዎ 2. አይ
404	ከዚህ በፊት የ ማሕጸን ጫፍ ካንሰር ምርመራ ካላደረግሽ ምክንያቱን ገለጪ	----- ----- --
405	በማሕጸን ጫፍ ካንሰር የመያዝ እድል አለኝ ብለሽ ታስቢያለሽ ወይ?	1. አዎ 2. አይ
ክፍል አምስት: ስለማህጸን ጫፍ ካንሰር ምርመራ ያለ አመለካከት		
501	መደበኛ የ ማሕጸን ጫፍ ካንሰር ምርመራ ማድረግ ትፈልጊያለሽ?	1. አዎ 2. አይ
502	ስለ መደበኛ የ ማሕጸን ጫፍ ካንሰር ምርመራ ምን ታስቢያለሽ?	1. በጣም አስፈላጊ ነው 2. አስፈላጊ ነው 3. አስፈላጊ አይደለም 4. ጎጂ ነው
503	የማሕጸን ጫፍ ካንሰር እንደሌሎች ካንሰሮች ከባድ አይደለም	1. እስማማለሁ 2. አልስማማም 3. አላውቅም
504	የማሕጸን ጫፍ ካንሰር ገዳይ በሽታ ነው	1. እስማማለሁ

		2. አለስማማም 3. አላውቅም
	ክፍል ስድስት: የ ማሕጸን ጫፍ ካንሰር ምርመራ ላለማድረግ እንደ መሰናከል የሚቆጠሩ ነገሮች	
601	የ ማሕጸን ጫፍ ካንሰር ምርመራ ሕመም ያለው ይመስልኛል?	1. አዎ 2. አይ
602	የ ማሕጸን ጫፍ ካንሰር ምርመራ የሚያሳፍር ይመስልኛል?	1. አዎ 2. አይ
603	የ ማሕጸን ጫፍ ካንሰር ምርመራን ማን ቢያከናውንልሽ ትመርጫለሽ?	1. ወንድ 2. ሴት 3. ምርጫ የለኝም
604	በባሕልሽ የ ማሕጸን ጫፍ ካንሰር ምርመራ ተቀባይነት አለው?	1. አዎ 2. አይ
605	ባልሽ የ ማሕጸን ጫፍ ካንሰር ምርመራ እንድታደርግ ፈቃደኛ ነው?	1. አዎ 2. አይ 3. ቢደረግም ባይደረግም ግድ የለውም 4. ባል የለኝም
606	የ ማሕጸን ጫፍ ካንሰር ምርመራ የሚስጥ ተቋም ባቅራቢያሽ አለ?	1. አዎ 2. አይ 3. አላውቅም
607	የ ማሕጸን ጫፍ ካንሰር ምርመራ እንዳታደርግ ሌላ ምን መሰናከል ገጠመሽ?	1. _____ _____

Declaration

I, the undersigned declare that this thesis is my original work in partial fulfillment of the requirement for the degree of Master of Public Health. I also declare that it has never been presented in this or any other university and that all resources and materials used in the thesis have been duly acknowledged.

Student Name: Dr Assefa Tesfaye

Signature: _____

Place of submission: _____

Date of submission: _____

This thesis has been submitted with my approval as a College/university advisor.

Advisor Name: _____

Signature: _____

Date of submission: _____