ADDIS ABABA UNIVERSITY IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE SPECIALITY CERTIFICATE IN GYNAECOLOGY AND OBSTETRICS

Utilization of Screening Service on Cervical Cancer and Associated Factors among Female Health Professionals in Addis Ababa, Ethiopia

BY:

DR. Achamyelew Melaku

AUGUST, 2023GC

ADDIS ABABA, ETHIOPIA.

ADDIS ABABA UNIVERSITY IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE SPECIALITY CERTIFICATE IN GYNAECOLOGY AND OBSTETRICS

BY:

DR. ACHAMYELEW MELAKU

A CROSS-SECTIONAL STUDY ON UTILIZATION OF SCREENING SERVICE ON CERVICAL CANCER AND ASSOCIATED FACTORS AMONG FEMALE HEALTH PROFESSIONALS IN ADDIS ABABA, ETHIOPIA.

ADVISORS:

- Dr. Shiferaw Negash (MD, Gynecologic Oncologist, Associate Professor in Gynecology and Obstetrics, School of Medicine, College of Health Sciences, Addis Ababa University)
- Dr. Sofanit Haile (MD, Assistant Professor in Gynecology and Obstetrics, School of Medicine, College of Health Sciences, Addis Ababa University)

A RESEARCH REPORT SUBMITTED TO THE DEPARTMENT OF GYNAECOLOGY AND OBSTETRICS, SCHOOL OF MEDICINE, COLLEGE OF HEALTH SCIENCES,

AUGUST, 2023GC

ADDIS ABABA, ETHIOPIA.

DECLARATIONS

ADDIS ABABA UNIVERSITY COLLEGE OF HEALTH SCIENCES, SCHOOL OF MEDICINE, DEPARTMENT OF OBSTETRICS AND GYNECOLOGY

POSTGRADUATE PROGRAM

I, Dr. Achamyelew Melaku, hereby declare that this research report entitled " **Utilization of screening service on cervical cancer and associated factors among female health professionals working in Addis Ababa, Ethiopia, 2023GC**." in line with the requirement of graduate studies was fully undertaken by me under the guidance of my advisors and that I have, to the best of my knowledge and effort, avoided plagiarism or duplication of materials unless and otherwise cited and/or acknowledged and that it has not been so far submitted for any form of research application or consideration.

Dr. Achamyelew Melaku _____ _____

Principal investigator Signature Date

We hereby certify that we have read and evaluated this research proposal relating to **Utilization of screening service on cervical cancer and associated factors among female health professionals working in Addis Ababa, Ethiopia, 2023GC"** under our guidance from its inception up to in its current format that it can be submitted to the DRPC for final approval in partial fulfillment to the Degree of Specialty in Obstetrics and Gynecology.

Dr. Shiferaw Negash _____ _____

(Associate professor, Gynecology oncologist)

1. Advisor Signature Date

Dr. Sofanit Haile

(Assistant Professor, OBGYN consultant) _____ _____

_____

2. Advisor Signature Date

ACKNOWLEDGEMENT

The researcher would like to appreciate everyone who made this study feasible and achievements of my objectives a reality. First and foremost, appreciation goes to my advisors Dr. Shiferaw Negash and Dr. Sofanit Haile for their constant support, mentorship and patience throughout the entire process.

Acknowledgement to my research assistant Mr. Yibekal Manaye (Epidemiologist and Lecturer at Dire Dawa University) who supported me throughout proposal development till research report writing.

Acknowledgement goes to AA city health bureau administrative officers and each health facility staffs who sacrificed their valuable time to assist in data collection.

Finally, to almighty God for giving me a chance to accomplish this work.

TABLE OF CONTENTS

ACKNOWLEDGEMENT I

LIST OF TABLE IV

LIST OF FIGURES V

ABBREVIATIONS AND ACRONYMS VI

ABSTRACT VII

1.INTRODUCTION VII

1.1 Back ground 1

1.1.Statement of the Problem 3

1.2.Significance of the Study 8

2.LITERATURE REVIEW 9

3. OBJECTIVES 14

3.1. General Objective 14

3.2. Specific Objective 14

4. METHODS 15

4.1. Study area description 15

4.2. Study design and period 15

4.3. Source population 15

4.4. Study population 16

4.5. Inclusion and Exclusion criteria 16

4.6. Sampling technique and Sample size 16

4.7. Research instrument, measurements and data collection 19

4.8. Study Variables 19

4.9. Operational definitions 20

4.10. Data Quality Control and Management 21

5. RESULT 22
5.1. Sociodemographic characteristics of the study participants 22
5.2A. Knowledge of the study participants on cervical cancer screening..... 25
5.3. Study participants attitude on cervical cancer screening 27
5.4. Utilization of Screening Service 29
5.5 The main reason of the study participants unscreened for cervical cancer..... 32
5.6. Determinant of utilization of cervical cancer screening among female health providers of AA, Ethiopia in 2023. 34
6. Discussion..... 37
7. Limitation of the study..... 38
8.Conclusion and Recommendation 39
9.REFERENCES 40
10.ANNEX..... 45

LIST OF TABLE

Table 1: Distribution of Health centers found in AA City administration among each county,2022GC. 17

Table 2. The sociodemographic characteristics of female health providers working in Addis Ababa public health facilities, 2023..... 22

Table 3. The knowledge related characteristics of the study participants about cervical cancer and its screening, among female health workers in AA, Ethiopia,2023..... 26

Table 4. Knowledge of participants about cervical cancer screening among female health workers at Public Health Institutions in AA, Ethiopia,2023. 27

Table 5.4A. Shows subgroup analysis findings of screening service utilization among each participant. 30

Table 5.4B. Shows knowledge versus screening service utilization among who respondents..... 31

Table 5.5: The main reasons for those not utilized screening services among targeted age group(30-49years) in AA, Ethiopia;2023 33

Table 5.6. The bivariate and multivariate logistic regression of association between cervical cancer screening utilization and independent variable among female health provider who works in Addis Ababa health facilities,2023. 35

LIST OF FIGURES

Conceptual frame work which is adapted from previous studies 13

Figure 2. Sampling technique(procedure) for influencing factors for utilization of cervical screening service among female health workers in Addis Ababa public health institutions,202218

Figure 3. Magnitude of cervical cancer screening among female health provider in Addis Ababa, Ethiopia 2023. 29

Figure 4. the main reason of the study participants for not screened cervical cancer. 32

ABBREVIATIONS AND ACRONYMS

AAU=Addis Ababa University

ASIR……Age-standardized incidence rate

CCS-cervical cancer screening

CI……...Confidence Interval

DNA…...Deoxyribose-nucleic Acid

Dr……...Doctor

EC……...Ethiopian Calendar

FHWs…. Female health workers

HC……. Health Center

HFs…. Health Facilities

HIV……Human Immunodeficiency Virus

HPV……Human papilloma virus

ICO……Institute Català d'Oncologia

KAP……Knowledge Attitude and practice

MD……. Medical Doctor

MPH…...Master of public Health

OBGYN/GYNOBS…. Obstetrics and Gynecology

OR……...Odds Ratio

Pap…....Papanicolaou smear

PLWHIV…People live with HIV

RVI…..... Retroviral Infection

SSA……. Sub-Saharan Africa

VIA…...Visual Inspection with Acetic Acid

WHO…World Health organization

ABSTRACT

***Background**: Cervical cancer is the most prevalent gynecologic cancer. It is preventable and curable, as long as it is detected early and managed effectively. Yet it is the fourth most common form of cancer among women worldwide and second in Ethiopia, with the disease claiming the lives of more than 340 000 women in 2020. Its incidence and burden are high in developing regions, especially in sub-Saharan Africa. The World Health Organization plans to increase vaccination, screening, and treatment of cases to 90%, 70%, and 90%, respectively, in developing countries by 2030. Early screening for cervical cancer is a key intervention in reduction of maternal deaths. Health care workers have a significant contribution to improve cervical cancer screening practice among women. Therefore, the aim of this study was to assess magnitude of utilization of cervical cancer screening and associated factors among female healthcare providers in Addis Ababa, Ethiopia.*

***Methods**: Institution-based cross-sectional survey was done from June 05- July 05, 2023GC. The data was collected using a structured questionnaire. The questionnaire was checked manually for its completeness, coded, and entered into Epi-Data version 4.6 and analyzed with SPSS version 25. Descriptive and summary statistics were done. Both bivariate and multivariate logistic regression analyses were used to determine the association of each independent variable with the dependent variable. Variables significant in bivariate analysis (P-value≤ 0.25) were entered into a multivariate logistic regression model to adjust the effects of confounders on the outcome variable. Odds ratios with their 95% confidence intervals (CIs) were computed to identify the presence and strength of association, and statistical significance was declared if P<0.05.*

***Results**: The total study participants in our study were 432, of these more than half, 243(56.3%) were nurses. Almost all of the participants know at least one risk factor and one of screening methods. In this study only 19.4 %(n=84/432) and 31.15% (n=57/183) among all participants and targeted age(≥30years) participants have utilized screening service respectively. The main reason that hinders screening service utilization was lack of attention while the promotor factors were awareness of screening method and physician recommendation. Age, marital status, year of experience, working unit, knowledge of cervical cancer etiology, knowing of risk factor, attitude, method of screening and management of cervical cancer were significantly associated with utilization on Multivariable logistic regression.*

***Conclusion and recommendations**: Unfortunately, there is low utilization of screening service among participants who were expected to be role model for the community. The top common reasons not utilizing were lack of attention and feeling healthy while those screened were motivated by awareness about screening methods and physician recommendation. Lack of attention is the leading reason among age group of >=30yrs. Due to their unfavorable attitude and lack of adequate knowledge had negative effects on themselves and the vast majority of their clients. Therefore, the researcher recommends training for participants to increase awareness on screening methods and to increase the uptake of screening services.*

1. INTRODUCTION

1.1 Back ground

Cervical cancer is an important public health problem and is the fourth most common gynecological cancer in the world(Rup1, 2-4) In 2020, an estimated 604,127 new cases of cervical cancer were diagnosed, and 341,831 deaths occurred, although incidence and mortality varied widely geographically(1, 2, 4, 5). Over 85 percent of new cases are diagnosed in resource-limited setting and nearly 90% of the deaths in 2020 occurred in low- and middle-income countries (3-8).

In sub-Saharan Africa, 34.8 new cases of cervical cancer are diagnosed per 100,000 women annually, and 22.5 per 100,000 women die from the disease. These figures compare with 6.6 and 2.5 per 100,000 women, respectively, in North America (1, 4, 8, 9). The drastic differences can be explained by lack of access to effective screening and to services that facilitate early detection and treatment(1, 6, 8, 9). This disease is steadily increasing in sub-Saharan Africa, with more than 75,000 new cases and 50,000 deaths yearly, further increased by HIV infection (5, 7, 9). Since it has slowly decreasing trends in cervical cancer were detected worldwide from 1990 to 2019. Cervical cancer remains a substantial health problem for women globally, requiring more effective prevention and control strategies (1, 7, 10, 11).

There are three components of prevention and control: 1) primary prevention, 2) secondary Prevention, and 3) tertiary care. Primary prevention includes prevention of infection with Human Papilloma Virus (HPV) either through behavior change mechanisms, such as abstinence or condom use, or through biological mechanisms, such as the HPV vaccine. Secondary prevention, which includes screening and treating precancerous lesions with effective outpatient methods.

Tertiary care includes management of invasive cervical cancer (i.e. surgery, radiation therapy and chemotherapy), as well as palliative care(2, 12). Cervical cancer is preventable and, in most cases, curable, if identified in its early stages (2, 4, 6, 13, 14).

Most cervical cancers (More than 95%) are caused by persistent infection with certain types of human HPV (14). While women who begin having sex at an early age or who have had many sexual partners are at increased risk for HPV infection and cervical cancer, a woman may be

infected with HPV even if she has had only one sexual partner. In fact, HPV infections are common in healthy women and only rarely cause cervical cancer (8, 12, 15, 16).

Among the general population, ~33.6% of women are estimated to harbor cervical human papilloma virus (HPV) infection at a given time(14).Both persistence of HPV infection and progression to cancer may be influenced by many factors, including a suppressed immune system, a high number of childbirths, and cigarette smoking (2, 17). The risk of transmission of HPV correlates with the lifetime number of sex partners (1, 3, 18). Cervical cancer has a long precancerous period, usually taking more than 10 years to progress from precancerous lesions to invasive cancer. As a result, it is rare for cervical cancer to develop in a woman less than 30 years of age. This long precancerous stage provides an excellent opportunity for effective intervention measures(12, 19). The screening techniques often used are Pap smear test, visual inspection methods (VIA/VILI), and HPV DNA test.(5, 20, 21).In countries with effective cytology-based cervical cancer screening and treatment programs, the mortality from cervical cancer has been reduced fivefold over the past 50 years(5, 6). This screening approach has not been as successful in low- and middle-income countries(9).

More recently, even newer tests and techniques have been developed: (i) other molecular tests such as those based on HPV mRNA, oncoprotein detection (E6 &/or E7) or DNA methylation; (ii) more objective tests performed on cytological samples such as p16/Ki-67 dual staining; and (iii) more advanced visual inspection tests based on artificial intelligence/machine learning(22).

VIA screening combined with access to cryotherapy was piloted in Ethiopia by the FMOH in collaboration with Pathfinder. The service was introduced in 2009 as a single-visit approach to cervical cancer prevention integrated into a comprehensive care package for people living with HIV at 14 Hospitals.

The service was subsequently initiated in eleven additional health facilities (clinics of the Family Guidance Association of Ethiopia (FGA), Military Hospitals, and some other facilities) making the service available in a total of 25 health institutions(12).

A study conducted in Ethiopia about availability and readiness of cervical cancer screening service at health facilities revealed that nationally, 33% of the facilities provided cervical cancer screening service in 2018. Among facilities that provide cervical cancer screening services, 30% of the hospitals and 29% of health centers had all tracer items for Cervical Cancer Prevention

and Control (23). Currently (2022) in Addis Ababa all public health centers and all hospitals provide cervical cancer screening services (24).

1.1. Statement of the Problem

Despite being largely preventable through human papillomavirus (HPV) vaccination and screening programs, cervical cancer remains a global health challenge. According to a WHO survey from 2015, the incidence, death, and prevalence of cervical cancer were globally (7.9%, 7.5%, and 9%), in Sub-Saharan Africa (25.2%,23.2%, and 27.6%) and in Ethiopia were (17.3%, 16.5%, and 18.2%)(1, 4-7, 24) respectively.

It is preventable and curable, as long as it is detected early and managed effectively(7, 13). Yet it is the fourth most common form of cancer among women, 604 000 new cases of cervical cancer diagnosed worldwide annually with the disease claiming the lives of more than 342 000 women in 2020 worldwide(6-8, 13, 19, 21) .

Significant reductions in the burden of cervical cancer have occurred in high income countries (HICs) in recent decades. However, vulnerable groups in HICs continue to be affected disproportionately, and the vast majority of cases and deaths occur in low- and middle-income countries (LMICs)(3, 12, 19). Nearly 90% of the deaths in 2020 occurred in low- and middle-income countries(13, 25). This is where the burden of cervical cancer is greatest, because access to public health services is limited and screening and treatment for the disease have not been widely implemented, which reflect global inequities(6, 8, 11) .

The use of pap screening tests over the past 50 years has reduced mortality by 50–60%. It is indicated that on average, cervical cancer screening rate is three times higher in high-income countries (63%) than in low and middle-income countries (19%)(18, 25, 26) .

Cytology-based screening and treatment programs have reduced cervical cancer incidence and mortality by as much as 80% in Canada, the USA and some Nordic countries, and by 50–60% in other European countries(18, 27-30) .

But, in developing nations, the problem is still devastating due to scarcity of resources, deficiency of health care system, making cervical cancer screening opportunistic rather than being organized and largely relying on visual inspection with acetic acid(15, 26, 30-33).

A review and systematic analysis conducted on cervical cancer screening programs and age-specific coverage estimates for 202 countries and territories worldwide in 2020 identified recommendations for cervical screening in 139 (69%) of 202 countries and territories. Cytology was the primary screening test in 109 (78%) of 139 countries. 48 (35%) of 139 countries recommended primary HPV-based screening. Visual inspection with acetic acid was the most recommended test in resource-limited settings. Estimated worldwide coverage in women aged 30–49 years in 2019 was 15% in the previous year, 28% in the previous 3 years, and 32% in the previous 5 years, and 36% ever in lifetime. An estimated 1·6 billion (67%) of 2·3 billion women aged 20–70 years, including 662 million (64%) of 1·0 billion women aged 30–49 years, had never been screened for cervical cancer. One hundred thirty-three (133) million (84%) of 158 million women aged 30–49 years living in high-income countries had been screened ever in lifetime, compared with 194 million (48%) of 404 million women in upper-middle-income countries, 34 million (9%) of 397 million women in lower-middle-income countries, and 8 million (11%) of 74 million in low-income countries (17). A meta-analysis study in sub-Saharan Africa showed that only 12.87% of women were screened for cervical cancer(8, 24, 25, 28).

The World Health Organization is developed a global strategy towards eliminating cervical cancer as a public health problem, which proposes an elimination threshold of four cases per 100 000 women and includes 2030 triple-intervention coverage targets for scale-up of human papillomavirus (HPV) vaccination to 90%, twice-lifetime cervical screening to 70%, and treatment of pre-invasive lesions and invasive cancer to 90% in developing countries by 2030(2). In developed countries, the proportions of women who are screened by vary from 68 to 84%. However, in developing countries, screening coverage is still very low(4, 7, 34).

Ethiopia has a population of 36.9million women ages ≥15years and around 9.8million 30-49 years old who are at risk of developing cervical cancer. Data is not yet available on the HPV burden in the general population of Ethiopia. However, in Eastern Africa, the region Ethiopia belongs to, about 4.7% of women in the general population are estimated to harbor cervical 16/18 infection at a given time. Cervical cancer is the second most common female reproductive organ cancer in women aged 15 to 44 years in Ethiopia. and annually, about 7,619 new cervical cancer cases are diagnosed and 6081 deaths estimated in 2020(2, 3, 15, 16, 23) .

In Ethiopia, the coverage of cervical cancer screening remains very low, ranging from 2.0–20.2% in the urban areas and 0.4–14.0% in rural areas(1, 12, 13, 16). A cross-sectional community- based study was conducted in Butajira, Ethiopia in 2018 on to assess knowledge, attitude and practice which revealed 2.3% of participants had screened (26).

When women screened at least once in their lifetime for cervical cancer, their risk of cancer could be decreased by **25–36**%. Despite this advantage the coverage of cervical cancer screening remains low across country level(16, 23, 25) .

A systematic review and meta-analysis were conducted in Ethiopia which included twenty-five studies with a total of 18,067 eligible women in this study the pooled national cervical cancer screening utilization was 14.79%. This meta-analysis found that the percentage of cervical cancer screening among eligible women was much lower than the WHO recommendations. Only one in every seven women utilized cervical cancer screening in Ethiopia. There were significant variations in the cervical cancer screening based on geographical regions and characteristics of women (28).

The performance of VIA has been evaluated in numerous studies. An extensive meta-analysis by Sauvaget et al in 2015 shows a pooled data from 26 studies that were conducted in different high- and low-income countries found an overall sensitivity of 80% and a specificity of 92% for the VIA method, although sensitivities greatly varied between studies. Close values were found in a meta-analysis where pooled data from 11 studies that were performed in Africa and India showed a sensitivity for VIA of 79% (range: 73%-85%) and a specificity of 85% (range: 81%-89%) for CIN2 lesions or worse (CIN2+). With regard to VILI, its use appears to increase VIA's sensitivity by 10%, without affecting the specificity(35).

In countries that have introduced successful cervical cancer screening programs, cervical cancer has become a relatively rare disease. In most resource-rich countries, the age-standardized incidence rate (ASIR) for cervical cancer is less than 10/100,000, whereas in resource-limited countries, the ASIR of cervical cancer ranges from 25 to 55/100,000(10, 11, 34).

More than 44 million women will be diagnosed with cervical cancer in the next 50 years if primary and secondary prevention programs are not implemented in LMICs. If high coverage vaccination can be implemented quickly, a substantial effect on the burden of disease will be seen after three to four decades, but nearer-term impact will require delivery of cervical

screening to older cohorts who will not benefit from HPV vaccination. Widespread coverage of both HPV vaccination and cervical screening from 2020 onwards has the potential to avert up to 12·5–13·4 million cervical cancer cases by 2069(24).

The guidelines of the World Health Organization (WHO), the United States Preventive Services Task Force (USPSTF) and the American Cancer Society (ACS) recommends that all eligible women should have cervical cancer screening at least once every three years(22). The prevalence of cervical cancer screening is much higher at the Western countries than SSA; 85.0% in the United States, 78.6% in the United Kingdom(27, 28).

Ethiopia adopted cervical cancer prevention and control guideline from the WHO and recommend every woman starting from the age of 30 to be screened every five years (the program focused efforts on screening and treating women between the ages of 30 and 49 years, the target age group could be expanded (e.g., to ages 25-59years)) unless HIV-positive and if there is an indication starting from the age of 25 years. If a woman is HIV positive, it recommends starting screening at HIV diagnosis, regardless of age once the woman is sexually exposed(35-37).Currently, both arranged and opportunistic cervical cancer screening are available(35).

WHO 2021 recommends for general population HPV DNA detection in a screen- and treat or screen, triage and treat approach starting at age of 30years with regular screening every 5 to 10 years. For those living with HIV HPV DNA detection in a screen, triage and treat approach starting at the age of 25 years with screening every 3 to 5 years(37).

Recent studies have shown that over 80% of cervical cancer cases are detected at advanced stages of cancer due to a low level of knowledge about the disease as well as lack of awareness of available screening methods and indicated that knowledge of women on cervical cancer, cervical cancer screening and perceived susceptibility might influence a women's decision and uptake of cervical cancer screening (1, 4, 12, 22). Studies showed among screened women majority of them being screened due to health professionals' recommendations (5, 16, 38).

Despite government support for health policy, women in underdeveloped nations have a lower rate of cervical cancer screening than those in developed countries: for example, Kampala, Uganda 7%, Nigeria 8.3%, and Kenya 6% respectively. Surprisingly, only 2% of Ethiopian women receive cervical cancer screening, with 90% of women receiving no screening at all (26,

30). Different studies showed FHWs had a high level of knowledge and positive attitude towards CCS. However, CCS uptake was poor (13, 14, 16, 38).

Healthcare providers in hospitals and health centers constitute the most visible, front-line personnel providing health education to patients and the general population. Since they play an integral role in educating women in the prevention of diseases, they can also influence cervical cancer screening adherence and health promotion among women. Few studies have been done in Addis Ababa to assess utilization of cervical cancer screening service and influential factors among the health care providers.(39, 40).

The burden of cervical cancer extends beyond the impact of the disease itself, to the resources devoted to cervical cancer screening(4). Health workers are the trusted source of medical information and their attitude and practice toward diseases of public health importance like cervical cancer are very critical if the country must make progress toward the prevention of such diseases. This research will assess the utilization and influencing factors among female health workers serving in AA public health institutions(41, 42).

Research questions

1. What is the magnitude of cervical cancer screening service utilization among female health professionals in Addis Ababa, Ethiopia?
2. What are the influencing factors with the utilization of cervical cancer screening among female health professionals in Addis Ababa, Ethiopia?
3. Which factors has strong association for the utilization of cervical cancer screening service among female health professionals in Addis Ababa, Ethiopia?

1.2.Significance of the Study

The primary beneficiary from this research is the female health professionals.

Though there are different studies conducted to assess knowledge, attitude and practice on community level, few studies on assessment of influential factors for the low uptake of screening by health professionals and inconsistent findings. Several community level studies demonstrate that among the reasons being screened was health professional's recommendation had great contribution.

- The purpose of this study will assess the health professional's cervical cancer screening service utilization and what determines it and which help to encourage their clients and will play great role at community level because they are the one who initiate and teach their clients. Since Ethiopian screening strategy is opportunistic and arranged. They will act as role model.
- As part of society they are at risk and will help them to be screened as brain-storming.
- The findings will be used to form basis for further researches and to plan strategies to forward possible solutions for influential factors.

Scope of the study

To make the study more manageable and feasible, the study will be delimited only on Government Health institutions in Addis Ababa. The reason to focus only on health professionals is that female health workers are key for community awareness creation and promotion and also act as role model. Those health care providers who work at health centers and primary hospitals encounter almost most of patients before they referred to tertiary institutions and if their knowledge and utilization of screening UpToDate they will offer the service for their clients.

It is difficult to conduct in all health workers who work in Addis Ababa institutions both government as well as private because it needs much time and budget.

2. LITERATURE REVIEW

Cervical cancer remains a major cause of morbidity and mortality among women in the world. Early screening for cervical cancer is crucial in the reduction of women's deaths. Health professionals have a significant contribution to improve cervical cancer screening practice among women and can act as role model to their clients (8, 14).

A cross-sectional study by AL-Amro et al from Jordanian, in 2020 found out only 156 (31.2%) of Jordanian women had been screened for cervical cancer. The study also showed that Healthcare provider encouragement was significant predictors of cervical cancer screening. To improve cervical screening uptake, structured screening program needs to be implemented(43).

An institution-based cross-sectional study which assessed the knowledge and practice of cervical cancer screening among female health care workers in one of Indian teaching hospital,2020 which shows Majority of the participants (94%) had knowledge that cervical cancer is the commonest female genital cancer (100% in doctors, 88% in nurses). Cervical cancer can be detected at early stage, even when symptomless was agreed fully by doctors but 74% in nurses. This has an impact on early screening. Knowledge on age for screening up to 65 years, periodic screening at intervals and pelvic examination was not fully agreed by both doctors and nurse. Risk factors knowledge was more in doctors than nurses, on various factors varied from 42-84% like, having many sexual partners, sexual transmission, but smoking, OC pills as risk was known in less than 50% in both. Doctors were more aware than nurses *P* value = 0.06 significant.

Awareness about HPV vaccine and screening was known fully in doctors but only 72% of nurses.

Practices of cervical cancer screening and HPV vaccination in health care providers were not up to expectations, similar to in other studies which is low. Reason for not getting pap smear done in majority of subjects was not feeling necessity (58%), not feeling at risk, lack of symptoms and being shy to have pap smear. HPV Vaccine has been received in only 2%, others feeling not necessary and concerned about safety in 76% doctors, financially costly in 48% nurses (39).

There was a study conducted for assessment of perception and utilization of cervical cancer screening services among health workers in Low resources setting based on this study the most common symptom of cervical cancer identified was postcoital bleeding (57%). Nursing training was the most common (73.5%) source of cervical cancer information. Utilization of cervical cancer screening was poor in this study as only 20.6% of the respondents had ever undergone screening. The most common reason for no screening was that they have not thought of it (28.4%)(27).

A descriptive, cross-sectional study by Anyebe and ital. in 2014 conducted on the knowledge, attitude and practice of cervical cancer screening among female nurses in Ahmadu Bello University Teaching Hospital Zaria, revealed that awareness and knowledge of the cervical cancer screening was very high but they exhibited indifference and negative attitude, and low personal screening practices. Several reasons were put forward for this low level of practice among which were fears of test being positive and non-consent from husbands(44).

A systematic review was conducted on factors influencing cervical cancer screening practice among female health workers in Nigeria in 2020 which revealed FHWs had a high level of knowledge and positive attitude towards CCS. However, CCS uptake was poor. Predominant barriers to CCS uptake were the cost of screening, fear of positive results, lack of test awareness, reluctance to screen, low-risk perception, and lack of time. In contrast, being married, increasing age, awareness of screening methods, and physician recommendation were the most documented facilitators. This study revealed that a complex interplay of socioeconomic, structural, and individual factors influences CCS among FHWs in Nigeria(38).

Different studies showed females play role model(14, 22, 26, 33) Considering the role that health care workers play in communicating health behaviors to the general public, strengthening health education interventions for this group of females is essential(26, 38, 45).

In 2018,a descriptive study on knowledge, attitude and practice of Nigerian Specialist doctors in training of cervical cancer and its screening showed the knowledge of the participants regarding cervical cancer and its screening is very good, with an average of 98%, but their attitude toward cervical cancer screening is poor as only 7 (14%) had ever recommended a woman for cervical cancer screening.

The practice of cervical cancer screening among the participants is poor as only 5 (22.7%) of the 22 female doctors in training had ever screened for cervical cancer and only one male specialist doctor in training out of the 28 of them had the partner screened for cervical cancer before this study. Only 4 (9%) of the 28 males had ever recommended cervical cancer screening to their female partner and 44 (88%) of the specialist doctors in training had never spoken to any organization about cervical cancer screening (42).

A systematic review and meta-analysis were conducted on total of 44 studies with 28,186 study participants were included to determine the impact of knowledge and attitude on the prevalence of cervical cancer screening service utilization rates among Ethiopian women in 2020 and overall information regarding the prevalence of cervical cancer screening service utilization was obtained from various regions of the country. Ten of the studies involved participants from the Amhara region, eleven from the Oromia region, nine from the SNNPR, four from Tigray, **eight from Addis Ababa,** one study involving participants from the Amhara, SNNPR and Afar regions, and another study involving participants **countrywide**. Regarding sampling, all of the studies used the probability sampling technique. In this study the estimated pooled prevalence of cervical cancer screening service utilization was 8.11% (95% CI). The prevalence of cervical cancer screening service utilization was higher among HIV-positive women, 16.85%, and in studies conducted among health care workers, 10.24%, than the general population. The pooled effect of knowledge on the utilization of cervical cancer screening tests among Ethiopian women was statistically significant (AOR = 3.20, 95% CI: 1.63, 6.31). Similarly, the pooled estimated odds of utilizing cervical cancer screening tests were 6.1 times higher (AOR = 6.09, 95% CI: 1.09, 34.36) among women who had a favorable attitude towards the screening test(34).

In 2020 another systematic review and meta-analysis were conducted on total of 25 studies with 18, 067 eligible women were included in this study. The pooled national cervical cancer screening utilization was 14.79% (95% CI: 11.75, 17.83). The highest utilization of cervical cancer screening (18.59%) was observed in Southern Nations Nationalities and Peoples' region (SNNPR), and lowest was in Amhara region (13.62%).

The sub-group analysis showed that the pooled cervical cancer screening was highest among HIV positive women (20.71%). This meta-analysis also showed that absence of women's formal education reduces cervical cancer screening utilization by 67%.

Women who had good knowledge towards cervical screening, perceived susceptibility to cervical cancer, severity to cervical cancer and those with a history of sexually transmitted infections (STIs) were more likely to utilize cervical cancer screening. Additionally, the major barriers of cervical cancer screening utilization were considering oneself as healthy (48.97%) and lack of information on cervical cancer screening (34.34%)(28).

A Journal of cancer research reveals Factors Affecting the Practices of Cervical Cancer Screening among Female Nurses at Public Health Institutions in Mekelle Town, 35.6% reported that only HPV was an important predisposing factor for cervical cancer. More than one-third (38.1%) and 26.6% of the respondents knew that age and multiple sexual partner as a predisposing factor, respectively. With regard to signs and symptoms of cervical cancer, more than one-third (45.8%) of the study participants mentioned vaginal bleeding as one of the signs of cervical cancer. 76.4% know at least one preventive measure of cervical cancer. On the other hand, only 43.1% of the study participants knew that the preventive measure for cervical cancer is avoidance of predisposing factors. 63.1% have positive attitudes towards cervical cancer screening. 10.7% nurses reported that they have ever been tested for cervical cancer in the past five years (2009–2014). The most common reasons for not being screened for cervical cancer were carelessness (17.9%), fear of positive result (16.4%), and fear of pain (10.9%), among a list of different reasons(46).

In 2019 a cross sectional study on female healthcare providers' knowledge, attitude, and practice towards cervical cancer screening and associated factors in public hospitals of Northwest Ethiopia revealed that 43.8% had adequate knowledge, 30.7% had a favorable attitude, and 8.7% had regular screening practice(13).

An institution-based cross-sectional study which assessed the knowledge and practice of cervical cancer screening among female health care workers in southern Ethiopia. Was conducted in, 2015 showed out of the total respondents, 86.9% had a good level of knowledge on cervical cancer. Similarly, a majority of them, 89.6%, 87.5%, and 80.4%, knew about the risk factors, symptoms, and outcomes of cervical cancer, respectively.

More than two thirds of the respondents, 283 (77.1%), knew that there is a procedure used to detect premalignant cervical lesions and 138 (37.6%) of them mentioned visual inspection with acetic acid as a screening method. In this study, only 42 (11.4%) of the respondents were

3. OBJECTIVES

3.1. General Objective

- ✓ To assess magnitude of utilization of screening service on cervical cancer and associated factors among female health professionals in Addis Ababa city public health institutions, Ethiopia in 2023GC.

3.2. Specific Objective

- ✓ To determine the utilization of screening service among female health care providers in AA, Ethiopia, 2023GC.
- ✓ To assess factors that influence utilization of cervical cancer screening service among female health care providers in AA, Ethiopia, 2023GC.
- ✓ To suggest possible solutions based on the findings.

4. METHODS

4.1. Study area description

The study was carried out among female health workers in Addis Ababa the capital city of Ethiopia from 05 June to 05 July,2023.

Addis Ababa which was founded in1886 by Emperor Menelik II. Administratively, it is divided into three layers: the city council at the top, 11subcities (counties) in the middle and 117woredas (districts), at the lowest level (26). AA has about 25% of the country's urban population where millions of people with diverse ethnic and religious back grounds live together. Currently estimated population number live in AA city is 4,794,000 from woreda Censes(16). In AA, there are 10(six owned by AA City administrator) governmental hospitals and 101 public health centers.

4.2. Study design and period

An institutional based cross-sectional study was conducted in AA city owned public health institutions from June 05,2023 –July 05,2023G.C.

4.3. Source population

All health professionals working in the Addis Ababa City, public institutions, 2023GC. There are 6 public hospitals under AA city Health Bureau and 101 public health centers.

Currently there are 15,598 health professionals employed under AA city Health Bureau and of these 2550 from hospitals and remaining working at Health centers. The numbers of female health professionals working in the public health facilities in the city (HCs and Hospitals) are 9,509 of these 1,227 medical doctors (general practitioners, specialists and subspecialists), 1,172 midwives, 5,715 nurses, 937 HO and IESO and 457 other health professionals (28).

All health workers comprising doctors, nurses, midwives, pharmacy technicians, pharmacists, and medical laboratory technicians and technologists, and others, aged between 25 and 59 years, and employed in the Addis Ababa city were considered as the source population, while those female health professionals who were employed in the selected health institutions considered as the study population. But female health professionals actually selected for study called Study unit.

4.4. Study population

All female health professionals working in selected AA city public health institutions (HCs and Hospitals) in June 05-July 05,2023GC.

4.5. Inclusion and Exclusion criteria

A. Inclusion criteria

Health professionals (physicians, nurses, and midwives, Laboratory, Anesthesia, pharmacy Environmental health professional, nutritionists, Health Officer and IESO and others) working in Addis Ababa health centers and hospitals.

Age >=25yrs.This age selected because there are recommendations to start screening at age of ≥25years (37).

B. Exclusion criteria

Health professionals absent (on maternity leave, annual leave or training leave) during data collection period was excluded from this study.

4.6. Sampling technique and Sample size

From 101 health centers and 6 hospitals; 64 health centers and 2 hospitals were selected using simple random sampling technique from each sub cities respectively. One of federal owned teaching hospital (St. Paulos Hospital) included. A single population proportion formula was used for the study, $n = (z^2pq/d^2)$, where n is the desired sample size; z is the 95% confidence interval (CI) which was 1.96; p is the proportion the national cervical cancer screening utilization which is (~15%) from systematic review and meta-analysis which was conducted on total of 25 studies with 18, 067 eligible women were included in this study. The pooled national cervical cancer screening utilization was 14.79% (95% CI: 11.75, 17.83) and d is the level of precision desired, set at 0.05. Accordingly, the calculated total sample size was 196. By adding a 10% non-response rate, so the sample size became **n=2**16, considering design effect (2) then the final sample size was **432.** Each sub city has its own HC.

Out of 6 hospitals 2 were selected (by Lottery method). The number of Health works at AA public health institutions compared to health centers, hospitals contribute around 36%.

During sampling each unit was tried to incorporate to get sample from different health professionals working at different departments so as to make more representative and include all health professionals and consideration of field to get at least minimum allowable convent sample size in each subgroup. One of federal owned hospital especially teaching institution by lottery method was included to see if any difference in their staff screening utilization compared to others. This is done purposely.

Table 1: Distribution of Health centers found in AA City administration among each county, 2022GC.

Sub city	Number of HCS	No of HCs that will be selected for study	Remark
Akaki Kality	9	6	Selected from A&B
Gulele	10	6	‘’
Yeka	12	9	‘’
Arada	10	6	‘’
Lemi Kuri	9	6	‘’
Nefas Silk Lafto	10	6	‘’
Kirkos	8	5	‘’
Kolfie	7	4	‘’
Addis Ketema	14	10	‘’
Lideta	6	3	‘’
Bole	6	3	‘’
Addis Ababa		64HCS	‘’

Sample size for each selected health institution was computed as follows using the formula:

ni = Ni x n/N, where: ni =number of female health professionals that are needed from specific health unit/ department in the hospitals.

Ni=total number of female health professionals who are working within specific unit/department

n =calculated sample size and

N = total number of female health professionals in AA public health institutions.

4.7. Research instrument, measurements and data collection

A self-administered structured questionnaire was used for data collection. The role of data collectors was to get verbal consent and to provide questionnaire and recollect after participants responded. Data collectors (BSc holder nurses and Midwives) and Supervisor (MPH holder) from non-staff from study institutions were recruited. The questions aimed to gather information regarding respondent's knowledge on screening for cervical carcinoma, their attitude, practice towards screening for cervical lesion and influencing factors for utilization of screening service. Knowledge and attitude assessed as influential factor for being screened or not; not for the KAP assessment.

A. Assessment of Knowledge (one of influential factor for utilization of screening)

Participants who scored above the mean on knowledge questions were regarded as knowledgeable, and those who scored below the mean were regarded as not knowledge.

B. Assessment of attitude

For attitude also in similar manner, those who scored above the mean were considered to have a favorable attitude and those who scored below the mean had an unfavorable attitude.

C. Utilization assessment: The practice (Utilization) was assessed by looking:

Those who had screened for premalignant cervical lesion for themselves at least once. But those who never screened were regarded as having **not utilized** on screening service (16, 40, 47)**.**

4.8. Study Variables

Dependent Variable: Utilization of cervical cancer screening service.

Independent Variables: Two categories of factors were assessed as independent variables;

- Socio-demographic characteristics:
  - Socio-demographic variables
  - Years of work experience
  - Type of profession
  - Working place
  - Monthly household income(income)
  - Duration of marriage

- Perceived influential factors (knowledge, Attitude, others)

4.9. Operational definitions

Knowledge: the understanding of the respondents regarding to carcinoma of the cervix with respects to symptoms, risk factors, screening methods, prevention and treatment.

Attitude: the belief and feeling of the respondents about screening for premalignant cervical lesions

Practice/Utilized: The action taken by individual respondents to go for screening/for herself weather screened or not. Those who had screened for herself considered as utilized.

Knowledgeable: Participants who score above the mean value on knowledge questions were regarded as knowledgeable, and those who scored below the mean were regarded as not knowledgeable.

Favorable Attitude: Health professionals who score above the mean value on attitude questions were considered positive attitude towards cervical cancer screening.

Barriers= circumstance or obstacle that keeps or hinders people action achieving, using or performing an activity.

Uptake = alternatively used as Utilization in this context.

Utilization/utilized= Those female health professionals who had screened for Premalignant cervical cancer.

4.10. Data Quality Control and Management

To ensure data quality, an English version of the questionnaire was translated to Amharic (the local language) and training was given for both data collectors and supervisor regarding the aim of the study and data collection procedures, and a pre-test was conducted among 22(5% of total sample size) female HCWs outside of the selected health institutions. Moreover, the data collection process was checked by supervisor and investigator on a daily basis to ensure data completeness and consistency.

The collected questionnaire was checked manually for its completeness, coded, and entered into Epi-Info version 4.6 statistical package, then exported to SPSS version 25 for further analysis. Descriptive and summary statistics were done. Both bivariate and multivariate logistic regression analyses were used to determine the association of each independent variable with the dependent variable. Variables significant in bivariate analysis (P-value $\leq$ 0.25) were entered into a multivariate logistic regression model to adjust the effects of confounders on the outcome variable. Odds ratios with their 95% confidence intervals (CIs) were computed to identify the presence and strength of association, and statistical significance was declared if $P<0.05$.

5. RESULT

5.1. Sociodemographic characteristics of the study participants

In this study 432 participants were involved making a response rate of 100%. Two third, 276(63.9%) of the study participants were work in health center. More than half,249 (57.6%) of the study participants were<30 years old and 284(65.7%) were orthodox in religion. Fifty four percent of the study participants were married and 235(54.4%) were nulliparous. Eight six percent (n=372) were non-physician health provider and regarding to specific department, nurse accounts 243(56.3%) followed by midwife,58 (13.4%), HO,41 (9.5%) and general practitioner,36 (8.3%). and majority (46.1%, n=199) had ≤5 years of experience. Sixty percent (n=260) were work out of obstetrics and gynecology unit and 248(57.4%) had a house hold monthly income of 5000-10000 ETB.

Table 2. The sociodemographic characteristics of female health providers working in Addis Ababa public health facilities, 2023.

Variable	Frequency	Percent
Study setting: Health center	276	63.9
Hospital	156	36.1
Age of the study participants <30years	249	57.6
≥30years	183	42.4
Religion: Orthodox	284	65.7
Muslim	71	16.4
Protestant	73	16.9
Catholic	4	0.9

Table 2: Cont.…

Variable	Frequency	Percent
Marital status		
Single	192	44.4
Married	234	54.2
Divorced	6	1.4
Parity		
Nulliparous	235	54.4
One	69	16.0
Two	81	18.8
Three	37	8.6
Four	9	2.1
Five	1	0.2
Professional designation		
Physician	60	13.9
Non-physician health provider	372	86.1
Specific types of profession		
GP	36	8.3
Specialist	24	5.6
Nurse	243	56.3
Midwife	58	13.4
HO &IESO	41	9.5
Other (pharmacy, Lab., Anesthesia…)	30	7.0
Year of service		

≤5 years	199	46.1
6-10 years	171	39.6
11-15 years	44	10.2
>15 years	18	4.2
Unit of working		
Obstetrics and gynecology (ANC, LW, ward, Gyn OPD)	94	21.8
Cervical screening service room	33	7.6
ART &TB	24	5.6
other than OBGYN (OPD, ward, ICU, OR)	260	60.2
Others	21	4.9
Your partner educational status		
able to read and write	8	3.4
Primary	6	2.6
Secondary	13	5.6
College and above	207	88.5
Your partner profession for those educated college and above		
Health professional	86	41.5
Other than health	121	58.5
House hold monthly income in birr by New World Bank country classification by income 2022		
<5000	28	6.5
5000-10000	248	57.4
10000-50000	126	29.2
>50000	30	6.9

5.2A. Knowledge of the study participants on cervical cancer screening

Majority of (89.6%, n=387) the participants knew the etiology of cervical cancer and 84.7%, 71.1%,72.5% and 44.9% of them mentioned having multiple sexual partner, early age sexual experience, Persistent HPV infection, and smoking cigarette as a risk of cervical cancer. Around 84.5% and 68.5% of the participants knew role of HPV vaccine and screening and early treatment of premalignant cervical lesion to prevent cervical cancer respectively. Almost all the participants (93.5%, n=404) heard about premalignant cervical lesion screening. Among participants who had the information about screening modality of premalignant cervical lesion, 82.4%,68.6% and 36.9%heard about pap smear, VIA and HPV DNA test respectively. Almost 2/3rd of the participants knew the recommended interval of repeat cervical cancer screening and 54.2% of the participants knew the recommended age cervical cancer screening should be done. Two-third (68.3%) of the participant believed that cervical cancer detected at an early stage due to obvious symptoms and 94.0% knew that premalignant lesion and cervical cancer can be treatable.

Table 3. The knowledge related characteristics of the study participants about cervical cancer and its screening, among female health workers in AA, Ethiopia,2023.

Variable	**Frequency**	**Percentage**
know about HPV infection as cause/etiology of cervical cancer		
Yes	387	89.6
No	45	10.4
Participants knowledge on the risk factors of cervical cancer		
Multiple sexual partners	366	84.7
Early sexual intercourse experience	307	71.1
HPV infection (Persistent)	313	72.5
Smoking cigarettes	194	44.9
The participants knowledge on cervical cancer prevention (n=432)		
Vaccination	365	84.5
Behavioral change	228	52.8
Screening	296	68.5
Early detection and treatment of pre-cancerous cervical lesions	257	59.5
Have you ever heard of premalignant cervical lesion screening?		
Yes	404	93.5
No	28	6.5
Among participants who knew cervical lesion screening modalities(n=404)		
Pap smear/Cytology	333	82.4
Visual inspection of the cervix (VIA) by applying acetic acid	277	68.6
Human papilloma virus DNA testing	149	36.9
Participants who Know recommended interval of cervical cancer screening(3-5years)		
Yes	262	60.6
No	170	39.4
Are you a candidate for premalignant cervical lesion screening?		
Yes	320	74.1
No	102	23.6
Didn't know	10	2.3
Do you know the targeted age group(30-49yrs.) for cervical cancer screening in our country (≥30 years)		
Yes	234	54.2
No	198	45.8
Cervical cancer can usually be found at an early stage due to obvious symptoms		
Yes	295	68.3
No	127	29.4
didn't know	10	2.3
IS it possible to treat premalignant lesion and cervical cancer?		
Yes	406	94.0
No	20	4.6
didn't know	6	1.4
The method of treatment used for premalignant lesion and cervical cancer (n=406)		
Cryotherapy	270	66.5
Surgery	272	67
Chemotherapy	279	68.7
Radiotherapy	168	41.4

Table 4. Knowledge of participants about cervical cancer screening among female health workers at Public Health Institutions in AA, Ethiopia,2023.

K_score

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	poor knowledge	198	45.8	45.8	45.8
	good knowldge	234	54.2	54.2	100.0
	Total	432	100.0	100.0	

Key: Poor knowledge=Not knowledgeable

Good Knowledge=Knowledgeable

5.3. Study participants attitude on cervical cancer screening

Mean score was used to calculate the level of attitude and participants who score above the mean were considered as favorable attitude. Accordingly, 63%of the participants had favorable attitude towards Premalignant cervical lesion screening.

Table 5: Factors associated with the practices of cervical cancer screening among female health care providers at Public Health Institutions in AA, Ethiopia,2023.

Variables	SA	A	N	D	SD	**Mean**
Cervical cancer is highly prevalent in our country and one of the leading causes deaths	257(59.5)	156(36.1)	12(2.8)	6(1.4)	1(0.2)	14.9
Any young woman including you can acquire cervical cancer?	224(51.9)	178(41.2)	20(4.6)	3(1.6)	3(0.7)	
Screening of premalignant lesion of the cervix will help in prevention of cervical cancer	277(64.1)	133(30.8)	11(2.5)	7(1.6)	4(0.9)	
Screening service is good if done by female healthcare providers?	180(41.7)	132(30.6)	74(17.1)	33(7.6)	13(3)	

Table 5.4 A. Shows subgroup analysis findings of screening service utilization among each participant, health professionals working at public health facility in AA, Ethiopia 2023GC.

Professional designation	**Have you ever been screened for premalignant cancer of the cervix?**		
	Yes	**No**	**Total**
Physician: GP	5	31	36
% within professional designation	13.9	86.1	**100.0**
% within have you ever been screened for premalignant cancer of the cervix?	6.0	8.9	8.3
Specialist	5	19	24
% within professional designation	20.8	79.2	100.0
% within Have you ever been screened for premalignant cancer of the cervix?	6.0	5.5	5.6
Nurse	54	189	243
% within professional designation	22.2	77.8	100.0
% within Have you ever been screened for premalignant cancer of the cervix?	64.3	54.3	56.3
Midwife	11	47	58
% within professional designation	19.0	81.0	100.0
% within have you ever been screened for premalignant cancer of the cervix?	13.1	13.5	13.4
HO&IESO	7	34	41
% within professional designation	17.1	82.9	100.0
% within have you ever been screened for premalignant cancer of the cervix?	8.3	9.8	9.5
Others	2	28	30
% within professional designation	6.7	93.3	100.0
% within have you ever been screened for premalignant cancer of the cervix?	2.4	8.0	6.9

Table 5.4B. Shows knowledge versus screening service utilization among health professionals working at public health facility in AA, Ethiopia 2023GC.

K-Score	Have you ever been screened for premalignant cancer of the cervix?		
	Yes	NO	Total
Not knowledgeable	25	173	198
% within K-score	12.6%	87.4%	100.0%
% within have you ever been screened for premalignant cancer of the cervix?	29.8%	49.7%	45.8%
Knowledgeable (good knowledge)	59	175	234
% within K-score	25.2%	74.8%	100.0%
% within have you ever been screened for premalignant cancer of the cervix?	**70.2%**	50.3%	**54.2%**
Total	84	348	432
% within K-score	19.4%	80.6%	100.0%
% within Have you ever been screened for premalignant cancer of the cervix?	100.0%	100.0%	100.0%

In this study 19.4%(n=84/342) of participants and 31.15%(n=57/183) among targeted age group was screened at list once about premalignant cervical cancer. Among those who utilized screening service; 48.8% were motivated by awareness of screening method, 26.2% were screened due to physician recommendation and 11.9% were due to having of cervical cancer

Table 5.5: The main reasons for those not utilized screening services among targeted age group(30-49years) in AA, Ethiopia;2023

Main reason not to be screened	Will you screen if you get remainder text through your phone?				
	Yes	No	Did not sure	Total	Percentage
Lack of attention	16	6	19	41	**32.5(41/126)**
Feeling of healthy/ the feeling of low risk perception	15	4	13	32	25.4%
Fear of pain	12	10	6	28	22.2
Lack of test awareness	2	1	2	5	4
Fear of positive result	1	1	5	7	5.6
Cost of screening	0	0	2	2	1.6
Inconvenient setup for examination	1	0	2	3	2.4
Lack of confidence in the quality of care	2	0	6	8	6.3
Total	49	22	55	126	100.0

5.6. Determinant of utilization of cervical cancer screening among female health providers of AA, Ethiopia in 2023.

Age, marital status, year of experience, working unit, attitude, knowledge of cervical cancer etiology and risk factor, method of screening and management of cervical cancer were had an association with its utilization on bivariate logistic regression. The multivariate logistic regression revealed that study participant whose age of ≥30 years had 1.6 folds increase it's screening compared to age<30 years (AOR=1.6, 95%CI=1.15, 3.37) and participant who were married had 6.1 times increase the cervical cancer screening compared to single (AOR=6.1, 95%CI=2.42, 15.06). Study participants whose experience increase as there screening of cervical cancer significantly increase. Study participant who works in cervical cancer screening units had 3.7 folds increase their screening compared to those of working other than obstetrics and gynecology unit (AOR=3.7, 95%CI=1.01, 12.12) and study participants who knew etiology of cervical cancer screening had 1.6 folds chance of being screened for cervical cancer than its counterparts (AOR=1.6, 95%CI=1.01, 12.12). Study participants who knew cigarette smoking as risk factor of cervical cancer had 4.1folds chance of utilizing screening service than its counterparts (AOR=4.1, 95%CI=1.68, 9.76) and participant who knew visual inspection method of cervical cancer screening had 14.2 times screened than those did not know it (AOR=14.2, 95%CI=3.77, 53.32).

Table 5.6. The bivariate and multivariate logistic regression of association between cervical cancer screening utilization and independent variable among female health provider who works in Addis Ababa health facilities,2023.

Variable	Ever screen premalignant cervical cancer		p-value	COR with 95%CI	P-value	AOR with 95%CI
	Yes	No				
Study setting						
Health center	63	213	0.019	1.9(1.11, 3.26)	0.576	1.3(0.56, 2.81)
hospital	21	135	1		1	
Age of the study participants						
<30	27	222	1		1	
≥30	57	126	0.000	3.7(2.24, 6.18)	0.025	**1.6(1.15, 3.37)**
marital status						
single	9	183	1			
married	74	160	0.000	9.4(4.56, 19.39)	0.000	**6.1(2.42, 15.06)**
divorced	1	5	0.221	4.1(0.43, 38.54)	0.668	2.2(0.06, 73.46)
Year of service						
<=5 years	13	186	1		1	
6-10 years	44	127	0.000	4.9(2.57, 9.58)	0.004	**3.8(1.54, 9.12)**
11-15 years	21	23	0.000	13.1(5.78, 29.55)	0.000	**13.2(4.03, 43.33)**
>15 years	6	12	0.001	7.2(2.31, 22.14)	0.039	**5.4(1.09, 26.36)**
Working unit						
Obstetrics and gynecology unit	16	78	1			
Cervical screening room	21	12	0.000	8.5(3.50, 20.78)	0.035	**3.7(1.10, 12.78)**
ART &TB	8	16	0.082	2.4(0.89, 6.66)	0.145	2.8(0.69, 11.49)
OPD, ward and OR	38	222	0.579	0.83(0.44, 1.58)	0.176	0.52(0.21, 1.34)
pharmacy, lab and anesthesia	7	23	0.143	0.29(0.23, 9.95)	0.114	0.47(0.01, 1.69)
Know that HPV cause/ etiology of cervical cancer						
yes	79	308	0.143	2.1(0.78, 5.37)	0.014	**1.6(1.01, 12.12)**
no	5	40	1			
Early sexual intercourse risk factor for cervical cancer						
yes	66	241	0.093	1.6(0.92, 2.88)	0.114	0.47(0.19, 1.19)
no	18	107	1			
HPV infection risk factor cervical cancer						
yes	68	245	0.054	1.8(0.98, 3.23)	0.957	1.1(0.36, 2.94)
no	16	103	1		1	
Smoking cigarettes risk factor for cervical cancer						
yes	51	143	0.001	2.2(1.36, 3.61)	0.002	**4.1(1.68, 9.76)**
no	33	205	1		1	

Table 5.6 cont.…

Behavioral change prevents cervical cancer						
yes	57	171	0.002	2.2(1.32, 3.62)	0.757	1.2(0.46, 2.87)
no	27	177	1			
Screening is preventive method of cx ca						
yes	65	231	0.053	1.7(0.99, 3.03)	0.923	0.95(0.36, 2.56)
no	19	117	1			
Early detection of pre-cancerous cervical lesions preventive for cervical cancer						
yes	58	199	0.048	1.7(1.00, 2.78)	0.757	0.88(0.38, 2.03)
no	26	149	1			
Know cervical cancer by visual inspection of the cervix						
yes	77	200	0.000	7.8(3.28, 18.36)	0.000	**14.2(3.77, 53.32)**
no	6	121	1			
Know premalignant cervical cancer by HPV DNA						
yes	39	110	0.033	1.7(1.04, 2.77)	0.397	0.69(0.29, 1.61)
no	44	211	1			
Know the frequency of cervical cancer screen						
no	18	152	1			
yes	66	196	0.000	2.8(1.62, 4.99)	0.690	0.98(0.42, 2.28)
Know the WHO recommended cervical cancer screening age						
yes	55	179	0.021	1.8(0.9, 2.94)	0.941	1.0(0.49, 2.16)
no	29	169	1			
Cryotherapy is treatment given for premalignant cervical lesion						
yes	66	204	0.001	3.6(1.62, 5.78)	0.195	1.8(0.74, 4.34)
no	13	123	1			
Radiotherapy treatment given for premalignant cervical lesion						
yes	43	125	0.009	19(1.18, 3.17)	0.043	2.1(0.46, 2.16)
no	36	202	1			
Attitude of cervical cancer screen						
unfavorable attitude	23	137	1			
favorable attitude	61	211	0.043	1.7(1.02, 2.91)	0.998	0.99(0.46, 2.16)

6. Discussion

This study was conducted to assess cervical cancer screening utilization among female health professionals working in public health institutions of AA, Ethiopia. Accordingly, the prevalence of cervical cancer screening utilization was found to be 31.15% among targeted age and 19.4% among the total participants with (95% CI: 1.397-3.896). Knowledge about cervical cancer screening was one of a significant predictors of cervical cancer screening utilization. Women who had good knowledge about cervical cancer screening were 2.3 times more likely to utilize cervical cancer screening compared to women who had poor knowledge with 95% CI (1.397-3.896).

This finding was in line with studies done in Nigerian Specialist physician (22.7%) and Lagos, Nigeria (18.5%) (18); in Baghdad city (18.8%) and the study carried out among staff nurses in teaching hospitals of India (20%), but higher than that of the finding in eastern India (11.6%), Korea (13%) and South Ethiopia (11.4%) &North Ethiopia (10.7%) (12-18, 23 &25).

The prevalence of screening utilization to targeted age group 31.15% is higher compared to study conducted in AA (25%) time and place of the study is also another possible explanation for this difference. The availability of screening services (35).

However, this finding was lower than studies done in Japan (54.7%), United State (71%), and Cameroon (43.48%). This inconsistency might be the difference in age of the participant. In our study, participants' age was ≥25years whereas, a study in Japan was among 20-30 years; United States includes 45-65 years and Cameroon include 25-65 years. The availability of screening modalities, difference in study population and participants' knowledge (27-29).

Another reason for the difference s might be socio-demographic factors; people living in Japan and United States have a high quality of life as compared to our study participants, implying that they might give more weight to their health which provides a high chance to be screened for cervical cancer. Evidence showed people living in USA and Japan had a high quality of life as compared with all countries. The different levels of knowledge and attitude toward cervical cancer screening practices among the respondents (level of knowledge in Nigerian specialis,98% knew HPV as etiology for cervical cancer but in this study bit a lower,89.6%) one of associated factor being screened is knowledge.

Within each profession, among nurse's 22.2%, and among specialist (physicians) 20.8% were utilized screening service for premalignant lesion of cervix. The prevalence screening among nurses a bit higher possibly due to in our setup nurses assigned in screening room, availability of screening modalities VIA; which is seen in multivariate has significant association, working unit with being screened. When this finding compared to study done on Nigerian specialist almost comparable (22.7%) (16). Study participant who worked in cervical cancer screening units had **3.7 folds** increase their screening compared to those of working other than obstetrics and gynecology unit (AOR=3.7, 95%CI [1.01, 12.12]) and study participants who knew about etiology of cervical cancer had 1.6 folds screened than its counterpart (AOR=1.6, 95%CI=1.01, 12.12) which is congruent to findings conducted in Mekele (place of work) (23). Study participants who knew cigarette smoking as risk factor of cervical cancer had **4.1folds** utilization of screening service than its counterpart (AOR=4.1, 95%CI=1.68, 9.76) and participant who knew visual inspection method of cervical cancer screening had **14.2 times** screened than its counterpart (AOR=14.2, 95%CI=3.77, 53.32).

Less than one-fourth (19.4%) of study participants and 31.15% of targeted age group were utilized cervical cancer screening. Which is low compared to WHO recommendation for developing countries by 2030 to screen 70% community level but in this study, those expected to be role model their utilization too low. The top common reasons for not utilized of cervical cancer screening were feeling healthy and lack of attention respectively. Unfortunately, around 61% of those respond as lack of attention as a reason even they were not ready to utilize if they got remainder text through their phone.

7. Limitation of the study

This study is a cross-sectional in nature, the findings could not secure a cause–effect relationship. And also, it would not dig out the hidden factors that possibly affect the attitude of the participant, so difficult to generalize.

There was also selection bias.

8. Conclusion and Recommendation

There was low screening service utilization and the top common reasons not utilizing were lack of attention and feeling healthy while those screened were motivated by awareness about screening methods and physician recommendation. Lack of attention was the leading reason among age group of >=30yrs. unfortunately, more than 60% did not decide to be screened if they get reminder text through their phone.

Age, marital status, year of experience, working unit, knowledge of cervical cancer etiology, knowing of risk factor, screening modalities and management of cervical cancer were had an association with its utilization by Multivariate logistic regression.

Therefore, this finding urges the AA Health Bureau, the Ethiopia Ministry of Health, and any interested non-governmental organizations to give special attention to reviewing the undergoing prevention strategies and to providing training for female staff to improve the knowledge, attitude, and practice of cervical cancer screening and to strengthen cervical cancer screening education programs. Likewise, we recommend the Ministry of health and Ministry of education collaborate to evaluate the cervical cancer issue in educational curricula. There were around 6.5% of participants (28 in number) (health care providers who had not heard about premalignant cervical cancer screening). Teaching institutions should support health professionals by providing special orientation programs to sensitize them.

In addition, the researcher recommends qualitative studies to explore some concealed behaviors of participants regarding cervical cancer screening.

9. REFERENCES

1.Al Kalbani R, Al Kindi R, Al Basami T, Al Awaisi H. Cervical cancer-related knowledge and practice among Omani women attending a family medicine and public health clinic. Oman Medical Journal. 2022;37(3):e374.

2.Berek JS. Berek & Novak's gynecology: Lippincott Williams & Wilkins; 2019.

3.Canfell K, Kim JJ, Brisson M, Keane A, Simms KT, Caruana M, et al. Mortality impact of achieving WHO cervical cancer elimination targets: a comparative modelling analysis in 78 low-income and lower-middle-income countries. The Lancet. 2020;395(10224):591-603.

4.Wilailak S, Kengsakul M, Kehoe S. Worldwide initiatives to eliminate cervical cancer. International Journal of Gynecology & Obstetrics. 2021;155:102-6.

5.Dessalegn Mekonnen B. Cervical cancer screening uptake and associated factors among HIV-positive women in Ethiopia: a systematic review and meta-analysis. Advances in Preventive Medicine. 2020;2020.

6.Bhatla N, Aoki D, Sharma DN, Sankaranarayanan R. Cancer of the cervix uteri: 2021 update. International Journal of Gynecology & Obstetrics. 2021;155:28-44.

7.Nguyen DT SK, Keane A, Mola G, Bolnga JW, Kuk J, Toliman PJ, Badman SG, Saville M, Kaldor J, Vallely A. . Towards the elimination of cervical cancer in low-income and lower-middle-income countries: modelled evaluation of the effectiveness and cost-effectiveness of point-of-care HPV self-collected screening and treatment in Papua New Guinea. . BMJ global health e007380. 2022 Mar 1;;7(3):.

8.Yimer NB, Mohammed MA, Solomon K, Tadese M, Grutzmacher S, Meikena HK, et al. Cervical cancer screening uptake in Sub-Saharan Africa: a systematic review and meta-analysis. Public Health. 2021;195:105-11.

9.Getachew S, Getachew E, Gizaw M, Ayele W, Addissie A, Kantelhardt EJ. Cervical cancer screening knowledge and barriers among women in Addis Ababa, Ethiopia. PloS one. 2019;14(5):e0216522.

10.Chali K, Oljira D, Sileshi T, Mekonnen T. Knowledge on cervical cancer, attitude toward its screening, and associated factors among reproductive age women in Metu Town, Ilu Aba Bor, South West Ethiopia, 2018: community-based cross-sectional study. Cancer Reports. 2021;4(5):e1382.

11.Zhang X, Zeng Q, Cai W, Ruan W. Trends of cervical cancer at global, regional, and national level: Data from the Global Burden of Disease study 2019. BMC public health. 2021;21(1):1-10.

12.Health. FDRoEMo. Guideline for cervical cancer prevention and control in Ethiopia. . health Mo, editor Ethiopia 2015 Jan.

13.Abebaw E, Tesfa M, Gezimu W, Bekele F, Duguma A. Female healthcare providers' knowledge, attitude, and practice towards cervical cancer screening and associated factors in public hospitals of Northwest Ethiopia. SAGE open medicine. 2022;10:20503121221095931.

14.Dulla D, Daka D, Wakgari N. Knowledge about cervical cancer screening and its practice among female health care workers in southern Ethiopia: a cross-sectional study. International journal of women's health. 2017;9:365.

15.Bruni L B-RL, Albero G, Serrano B, Mena M, Gómez D, Muñoz J, Bosch FX, de Sanjosé S. ICO/IARC Information Centre on HPV and Cancer (HPV Information Centre). Ethiopia: Human Papillomavirus and Related Diseases in Ethiopia. . Summary Report 27 July 2017.

16.Kress CM, Sharling L, Owen-Smith AA, Desalegn D, Blumberg HM, Goedken J. Knowledge, attitudes, and practices regarding cervical cancer and screening among Ethiopian health care workers. International journal of women's health. 2015;7:765.

17.Toru T, Zeleke B, Tegegn T, Birlew T. Cervical cancer screening utilisation and associated factors among women aged 30 years and above in southern Ethiopia, cross-sectional study, 2020. Southern African Journal of Gynaecological Oncology. 2022;14(1).

18.Winer RL, Lee S-K, Hughes JP, Adam DE, Kiviat NB, Koutsky LA. Genital human papillomavirus infection: incidence and risk factors in a cohort of female university students. American journal of epidemiology. 2003;157(3):218-26.

19.Asseffa NA. Cervical cancer: Ethiopia's outlook. J Gynecol Womens Health. 2017;5(2):555660.

20.Akunga DN, Wanyoro A, Wanyoro AK. Individual Attributes Influencing Cervical Cancer Screening Services in Selected Health Facilities in Machakos County. 2018.

21.Getaneh A, Tegene B, Belachew T. Knowledge, attitude and practices on cervical cancer screening among undergraduate female students in University of Gondar, Northwest Ethiopia: an institution based cross sectional study. BMC Public Health. 2021;21(1):1-9.

22.Organization WH. WHO technical guidance and specifications of medical devices for screening and treatment of precancerous lesions in the prevention of cervical cancer. 2020.

23.Wasiyhun TS, Beyene MG, Deghebo AD, Getachew T, Zeleke GT, Tesema TT, et al. Availability and readiness of cervical cancer screening service at health facilities in Ethiopia. Ethiopian Journal of public health and nutrition. 2021;4(2):141= 5-= 5.

24.Simms KT, Steinberg J, Caruana M, Smith MA, Lew J-B, Soerjomataram I, et al. Impact of scaled up human papillomavirus vaccination and cervical screening and the potential for global elimination of cervical cancer in 181 countries, 2020–99: a modelling study. The lancet oncology. 2019;20(3):394-407.

25.Mboumba Bouassa R-S, Prazuck T, Lethu T, Jenabian M-A, Meye J-F, Bélec L. Cervical cancer in sub-Saharan Africa: a preventable noncommunicable disease. Expert review of anti-infective therapy. 2017;15(6):613-27.

26.Desta AA, Endale ZM, Aklil MB. Cervical cancer screening utilization and associated factors among women of 30–65 years in Girar Jarsoo district North shoa, Ethiopia, 2021. Clinical Epidemiology and Global Health. 2022;15:101048.

27.Anttila A, Ronco G, Clifford G, Bray F, Hakama M, Arbyn M, et al. Cervical cancer screening programmes and policies in 18 European countries. British journal of cancer. 2004;91(5):935-41.

28.Desta M, Getaneh T, Yeserah B, Worku Y, Eshete T, Birhanu MY, et al. Cervical cancer screening utilization and predictors among eligible women in Ethiopia: A systematic review and meta-analysis. PloS one. 2021;16(11):e0259339.

29.Dirirsa DE, Asefa EY, Awol Salo M. Utilization of cervical cancer screening service and associated factors among women of reproductive age group in Ilu Abba Bor zone, southwestern Ethiopia, 2019: Cross-sectional study. SAGE open medicine. 2022;10:20503121221094904.

30.Suba EJ, Raab SS, Project VACCP. Papanicolaou screening in developing countries: an idea whose time has come. American journal of clinical pathology. 2004;121(3):315-20.

31.Ararsa T, Tadele N, Ayalew Y, Gela D. Knowledge towards cervical cancer screening and associated factors among urban health extension workers at Addis Ababa, Ethiopia: facility based cross-sectional survey. BMC cancer. 2021;21(1):1-9.

32.Azene GK. Visual inspection with acetic-acid (VIA) service utilization and associated factors among women in Hawassa city, southern Ethiopia: a community based cross-sectional study. Women's Midlife Health. 2021;7(1):1-9.

33.Sultanov M, Zeeuw Jd, Koot J, der Schans Jv, Beltman JJ, Fouw Md, et al. Investigating feasibility of 2021 WHO protocol for cervical cancer screening in underscreened populations: PREvention and SCReening Innovation Project Toward Elimination of Cervical Cancer (PRESCRIP-TEC). BMC Public Health. 2022;22(1):1-10.

34.Kassie AM, Abate BB, Kassaw MW, Aragie TG, Geleta BA, Shiferaw WS. Impact of knowledge and attitude on the utilization rate of cervical cancer screening tests among Ethiopian women: A systematic review and meta-analysis. PloS one. 2020;15(12):e0239927.

35.Catarino R, Petignat P, Dongui G, Vassilakos P. Cervical cancer screening in developing countries at a crossroad: Emerging technologies and policy choices. World journal of clinical oncology. 2015;6(6):281.

36.Derbie A, Mekonnen D, Woldeamanuel Y, Van Ostade X, Abebe T. HPV E6/E7 mRNA test for the detection of high grade cervical intraepithelial neoplasia (CIN2+): a systematic review. Infectious agents and cancer. 2020;15(1):1-10.

37.Hu S, Zhao X, Zhang Y, Qiao Y, Zhao F. [Interpretation of" WHO guideline for screening and treatment of cervical pre-cancer lesions for cervical cancer prevention. Zhonghua yi xue za zhi. 2021;101(34):2653-7.

38.Okolie EA, Barker D, Nnyanzi LA, Anjorin S, Aluga D, Nwadike BI. Factors influencing cervical cancer screening practice among female health workers in Nigeria: A systematic review. Cancer Reports. 2022;5(5):e1514.

39.Desaraju A, Kodey PD. Knowledge, attitude, and practices of cervical cancer screening in health care providers in a teaching hospital. Journal of Dr NTR University of Health Sciences. 2021;10(1):33.

40.Tadesse A, Tafa Segni M, Demissie HF. Knowledge, Attitude, and Practice (KAP) toward Cervical Cancer Screening among Adama Science and Technology University Female Students, Ethiopia. International Journal of Breast Cancer. 2022;2022.

41.Abu SH, Woldehanna BT, Nida ET, Tilahun AW, Gebremariam MY, Sisay MM. The role of health education on cervical cancer screening uptake at selected health centers in Addis Ababa. PloS one. 2020;15(10):e0239580.

42.Esike COU, Onoh RC, Ukaegbe CI, Aluka CO, Ezeonu PO, Umeora OUJ. Knowledge, attitude and practice of Nigerian specialist doctors in training of cervical cancer and its screening. Tropical Journal of Obstetrics and Gynaecology. 2018;35(3):327-32.

43.Al-Amro SQ, Gharaibeh MK, Oweis AI. Factors associated with cervical cancer screening uptake: implications for the health of women in Jordan. Infectious diseases in obstetrics and gynecology. 2020;2020.

44.Anyebe E, Opaluwa S, Muktar H, Philip F. Knowledge and practice of cervical cancer screening amongst nurses in Ahmadu Bello University Teaching Hospital Zaria. Cancer. 2014;4(27):33-40.

45.Nilaweera R, Perera S, Paranagama N, Anushyanthan A. Knowledge and practices on breast and cervical cancer screening methods among female health care workers: a Sri Lankan experience. Asian Pacific Journal of Cancer Prevention. 2012;13(4):1193-6.

46.Gebreegziabher M, Asefa NG, Berhe S. Factors affecting the practices of cervical cancer screening among female nurses at public health institutions in Mekelle town, Northern Ethiopia, 2014: a cross-sectional study. Journal of Cancer Research. 2016;2016.

47.Al Saad A. Development and Validation of Questionnaire to Assess Knowledge about Cervical Cancer among Women Aged 20 to 65 years in Oman. Asian Pacific journal of cancer prevention: APJCP. 2021;22(1):69.

10.ANNEX-I-DATA COLLECTION TOOLS

1. **Assessment of Knowledge, attitude and utilization:**

A. Knowledge

The knowledge of the cervical cancer and screening for premalignant lesion were assessed using 11 questions. There are 11 multiple choice questions that carried a total of 22 correct responses. Of 11 questions 7 of them score 1 point for each correct answer and remaining 4 had total of 15 points (risk factors, prevention, screening methods and treatments). Each correct response was given a score of 1 and a wrong response a score of 0.

Total points scored were 22 and the minimum was 0. On assessment, Modified Bloom's cut off (Bloom cut off points adopted from Ms. Nahid a's KAP (knowledge, attitude and practice) Study 2007. Participants who scored above the mean were regarded as knowledgeable, and those who scored below the mean were regarded as not knowledge.

Attitude. Attitude was assessed by Likert-type scale questions.

The questions on the Likert-type scale have positive and negative responses that range from strongly agree, agree, neither agree nor disagree, disagree and strongly disagree. Those who scored above the mean were considered to have a favorable attitude and those who scored below the mean had an unfavorable attitude.

B. Screening service utilization assessment:

The practice (Utilization) was assessed by looking: Those who had screened for themselves in lifetime (during data collection). Those who ever screened within the past three to five years were regarded as having **regular practice**, those who ever screened but more than five years ago from the time of data collection was regarded as having **irregular practice** and those who never screened was regarded as having **not utilized** (16, 40, 47).

ANNEX III: STUDY QUESTIONAIRES

Addis Ababa University, Department of Obstetrics and Gynecology, School of Medicine and College of Health sciences

Questionnaire prepared to assess **'**Utilization of screening service on cervical cancer and influencing factors among female health professionals in Addis Ababa, Ethiopia'

My name is …….am working as data collector for the study being conducted in Addis Ababa by Dr. Achamyelew Melaku who is Specializing on Obstetrics and Gynecology in Addis Ababa University, department of OBGYN.I kindly request you to lend me your attention to explain you about the study and being selected as the study participant.

1. **The study/project title:**

Utilization of screening service on cervical cancer and influencing factors among female health professionals in Addis Ababa, Ethiopia

2. **Purpose/Aim of the study:**

The purpose of the study is to assess the utilization of cervical cancer screening and factors that influence female health professionals.

3. **Procedure:**

To assess the Utilization of screening service on cervical cancer and influencing factors among female health professionals in Addis Ababa, Ethiopia. We invite you to take part in this study. If you are willing to participate in this project, you need to understand and sign the agreement form. Then after, you will be provided self-administered questionnaire by the data collector to give your response and subjected to some measurements. You do not need to tell your name to the data collector and all your responses and the results obtained will be kept confidentially by using coding system whereby no one will have access to your response.

4. **Risks and benefits:**

The risk of being participating in this study is very minimal, but only taking few minutes from your time. There would not be any direct payment for participating in this study. But the findings from this research may reveal important information for the local health planners. Furthermore,

the information obtained from you will be used for planning and implementation of screening service at society level and to dig out solutions for influencing factors by other researchers.

5. Confidentiality:

The information you will provide us will be confidential and highly protected. There will be no information that will identify you in particular. The findings of the study will be general for the study population and will not reflect anything particular of individual person. The questionnaire will be coded to exclude showing names. No reference will be made in oral or written reports that could link participants to the research.

6. Rights:

Participation for this study is fully voluntary. You have the right to declare to participate or not in this study. If you decide to participate, you have the right to withdraw from the study at any time and this will not label you for any loss of benefits which you otherwise are entitled. You do not have to answer any question that you do not want to answer.

7. Contact address:

If there are any questions or enquires you may have about the study or the procedures, please contact: Dr. Achamyelew Melaku, AAU, Addis Ababa, Ethiopia.

Phone: 0964039367, or 0910113956

E-mail: Ache_Melaku@yahoo.com/Melakuachamyelew@gmail.com

8. Declaration of informed voluntary consent:

I have read/ was read to me the participant information sheet. I have clearly understood the purpose of the research, the procedures, the risks and benefits, issues of confidentiality, the rights of participating and the contact address for any queries. I have been given the opportunity to ask questions for things that may have been unclear. I was informed that I have the right to withdraw from the study at any time or not to answer any question that I do not want. Therefore, I declare my voluntary consent to participate in this study with my initials (signature).

signature of participant: _____ _____ Date _____

Name and signature of Data Collector: _____ _____Date_____

From HC…….. Or Hospital……...make tick

Part-I: Socio-demographic characteristics

S.no	Questions	Answer	Remark
1.1	Age/እድሜ	-	Age>=25
1.2	Religion ሀይማኖት	1. Orthodox 2. Muslim 3. Protestant 4. Other, specify	
1.3	Marital status የጋብቻ ሁኔታ	1. Single 2. Married 3. Divorced 4. Widow 5. Other	
1.4	Parity ስንት ልጅ ወልደዋል	-	
1.5	Your professional designation የሙያ ዘርፍ	1. Medical Doctor….a.GP…...b. specialist(specify)…. 2. Nurse 3. Midwifery 4. HO or IESO 5. Pharmacy	i.OBGYN ii.Other
1.6	Year of service ስንት አመት አገልግለዋል	1. ≤5 years 2. 6-10 years 3. 11-15 years 4. >15years	

1.7	In which unit are you working? (This question not include specialists) የሚሰሩበት የትኛዉ የስራ ንኡስ ክፍል ነዉ	1. ANC, Labor ward, Labor ward & Postnatal clinic 2. Cervical screening service room 3. ART &TB 4. OPD, OR, ICU, ward (other than OBGYN) 5. Other, specify	
1.8	Your partner educational status (for those of you married)	1. Unable to read and write 2. Able read and write 3. Primary	
1.9	If he is attended college and above continue Q#1.9, partner's field of study? ከተማረ የትምህርቱ ዘርፍ	1.Health professional 2.Non-health professional	
1.10	Your family monthly income (New World Bank country classification by income 2022) የቤተሰብዎ ወርሃዊ የግቢ መጠን በብር	1. <5,0000birr 2. 5000-10,000 3. >10,000-50,000 4. >50,000birrr	

Questionnaire Part II-IV for assessment of influencing factors and screening service utilization

Part-II. Knowledge on cervical cancer as influential factor

S.no	Question	Answer	Remark
2.1	What causes cervical cancer? (Etiology) የማህጸን በር ካንሰር አምጭ ምክንያቱ ምንድን ነዉ	A. Herpes simplex virus B. Human papilloma virus C. Hepatitis B virus D.HIV E.I don't know	
2.2	Which risk factor(s) of cervical cancer do you know? (More than one answer is possible) ለማህጸን በር ካንሰር አጋላጭ መንስኤ ከሆኑት የትኛዉን ያዉቃሉ/ ከአንድ በላየ መልስ የቻላል	A) Having multiple sexual partners B) Early sexual intercourse C) HPV infection (human papillomavirus) D) Smoking cigarettes E) I don't know any	
2.3	How can cervical cancer be prevented? (more than one answer is possible)? የማህጸን በር ካንሰርን እንዴት መከላከል ይቻላል	A. Vaccination B. Behavioral change C. Screening D. Early detection and treatment of pre-cancerous cervical lesions E. I don't know any	

2.4	Have you ever heard of premalignant cervical lesion screening? ስለማህጸን በር ቅድመ ካንሰር ምርመራ ሰምተዉ ያዉቃሉ	A. Yes B. No	
2.5	If Q#2.4 answer is yes, which Method(s) premalignant cervical lesion screening do you know? (more than one answer is possible)? የትኛዉን የማህጸን በር ቅድመ ካንሰር ምርመራ ዘዴ ያዉቃሉ	A. Pap smear/Cytology B. Visual inspection of the cervix (VIA) by applying acetic acid or Iodine C. Human papillomavirus DNA testing D. There is no way of screening E. I don't know any	
2.6	Frequency of premalignant cervical lesion screening የማህጸን በር ቅድመ ካንሰር ምርመራ በየስንት ጊዜ መደርግ አለበት	A. Annually B. Every 10years C. Every 6 months D. 3-5 years based on screening method E. Other specify(please)……	
2.7	Are you a candidate for premalignant cervical lesion screening? እርስዎ የማህጸን በር ቅድመ ካንሰር ምርመራ ማድረግ ከሚገባቸዉ ሴቶች ዉስጥ ነዎት	A. Yes B. No C. I don't know	
2.8	Who should be screened according to WHO 2021 Cervical cancer prevention and control guideline recommendation for general population of developing nations? የማህጸን በር ቅድመ ካንሰር ምርመራ ማድረግ የሚገባቸዉ ሴቶች የትኞቸ ናቸዉ	A. Women age >=30years B. Any healthy woman C. Elderly women D. Age >21 yrs. E. Other specify(please)……..	

2.9	Is that true, cervical cancer can usually be found at an early stage because of the obvious symptoms? የማህጸን በር ካንሰር ቶሎ ምልክት ስለሚያሳይ በአብዛኛዉ ከፍተኛ ደረጃ ሳይደርስ በምርመራ ይታወቃል	A. Yes B. No C. I don't know	
2.10	IS it possible to treat premalignant lesion and cervical cancer? የማህጸን በር ቅድመ ካንሰርና ካንሰርን ማከም ይቻላል	A. Yes B. No C. I don't know	
2.11	If yes for Q#2.10, Which method(s) of treatment for cervical cancer / premalignant cervical lesion do you know? More than one answer possible) የማከሚያ ዘዴ የቱ ነዉ(ካንድ በላይ መልስ ይቻላል)	A. Cryotherapy B. Surgery C. Chemotherapy D. Radiotherapy E. it is cancer so no treatment F. I don't know any	

Part III. Attitude towards cervical cancer as influential factor

S.no	Questionnaire	Answer	Remark
3.1	Cervical cancer is highly prevalent in our country and one of the leading causes of deaths among all gynecologic malignancies in Ethiopia? የማህጸን በር ካንሰር በሐገራችን በአብዛኛዉ በሴቶች ከሚከሰቱ ካንሰር ዓይነቶች አንዱ ነዉ፣ በዚህ ሃሳብ ምን ያህል ይስማማሉ	1. Strongly agree 3. Neutral 2. Agree 4. Disagree 5. Strongly disagree	

3.2	Any young woman including you can acquire cervical cancer? እርስዎን ጨምሮ ማንኛዉም ሴት በማህጸን በር ካንሰር ሊጠቁ ይችላል	1. Strongly agree 3. Neutral 2. Agree 4. Disagree 5.Strongly disagree	
3.3	Screening of premalignant lesion of the cervix will help in prevention of cervical cancer? የማህጸን በር ቅድመ ካንሰር ምርመራ ማድረግ የማህጸን በር ካንሰርን ለመከላከል ይጠቅማል	1. Strongly agree 3. Neutral 2. Agree 4. Disagree 5.Strongly disagree	
3.4	Screening service is good if done by female healthcare providers? የማህጸን በር ቅድመ ካንሰር ምርመራዉ በሴት የጤና ባለሙያ ቢደረግ የተሻለ ነዉ	1. Strongly agree 3. Neutral 2. Agree 4. Disagree 5. Strongly disagree	

Part IV. Practice (Utilization) & perceived barriers towards screening for cervical cancer

S.no	Question	Answer	Remark
4.1	Have you ever been screened for premalignant cancer of the cervix? የማህጸን በር ቅድመ ካንሰር ምርመራ አድርገዉ ያዉቃሉ	A. Yes B. No	
4.2	If your answer, on Q# 4.1 yes, what motivates you to be screened? (if answer for Q#4.1 no…go to Q#4.6) ተመርምረዉ ከሆነ ለመመርመር ምን አነሳሳዎት	A. Physician recommendation B. Awareness of screening methods C. Increasing age D. Being married E. knowing a person with cervical cancer/your client F. Due to having other disease or history of STI G. Other (please specify) ……	
4.3	How many times have you been screened for the past 10 years? በአለፉት 10 ዓመት ጊዜ ዉስጥ ስንቴ ተመረመሩ	A. Once B. More than once	
4.4	When was the last time you were screened?	A. within the past 3 years	

	መጨረሻ የተመርመሩት መቼ ነበር	B. More than 3 years ago.	
4.5	Which screening tests you were received? (more than one answer possible -በትኛዉ የምርመራ ዘዴ ነዉ የተመረመሩት	A. Pap smear (cytology) B. Visual inspection with acetic acid (VIA) C. Visual inspection with Lugol's solution (VILI) D. HPV DNA test E. Other specify (please)…….	
4.6	If your answer 'NO' Q# 4.1, what was your main reason not to be screened? ካልተመረመሩ ለምን	A. Feeling of healthy/ the feeling of low risk perception B. Fear of pain C. Lack of test awareness D. Fear of positive result E. Lack of attention F. Cost of screening G. Inconvenient setup for examination H. Lack of confidence in the quality of care I. Other (please specify) ……	
4.7	Will you be screened if you receive remainder message through your phone? በእጅዎ ስልክ በየጊዜዉ መልክት ቢላክልዎት ይመረመራሉ	A. Yes B. No C. Not sure	

Thank you