

**ADDIS ABABA UNIVERSITY
COLLEGE OF HEALTH SCIENCE
SCHOOL OF PUBLIC HEALTH**



**CORRELATES OF KNOWLEDGE ON CERVICAL CANCER AMONG
FEMALE STUDENTS OF COLLEGE OF HEALTH SCIENCE, ADDIS ABABA
UNIVERSITY, ETHIOPIA**

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A thesis submitted to Addis Ababa University College of health Science school of public health in partial fulfillment of the requirement for the masters' degree of public health.

June, 2016

Addis Ababa, Ethiopia

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ACRONYMS

AAU -----	Addis Ababa University
AIDS -----	Acquired Immune-deficiency Virus
CC -----	- Cervical Cancer
CCS -----	Cervical Cancer Screening
CI -----	Confidence interval
COC-----	Combined Oral Contraceptive
DNA -----	Deoxyribonucleic Acid
ETB -----	Ethiopian Birr
GH -----	-General Hospital
HIV -----	Human Immune-deficiency Virus
HPV-----	Human Papilloma Virus
IUD-----	Intra Uterine Device
IRB-----	Institutional Review Board
KAP-----	-Knowledge, Attitude and Practice
Med-----	Medicine
MPH-----	Master of Public Health
PHC-----	Primary Health Care
POP-----	-Progesterone Only Pills
PPS-----	Probability Proportional to Size
PST-----	Pap-Smear Test
SAHS-----	School of Allied Health Sciences
SOM-----	School of Medicine
SOP -----	School of Pharmacy
SPH-----	School of Public Health
STD-----	Sexually Transmitted Diseases
VIA-----	Visual Inspection of cervix with Acetic acid
WHO-----	World Health Organization
UBTH.....	University of Benin Teaching Hospital
DELSUTH.....	Delta State University Teaching Hospital

Abstract

Introduction: Cervical cancer is the second most common cancer affecting women of reproductive age. It causes 270,000 annual deaths, of which most occur in low- and middle-income countries. Cervical cancer screening has been consistently shown to be effective in reducing the incidence rate or the occurrence of new cervical cancer cases and mortality from the disease. However, cervical cancer screening attendance rate are still far from satisfactory in many countries. In Ethiopia, an estimated 7,600 new cervical cancer cases are diagnosed annually. Medicine and health science students are young students within the most vulnerable age bracket for HPV infection, and by virtue of their discipline they are expected to have good knowledge of HPV vaccine as well as HPV infection and its relation to cervical cancer. However, the knowledge on cervical cancer among health science students in Ethiopia has not been adequately studied.

General objective: To assess the correlates of knowledge on cervical cancer among female students in College of Health Sciences of Addis Ababa University

Methods: Institution based cross sectional quantitative study was conducted on randomly selected female students from all departments of the College of Health Sciences from March – April, 2016. To obtain a representative sample, simple random sampling was applied to select study participants from the source population. First, all schools and departments in the university were identified by name. Next the calculated sample size (437) was distributed to each School and Department in the college using probability proportional to size (PPS). And the numbers of female students required for the study in each school and department were determined. For the data entry and analysis EpiInfo 7 and STATA12.0 were used. Also statistical analysis was employed (binary and multivariate logistic regression).

Result: Out of the total 437 students 11 students returned the questionnaires with incomplete response. This gives a total response rate of 98%. The mean age of the participants was 22 years (+/- 2 SD) ranging from 18 to 32. Great majority of the

participants 397(93.1%) mentioned that cancer of the uterine cervix is a female genital tract problem. A total of 399(93%) participants have heard of cervical cancer, 389(91.3%) of knew that HPV is risk factor of cervical cancer. Overall, 309(72.5%) had good knowledge and 117(27.4%) had poor knowledge. Similar proportion of the respondents, 332(77.7%), had positive attitude while 95(22.2%) had negative attitude. Among sexually active respondents only 5(5.3%) of the female students underwent cervical cancer screening test. Students in the School of Allied Health Sciences were **two** times more likely (**95%CI 1.02, 3.4**) to have good knowledge compared to the students from School of Medicine. Students whose fathers had primary level education were 50% less likely (**95%CI 0.25, 0.92**) to have good knowledge compared to students whose fathers had college and above level education.

Conclusion: Overall, female health science students had good knowledge on and attitude toward cervical cancer. However, only very small proportion of had screening for cervical cancer. The study also revealed that type of school of the students and their fathers' education levels were significantly associated with their knowledge cervical cancer.

Recommendation: Establishing accessible screening program both on national and regional levels as well in higher institution in order to target students to cervical cancer screening for ministry of health. Further study should be conducted at schools, community and national level to target all females and to solve other unclear findings.

1. INTRODUCTION

1.1 Background

Cervical cancer is the second most common female cancer, affecting women in reproductive age (1). It causes 270,000 annual deaths, of which most occur in low- and middle-income countries (1). Almost every cases of cervical cancer caused by the Human Papilloma Virus [HPV] which is transmitted by unprotected sexual intercourse (1). According to the World Health Organization [WHO], all sexually active individuals acquire this sexually transmitted infection [STI], once or repeatedly in their lives, usually shortly after onset of sexual activity (2). The prevalence of cervical cancer in developing world is 59.4 per 100,000 (3). In Africa the estimates indicate that every year 78,897 women are diagnosed and 61,671 die from the disease (4). According to the WHO estimates, in Ethiopia 7,600 women are diagnosed with cervical cancer and roughly 6,000 women die of the disease each year (5). Although there is no national cancer registry in Ethiopia, reports from a retrospective review of biopsy results have shown that it is the most prevalent cancer among women. A study from Gondar indicated that among 243 cancer cases, cervical cancer accounted for 12.8% of all cancers and 65.9% of female genital tract (6). Similar studies in Addis Ababa and Yirgalem Hospital (Southern Ethiopia) have shown that cervical cancer accounted for 32% (7) and 25.8% of female malignancies, respectively (8). Another study done in Addis Ababa, Ethiopia on female nurses Preventive practice of cervical cancer was significantly associated with younger age, work experience, being diagnosed with cervical cancer, and ever cared patient with cervical cancer and ever visited a health institution. Cervical cancer screening has been consistently shown to be effective in reducing the incidence rate or the occurrence of new cervical cancer cases and mortality from the disease (9, 10). However, cervical cancer screening attendance rate are still far from satisfactory in many countries. (11)

The FMOH recommends screening every five years following normal results irrespective of HIV status. In cases where there are abnormal results and/or treatment, repeat screening in should be done in one year. (12)The Ethiopian guideline on cervical cancer prevention aims to screen 80% of the 8.4 million 30 – 49 years old women for cervical cancer.

1.2 STATEMENT OF THE PROBLEM

Although cervical cancer remains a major cause of morbidity and mortality among women in developing countries, the patients presented with advanced disease (15). Cervical cancer screening attendance rate are still far from satisfactory in many countries. (15) Most women present with advanced stages of cervical cancer with poor prognosis. (15) Thus, in Ethiopia, only 0.6% of all women, 1.6% of urban and 0.4% of rural women aged 18-69yrs screened every 3yrs (11). The major factors associated with cervical cancer screening are inadequate knowledge about the disease process, and Pap smear testing and clients negative attitude towards the procedure (16). Besides, poor knowledge about cervical cancer, and lack of awareness of available screening methods have been identified as the most important factors hindering the use of available cervical cancer screening services (17).

Screening and treating approach or single-visit approach using Visual Inspection of cervix with Acetic acid (VIA) has been proven to be a very effective prevention strategy for cervical cancer. (13) Such low cost and high impact innovations could reduce the morbidity and mortality caused by cervical cancer even in resource-poor settings. (17) However, the low coverage of cervical cancer screening is a serious problem and a major barrier to reducing the mortality and morbidity in the developing countries (17).

Female health science students are young students within the most vulnerable age bracket for HPV infection, and by virtue of their discipline as health science and medical student they are expected to have good knowledge of HPV vaccine as well as HPV infection and its relation to cervical cancer. Good knowledge of HPV infection and attitude towards HPV vaccine among medical students, healthcare providers and the general population will greatly influence the success of immunization program against HPV. (18) There is lack of adequate evidence on correlates of knowledge on cervical cancer among university students. Our study aimed to assess the correlates of knowledge on cervical cancer among female medical students in Addis Ababa University.

Findings from this study will provide information to authorities so that proper measures can be taken according to the results to save the lives of women by creating awareness and provision of screening services in the university and teaching institutions.

2. Literature Review

2.1 Human papilloma virus infection and vaccination

The HPV infection is commonly short-lived, symptomless and often resolves naturally; nevertheless it could cause lesions that left untreated further could develop into cancer ten to twenty years later (2). There are more than 100 different types of HPVs, of which HPV-16 and 18 are more aggressive and prone to cause lesions; together they contribute to 70 % of all cervical cancer cases (3). Furthermore, 20 % of the cervical cancer cases are caused by HPV-31, 33, 35, 45, 52 and 58 (3). It is not yet clear what conditions may cause persisting HPV infections but probable contributing factors may be aggressive HPV-types, inadequate immune function, co-infection with other STI's or HIV, high parity, young age at first birth, use of oral contraceptives for more than five years and smoking (3). Risk factors for getting infected are related to sexual behavior including high number of sexual partners and low age at sexual initiation (5). Protective factors are condom use and male circumcision (3).

Primary prevention of cervical cancer involves prevention of infection with HPV vaccination. (4) Almost all of cervical cancer is due to HPV infection. (4) There are a number of varieties of subtypes of HPV that can cause cervical cancer but, the predominant subtypes are 16 and 18. (4) Primary prevention can be achieved through behavioral change approaches and the use of biological mechanisms, including HPV vaccination. (4) Abstinence from sexual exposure, being mutually faithful and consistent condom use can reduce the risk of HPV transmission. (4) Condoms only offer partial protection against HPV transmission, because the virus can exist on body surfaces not covered by the condom, such as the perianal area and anus in men and women, the vulva and perineum in women, and the scrotum in men. Despite this, consistent and correct condom use is highly recommended. (12) Currently, there are two types of HPV vaccines: the bivalent vaccine (Cervarix), which protects mainly against HPV genotypes 16 and 18, and the quadrivalent vaccine (Gardasil), which protects against genotypes 6, 11, 16 and 18. (12) These two vaccines have been evaluated in large clinical trials and proven to prevent the two most important high-risk HPV types—genotypes

16 and 18—which are known to cause up to 70% of cervical cancers. (12) These vaccines also provide cross-protection against other oncogenic HPV genotypes. (6) Both Cervarix and Gardasil have been shown to be effective in preventing cervical precancerous lesions over the period of more than ten years since they have been in use. (12) Both vaccines are given in a series of three 0.5 ml intramuscular injections within six months, and require storage and transport in a cold chain system. (12) But HPV vaccines are not intended to treat women with past or current HPV infection (12).

According to the Ethiopian cervical cancer guideline of 2015, adolescent girls of age 9 – 13 years are the current target for HPV vaccinations. Delivering HPV vaccine to these target groups requires a systematic approach such as school based, health facility based, outreach or a combination of either structures. So far, HPV immunization has not been introduced in the public sector in Ethiopia however, the country is in an active phase of introducing the HPV vaccine as a demonstration phase which eventually will be launched nationwide. (12)

2.2 Cervical cancer screening

Cervical cancer screening aims to test the largest possible proportion of women at risk and to ensure appropriate follow-up for those who have a positive or abnormal test result. (12) Such women will need diagnostic testing and follow-up or treatment. Colposcopy and biopsy are often used to reach a specific diagnosis of the extent of the abnormality in women with a positive screening test. (12)

In asymptomatic women, cervical cancer may be discovered as a result of cervical cancer screening or incidentally, if a visible lesion is discovered upon pelvic examination. Some popular screening methods are Papanicolaou (Pap) smear, VIA, HPV DNA test and colposcopy. (19) The screening for cervical cancer is based on two assumptions. The first is that prevention is better than cure and the second is early detection may allow early treatment as the primary pathologic process is still reversible. Screening tests are relatively simple

procedures that separate healthy persons from those with a high probability of having the disease (19).

2.3 Practice of health science students on cervical cancer screening and HPV vaccination

In Ukraine, Female Medical Students of Crimea State Medical University, shows Even though 82% respondents thought that cervical cancer is a major concern, only 32% had ever done a pap smear. (20)

In a study done in Saudi Arabia on the Knowledge and attitude about cervical cancer screening and HPV vaccine among female medical students of Taif university , Practice of cervical screening was poor among sexually active student in particular and family members in general.(21)

In a study done in India, on health science undergraduate students: only 3.7% of females reporting having had a Pap test. Among those having heard of the HPV vaccine (9.3%), few reported having received the vaccine (5.2%) and most (83.1%) reported that it was Very Unlikely/Unlikely that they would vaccinate their daughters.(22)

In a study conducted in turkey, Mustafa Kemal University Medical Students, None of female students had been immunized and 67% of female students did not consider getting immunized. Among those who did not consider getting immunized, 70% said they had worries about the safety of the vaccine. (23)

A study done on the heterosexual behavior, awareness and practice of cervical cancer screening among female staff and students in a private tertiary institution in south Nigeria, The practice of cervical cancer screening was low (22.4%). (24)In a study done in college students in Ghana, Women received few screening cues. Three barriers were negatively associated with screening in bivariate analyses: due to belief that cervical cancer screening diagnoses, pap test, is painful and the test will take away virginity. (25)

In a study done on female students and staff in a tertiary institution in the Niger Delta shows that There is a significant association between awareness and practice of cervical cancer screening amongst staff and students ($\chi^2 = 29.4$, $P=0.00$). (26)

In a study done in Ethiopia, about Knowledge, attitudes, and practices regarding cervical cancer and screening among Ethiopian health care workers. Health care service Providers had no experience performing cervical cancer screening on a routine basis with 40% having performed any type of cervical cancer screening. Reported barriers to performing screening were lack of training (52%) and resources (53%); however the majority (97%) of providers indicated cervical cancer screening is an essential part of women's health care. (27)

Another study done in Ethiopia to explore cervical cancer knowledge, preventive practices and associated factors among female nurses in government hospitals shows that Only 21.9% reported practicing prevention of cervical cancer. Preventive practice of cervical cancer was significantly associated with younger age, work experience, being previously diagnosed with cervical cancer, and having previously cared a patient with cervical cancer and having previously visited a health institution. (28)

2.4 Knowledge of health science students about cervical cancer screening and HPV virus vaccination

In a study done about Awareness of cervical cancer screening among paramedical staff and students in an institution of northern India. about 20% were not aware of cervical cancer as a disease. 19% knew that Pap smear is used for detection of pre-invasive cervical cancer. About 80% of subjects did not know that it was possible to detect cervical cancer early nor were they aware of different screening methods like Papsmear and had limited understanding of the types of cervical cancer screening Techniques and poor disposition towards undergoing cervical cancer screening. (29)

A study done on Knowledge and Attitude of Female Medical Students of Crimea State Medical University, Ukraine the Response rate was 81% (217) with nationalities from Nigeria (41.0%), India (15.2%), Ukraine (13.8%), Russia (9.2%), Crimean Tatar (8.3%),

Namibia (3.2%), Uzbekistan (2.8%), Sri Lanka (1.8%), Tanzania (1.4%), Liberia and Turkey (0.9%) each while Armenia, Azerbaijan, Cameroon, Germany and Nepal (0.5%) each. 38% of the respondents were not sure if they had received the HPV Vaccine while 16% did not know what is the HPV Vaccine. 80% of the respondents had heard of cervical cancer but only 58% had heard about cervical cancer screening. Of the screening tests, 17% of respondents knew about the HPV test while only 3% knew about the VIA testing. Even though 82% respondents thought that cervical cancer is a major concern, only 32% had ever done a pap smear. (20)

In a study done regarding Knowledge about Cervical Cancer Early Warning Signs and Symptoms, Risk Factors and Vaccination among Students at a Medical School in Al-Ahsa, Kingdom of Saudi Arabia. The majority of the students were not aware of the early warning signs, symptoms and risk factors. On average, only 43.7% males and 56% of females were aware about the early signs and symptoms whereas 51.4% males and 57.8% females had knowledge about the risk factors of cervical cancers. 46.8% of females were unable to select the correct answer regarding human papilloma virus (HPV) infection as the cause of cervical cancer. Majority of the students (67%) were not aware about the availability of vaccine against HPV. (30)

Another study done in Saudi Arabia on the Knowledge and attitude about cervical cancer screening and HPV vaccine among female medical students of Taif University, only about 50 % of medical students have knowledge about cervical cancer screening same percentage or even knows about human papilloma virus vaccination. Practice of cervical cancer screening was poor among sexually active student in particular and family members in general. (21)

The knowledge about, beliefs and attitudes of medical students regarding vaccination against the human papillomavirus, in South Africa: A Cross-Sectional Study. More than two-thirds (71%) of the respondents were aware of HPV and among them 81.2% mentioned vaccination against HPV. The majority (81.7%) were aware that persistent HPV infection is a cause of

cervical cancer. Only 14.5% of the medical students knew that between 60 – 80% of cervical cancers is caused by HPV types 16 and 18. Overall, knowledge regarding HPV infection was low among the medical students as the average score was 3.23 (possible range was 0 to 9). (31)

In a study done on Mustafa Kemal University Medical Students, about Human Papilloma Virus and HPV vaccine knowledge. Mean age of the students participating in the study was 21 ± 4 and 58 % of the participants were female. Out of 448 medical students, 60% of them did not know that HPV was a sexually transmitted disease. Only 55% of the students knew about the association of HPV with cervical cancer and 52% of the participants stated that HPV vaccine could not be preventive against cervical cancer. None of female students had been immunized and 67% of female students did not consider getting immunized. Among those who did not consider getting immunized, 70% said they had worries about the safety of the vaccine. (23)

In a study done on assessment of knowledge, level of perception and the attitude of female staff and students of Niger Delta University, Nigeria Most of the respondents 278 (72%) were aware of cervical cancer, while only 182 (50.6%) were aware of cervical cancer screening. Pap smear was the most popular screening test mentioned by respondents 100 (41.2%), while some respondents (8.5% of staff and 16.3% of students) wrongly believed that blood test is used for cervical cancer screening. There is a significant association between awareness and practice of cervical cancer screening amongst staff and students ($X^2 = 29.4$, $P=0.00$). (26)

A study done on the heterosexual behavior, awareness and practice of cervical cancer screening among female staff and students in a private tertiary institution in south Nigeria About 46% of respondents had penetrating sex before the age of 20 years. half of the respondents had sexual intercourse in the last one year but less than half of them have screened for cervical cancer. The awareness level about Cervical cancer screening was high,

(73.77%). The difference in the awareness level between students and staff of the institution was statistically significant ($\chi^2 = 7.38$, $p=0.0065$, $df = 1$). (24)

Cervical Cancer and Human Papilloma Virus Knowledge and Acceptance of Vaccination among Medical Students in Southwest Nigeria Most respondents were aware of cervical cancer (95.4%), HPV (85.4%) and HPV vaccination (69.3%) and the most common source of information was school teaching. Good knowledge of cervical cancer, HPV and HPV vaccination was demonstrated by 51.8%, 67.1% and 21.1% respectively; only 39.6% fully accepted HPV vaccination. Inadequate information and high costs were the obstacles identified to receiving vaccine recommending it to others. Older age and higher levels of study were significantly associated with good knowledge of HPV. Good knowledge of HPV and HPV vaccination respectively were significantly associated with full acceptance of vaccination.(32)

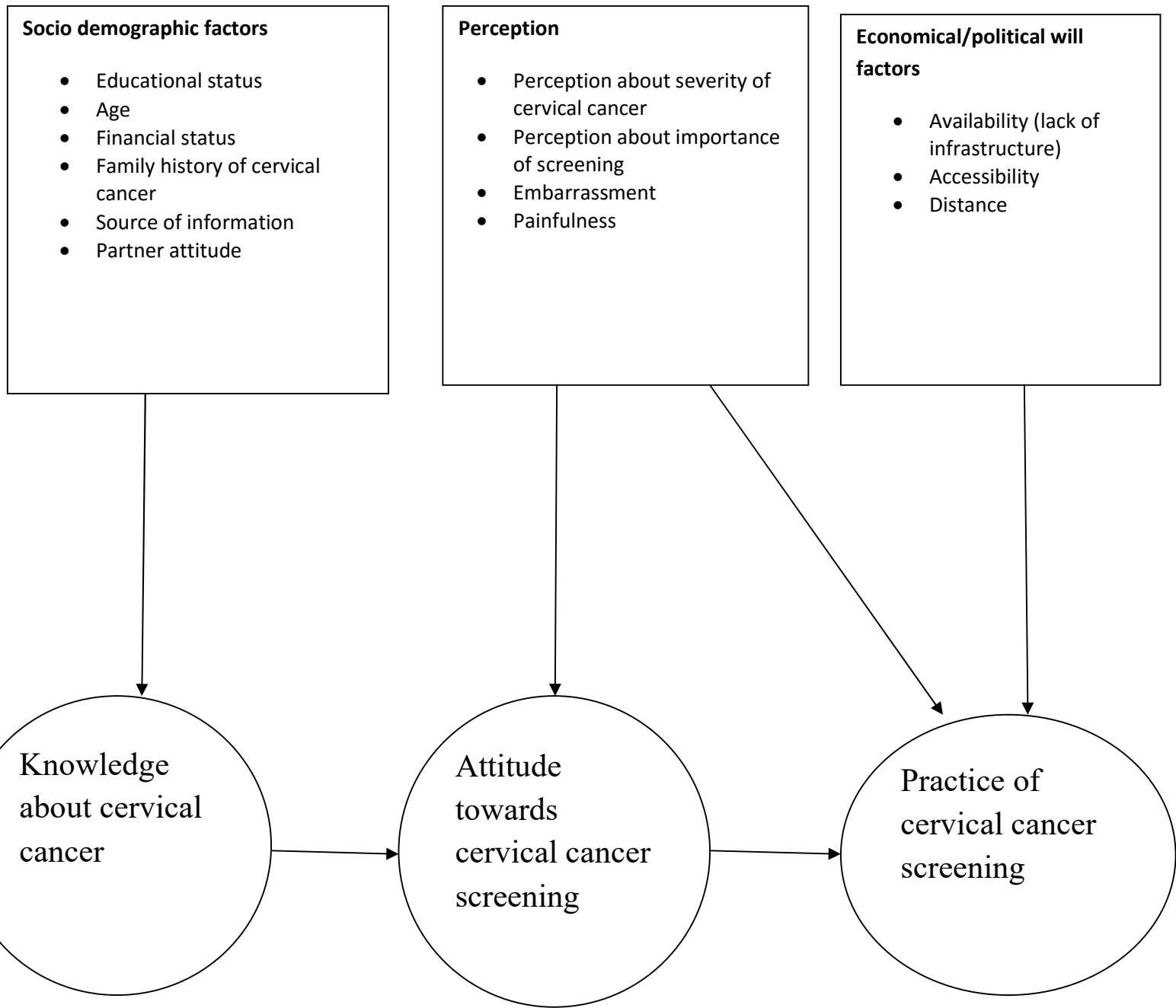
In a study done about Cervical Cancer Screening among College Students in Ghana: Knowledge and Health Beliefs. 140 females were recruited; the age range was 20-35 years. The prior pap screening rate was 12.0%; Women were unaware of local screening initiatives and only 7.9% were aware of the link between HPV and cervical cancer. The most prevalent barriers were lack of awareness that the purpose of pap screening is to diagnose cancer, concerns about what others may think, and lack of information about how to obtain screening services. Although women perceived the benefits of screening, (25)

On a study done about the knowledge attitude and practice of health care workers in Addis Ababa, Ethiopia the General awareness of cervical cancer was high among all respondents with 81% identified cervical cancer as an important cause of morbidity and mortality for women in Ethiopia. 85% of providers recognized cervical cancer as a preventable disease, with a detectable precancerous stage (87%) and understood the role of cervical cancer screening in detecting precancerous lesions (91%). Awareness of the link between human papilloma viruses (HPV) and cervical cancer was high among all doctors (96%) and medical

students (92%) and the knowledge that the virus is spread sexually was nearly as high in these two groups (93% and 88% respectively). Although HPV was correctly identified as a risk factor for cervical cancer by most nurses and midwives (75%), only 32% thought cervical cancer was caused by a virus that was spread sexually, revealing a limited understanding regarding cervical cancer etiology among these providers. (27)

on a study done to explore cervical cancer knowledge, preventive practices and associated factors among female nurses in Addis Ababa Ethiopia shows that Only 36.9% of respondents were aware that cervical cancer is the leading cause of cancer death in developing countries, 35.8% agreed it was the second leading cause preceded by breast cancer, while 20.8% reported they don't know. Well over half the sample (83.8%) reported that there were risk factors for cervical cancer. A small percent (3.1%) of those who were aware of cervical cancer did not know whether there were risk factors or not and 13.1% stated there were no risk factors for cervical cancer. Regarding the knowledge of specific risk factors, 53.5% of the respondents knew that having multiple sexual partners is a risk factor followed by sexually transmitted infections (47.3%) and early onset of sexual activity (45.4%). In general, only 25.8% of the respondents were able to identify all the possible risk factors for cervical cancer and 59.6% of the respondents knew that the most common cause of cervical cancer is Human Papilloma Virus Regarding the respondents' knowledge of the main symptoms of cervical cancer, 51.2% respondents mentioned bleeding after intercourse, 48.1% pain during sexual intercourse, 41.5% offensive vaginal discharge, 37.3% abnormal bleeding between periods while 13.1% of the respondents stated that cervical cancer has no symptoms. 46.9% of respondents correctly identified colposcopy as investigation of abnormal cells, with 27.3% being unsure. In relation to Pap smear, 86.5% of nurses had heard about the test. Only 28.5% of the respondents reported at age 21 or within three years of the first time of sexual intercourse as when a woman start being tested; 28.5% gave an incorrect answer for the recommended frequency of Pap smear test such as every 10 years and 22 (8.5%) was uncertain. Majority (78.8%) of nurses knew that cervical cancer can be prevented if appropriate measures are taken, while 14.2% stated that cervical cancer cannot be prevented

and 6.9% claimed they did know anything about prevention of cervical cancer. Regular medical checkup (screening) was mentioned by majority of the respondents 72.3% as a helpful prevention measure, and 91.5% also knew that cervical cancer can be treated. When the respondents were asked about treatment options, 37.7% mentioned surgery, 29.6% chemotherapy, 9.2% radiation therapy; 15.4% said treatment according to the stage. The majority (83.8%) agreed that cervical cancer can be cured if detected early. (28)



A Conceptual frame work for the knowledge, attitude and practice towards cervical cancer. Which is developed after viewing different literatures.

3. OBJECTIVES

3.1 General objective:-

- To assess correlates of cervical cancer among female students in Addis Ababa university college of health science. Ethiopia, 2016

3.2 Specific objectives

- To determine the proportion of female students of College of Health Science, Addis Ababa University who underwent cervical cancer screening.
- To assess the knowledge of female students of College of Health Science, Addis Ababa University on cervical cancer.
- To assess the attitude of female students of College of Health Science, Addis Ababa University towards cervical cancer.
- To assess correlates of knowledge on cervical cancer among female students of College of Health Science, Addis Ababa University.

4. Methodology

4.1 Study setting

The study is conducted in Addis Ababa University College of Health Sciences (CHS). College of Health Sciences (CHS) of Addis Ababa University (AAU) is established in 2009/10 by reorganizing previously separate department and schools of health under one umbrella. The CHS is comprised of four schools and one teaching hospital. The four schools are the School of Medicine (SOM), the School of Pharmacy (SOP), the School of Public Health (SPH) and the School of Allied Health Sciences (SAHS). The SAHS offers professional training in nursing, midwifery and medical laboratory technology. All Schools of the CHS offer professional degrees at both undergraduate and postgraduate levels except for the SPH, which offers only postgraduate degrees at MPH/MSc. and PhD levels. However, the SPH is engaged in offering public health courses to undergraduate students of the other Schools in the CHS. The CHS currently has over 5,000 students, and 600 full-time faculty members. The college currently offers eight undergraduate and over 70 postgraduate programs. The TikurAnbessa Specialized Hospital (TASH) is the teaching hospital of the College. TASH is the largest specialized hospital in Ethiopia, with over 700 beds, and serves as a training center for undergraduate and postgraduate medical students, dentists, nurses, midwives, pharmacists, medical laboratory technologists, radiology technologists, and others who shoulder the health problems of the community and the country at large. (33)

4.2 Study design and period

Institution based cross sectional quantitative study was conducted among 437 female students from different field of study from March – April, 2016.

4.3 Source and study population

The source population is all undergraduate female students within the College of Health Sciences of Addis Ababa University. The study population is all undergraduate female

students randomly selected from different departments in College of Health Sciences of Addis Ababa University.

4.4 Study subjects

Randomly selected female students from all departments of the College of Health Sciences of Addis Ababa University who were found during data collection time.

4.5 Inclusion criteria

All undergraduate female students from all departments in the College of Health Science of Addis Ababa University are randomly selected to participate in the study.

4.6 Exclusion criteria:

1. Those who were not willing to participate
2. Students who were seriously ill.

4.7 Study variables

4.7.1. Dependent Variables: Knowledge on cervical cancer and cervical cancer screening.

4.7.2. Independent variables:

Socio-demographic variables: Age, Educational status, Religion, Income, Marital status, Ethnicity, school/Department and years of study.

Reproductive health and obstetric factors: Gravidity, parity, still birth, abortion, contraceptive use

Gynecologic factors: - Age at first sexual intercourse, age at menarche

4.7.3 Attitude of the students towards CC

4.7.4 Practice of the students on CCS

4.8. Sample size determination

We used a single population proportion formula to calculate the sample size By assuming the proportion of students who had practice of cervical cancer screening to be 21.9% from literature, (28) adding non-response rate of 10% and 95% confidence level, 5% margin of error the sample size was determined as follows.

Assumptions

Since one of the variables is practice of cervical cancer screening, the proportion of practice of cervical cancer screening found to be 21.9% in a study done in Ethiopia to explore cervical cancer knowledge, preventive practices and associated factors among female nurses in government hospitals. This could be similar population group for the source population.

P (21.9%): assumed proportions of KAP toward cervical cancer screening among female university students.

Where $n = (Z_{\alpha/2})^2 * P(1-p) / d^2$

Sample size

α = Level of significance (set at 0.05)

z = The standard normal deviate with 95% CI (1.96)

p = Expected proportion of students who practiced of cervical cancer screening.

d = Degree of precision (0.04)

The sample size for KAP towards cervical cancer screening using the above formula and assumption is $n = (1.96)^2 * 0.219(1-0.219) / (0.04)^2 = 398$ A non-response rate of 10%, the total sample size will be: $398 + 10\% (NR) = 39.8$

$398 + 39 = 437 = 437$ female students

4.9 Sampling method

To obtain a representative sample, simple random sampling was applied to select study participants from the source population. First, all schools and departments in the university were identified by name. Next, the calculated sample size (437) was distributed to each

school and department in College of Health Sciences using probability proportional to size (PPS). And the numbers of female students required for the study in each school and department were determined. Sample size for each school and department is computed as follows using the formula: $n_i = N_i \times n_o / N$,

Where: n_i = number of female students that are needed from specific school/ department in the university

N_i = total number of female students who were attending within specific school/department

n_o = calculated sample size and

N = total number of female students in the health science college. (1204)

Therefore, the study subjects from respective school and department were selected by using multi stage sampling method. Simple random sampling was applied to choose a total of 437 female students attending pre-service health science training at College of Health Sciences.

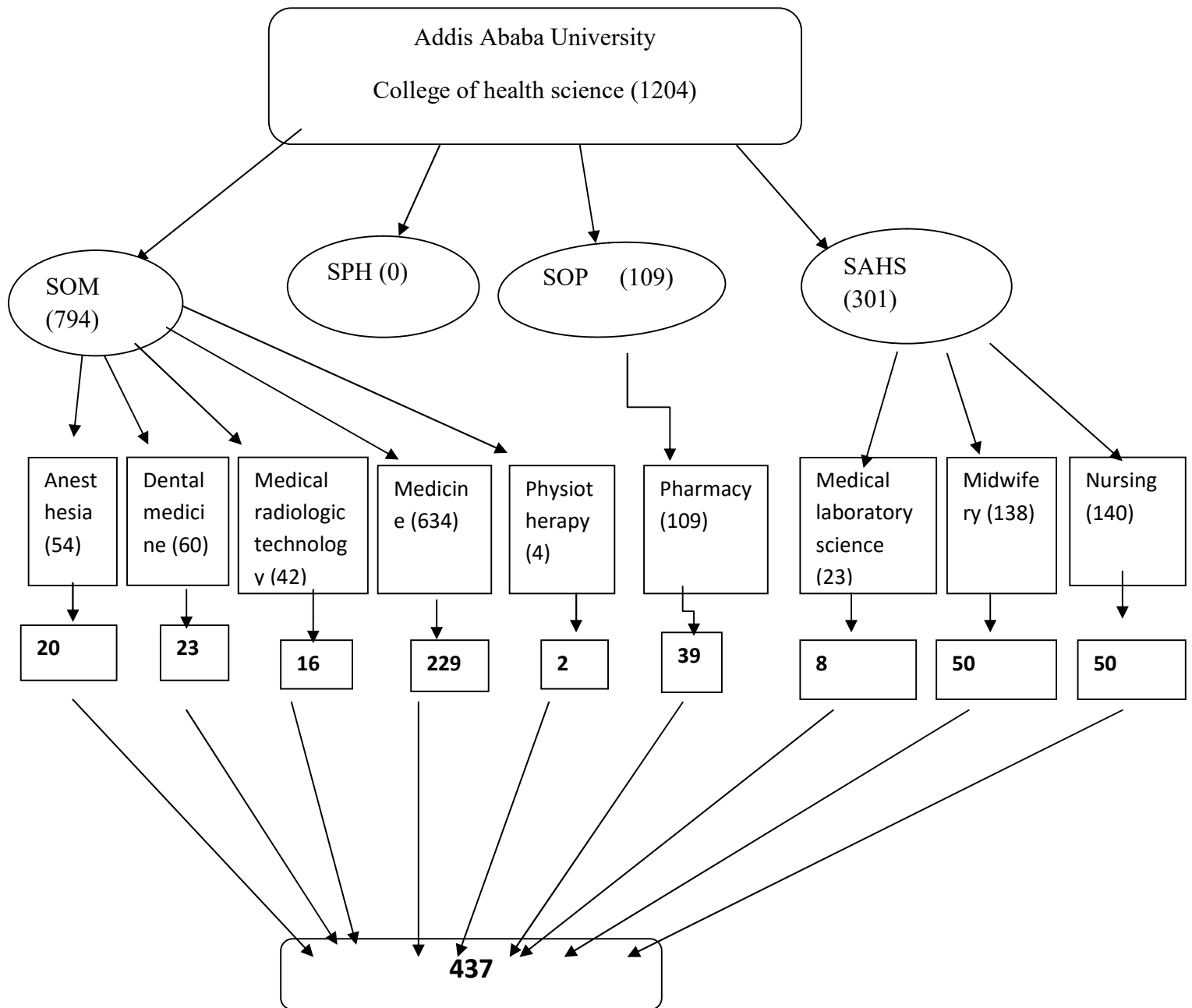


Figure 1 Diagrammatic representation of sampling procedure

SOM School of Medicine

SPH School of Public Health

SOP School of Pharmacy

SAHS School of Allied Health Sciences

4.10 Data collection and instrument

A structured self-administered pre-tested data collection instrument that was adopted and modified after reviewing different literature was applied. Questionnaires were prepared and administered in English. Simple language was used to make the questions understandable to the students. The questionnaire was composed of four parts. The first part contains information on the socio- demographic characteristics of the study participants. The second part was used to assess knowledge of students (study participants) about cervical cancer screening; the third part evaluates their attitude towards cervical cancer screening while the forth part was concerned with the practice of CCS.

The data collection was facilitated by three facilitators (Nurses) and a supervisor (Health officer) with experience in data collection in previous similar studies. Training was given for the facilitators and supervisor before the pretest. The training focused on the objective of the study, the contents of the questionnaire, issue related to the confidentiality of the response and the rights of the respondents. The trainees were given the responsibility to handle the whole process of the data collection. The data were collected after informed consent was obtained from respondents. Moreover, teachers and college authorities did not involve in administering the questionnaire and were not allowed to enter into data collection room during collection, to assure privacy of participants. Additionally, to overcome information contamination data were collected from all students from selected school simultaneously. Finally data were reviewed and checked for completeness and consistency by the supervisors and principal investigator after data collection.

4.11 Data quality management

To ensure the validity of the study, appropriate size and representative type of study units were selected and maximum effort was made to minimize chances of bias using the following strategies: Data collection facilitators and a supervisor were trained. Pre-testing was conducted prior to data collection process. Based on the pre-test, questions were revised

and edited with necessary modification. Data were entered using EPI info version 7 by the Principal investigator and then exported to STATA version 12 for cleaning, coding and analysis.

4.12 Data analysis procedure

For data processing and analysis, STATA version 12.0 was used. Data were checked for completeness and consistency. Frequency distribution tables were used to describe most of the findings and graphs were plotted for some accordingly; and other descriptive summaries were calculated. Bivariate and multivariate analyses were carried out to identify correlates of knowledge on cervical cancer. Odds ratio (OR) with 95% confidence intervals and p-values were calculated and tests of association for categorical variables were made. P value of <0.05 was taken to declare statistically significant association between the independent variables and knowledge on cervical cancer..

4.13 Operational definitions:

Knowledge on cervical cancer

The knowledge of cervical cancer was assessed using 14 questions, which are composed of multiple choice options. Knowledge score was computed by giving “1” for students who correctly answered the questions and “0” for those who didn’t. Students who scored the mean of the knowledge score or above were regarded as having **good knowledge** and those who score below the mean were regarded as having **poor knowledge**.

Attitude assessment

Attitude was assessed using five questions in Likert’s scale format. Respondents were asked to strongly agree, agree, neutral, disagree, and strongly disagree to the list of questions. The scoring system used with respect to students’ response was as follows: the minimum score “1” was given for those who strongly disagree, “2” for, disagree, “3” for neutral, “4” for

agree, and “5” for strongly agree. Attitude score as computed by adding the score for each question and the mean score was used as cutoff to categorize the respondents as having positive and negative attitude. Those students with attitude score value of the mean or above were regarded as having **positive attitude** and those with attitude score below the mean were considered as having **negative attitude**.

4.14 Ethical considerations

Ethical clearance was obtained from the school of public health, College of Health Sciences of Addis Ababa University. Before each interview respondents were informed about the objective and purpose of the study and verbal consent were obtained from each respondent. Moreover, all the study participants were informed that they have a full right to participate or decline from participating in the study and the study participants were assured for an attainment of confidentiality for the information obtained from them.

4.15 Dissemination of results

After this research paper is completed & approved by the School of Public Health, College of Health Sciences of Addis Ababa University, it will be disseminated to the Federal Ministry of Health, Universities and other concerned bodies. The findings from the study will also be published in peer-reviewed journal to make it available for those who could benefit from the study.

5. Result

5.1 Socio-demographic characteristics of the respondents

Out of the total 437 students 11 students returned the questionnaires with incomplete response. This gives a total response rate of 98%. The mean age of the participants was 22 years (± 2 SD), ranging from 18 to 32.

Regarding the ethnicity of the study participants about 111 (26.1%) of the participants were Amhara, 108(25.7%) Tigre, 93(21.9%) Oromo and other 112(26.23%). The dominant religions of the students were 178(41.88%) orthodox Christian, 88(20.7%) protestant Christian and 77(18.1%) were Muslim religion followers. The employment status of the participants was only 11(2.5%) of the students are employed and the rest 413(97.4%) are not employed.

Majority of the respondents 276(64.79%) were from school of medicine (which consists of medicine, anesthesia, physiotherapy, dental medicine and medical radiology technology) followed by 110(25.8%) students from school of allied health science (which consists of nursing, midwifery and medical laboratory science).

More than half of participants were from department of medicine 222 (52.1%). Most of the students 159(37.3%) were 3rd year students followed by 122(28.6%) who were in their 4th year study. Only 5(1.17%) were 1st year students.

Majority 13.3% of the respondents has income of 600. The mean of income of respondents is 1,058(SD ± 751) Ethiopian birr with the income ranging from 100 to 5000.

Table 1 Socio-demographic characteristics of the students

N=426

Variable	Number	Percent
Age		
<21	98	22.9
21-24	274	64.2
25-32	51	11.9
Religion		
Orthodox	178	41.8
Protestant	88	20.7
Muslim	77	18.1
Catholic	50	11.7
Other	32	7.5
Ethnicity		
Oromo	93	21.9
Tigre	108	25.7
Amhara	111	26.1
Other	112	26.23
Department		
Medicine	222	52
Dental		
medicine	23	5.4
Physiotherapy	2	0.5
Anesthesia	20	4.7
Medical		
radiotherapy	15	3.5

Nursing	50	11.7
Midwifery	48	11.2
Medical laboratory science	7	1.6
Pharmacy	39	9.1
Marital status		
Married	12	2.8
Divorced	1	0.23
Separated	4	0.9
Widowed	0	0
Never been married	409	96
have boy/girl friend	117	27

5.2 Reproductive health and behavioral characteristics of the participants

From a sample of 426 students, the mean age at menarche for the study participants was 12 (SD $\pm$ 1.2) years while the mean age of first sexual intercourse was 19.9(SD $\pm$ 1.96) years. From the total participants 94(22%) had sexual intercourse at least once. Among those who had sexual intercourse almost half 48(51.6%) had sexual intercourse with only one person and 28(30.11%) with two person.

Use of modern contraceptives among those who ever had sexual intercourse was 38(40%). Among those who use contraceptives 17(44.7%) are currently using contraceptives. Types of contraceptives used were COC, POP, injectables, implants and IUCD. COC being the most used by 17participants and the least was IUCD used by three. Mean duration of use of modern contraceptive by the respondents was 28(SD $\pm$ 22) months with range of 2 and 72 months.

Regarding substance abuse 77(18%) of the respondents had habits. Among those 70 (16.4%) drank alcohol, 26(6.1%) chewed chat, 16 (3.76%) smoked cigarettes Mean of time of substance use by the respondents was 96 week (SD $\pm$ 50weeks). Concerning marital status of the participants only a small fraction 12(2.82%) of the students were married/ living together with their partners while great majority of them 409(96%) were never married. Among those who never been married 117(27.59%) had boy/girl friend and the rest 307(72.4%) did not have boy/girl friend. Regarding the parity and gravidity of the respondents only 12(12.7%) of the respondents have ever been pregnant of which nine had given birth and two had abortion.

Regarding the educational status of the respondents' parents, for 269(65.13%) of the respondents the educational level of their fathers was college and above while 201(48.91%) of the respondents' mothers had similar educational level.

Table 2 Reproductive health and behavioral information of the students, Ethiopia, 2016
N=426

Variable	Number	Percent
Had sexual intercourse	94	22
Age of 1st sexual intercourse		
<20years	35	8.2
20-24years	51	11.9
25-29years	4	0.94
Number of sexual partner they ever had		
One	48	51.6
Two	28	30
Three	12	12.9
More than three	4	4.3
Can't remember number of sexual partner	1	1
Ever been pregnant	12	12.7
Ever given birth	9	75
Ever done abortion	2	16.67
Ever use modern contraceptive	38	40
Currently using contraceptive	17	44.7
Currently pregnant	3	25
Habit of substance use	77	18
chew chat	26	6.1
drink alcohol	70	16.4
Smoked cigarette	16	3.76
use marijuana	1	0.23

5.3 Knowledge status of the participants

5.3.1 Knowledge on female genital tract problems

A great majority of the study participants 397(93.1%) mention cancer of the uterine cervix is a female genital tract problem. Other female genital problems mentioned by the study participants included sexually transmitted infections 409(96%), ovarian cyst 353(82.8%), and tumor or myoma 354(83%). In addition, 17(3.9%) of the study participants mentioned other female genital tract problem. On the other hand 95(22%) wrongly mentioned Leucorrhoea as a female genital tract problem,

A total of 399(93%) participants have ever heard of cervical cancer, among those who heard of cervical cancer source of information were 304(71.3%) from Brochures, Posters, books and other printed materials, 275(64.5%) Teachers, 110(25.8%) from Health workers, 46(10.8%) from News Media, 14(3.29%) from family, 7(1.6%) from other means, and only 1(0.23%) from Religious leaders.

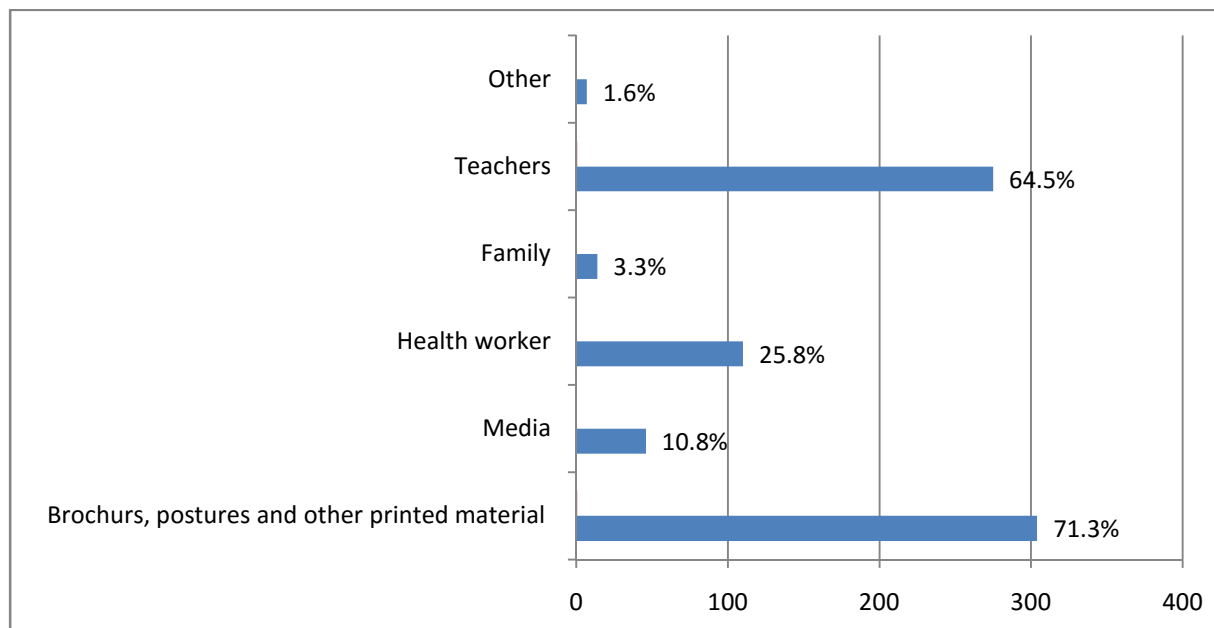


Figure 2 source of information of the participants regarding CC, Addis Ababa, Ethiopia, 2016

5.3.2 Knowledge on risk factors of cervical cancer

Three hundred and eighty nine (91.3%) of the respondents know that HPV is risk factor of cervical cancer, 373(87.5%) know multiple sexual partner is risk factor, 350(82.1%) know early initiation of sexual intercourse cervical cancer is risk factor, 338(79.3%) know HIV and other STI are risk factors, 319(74%) know Partner having sex with female having cervical cancer is risk factor, 212(49.7%) knows Old age is risk factor.

5.3.3 Knowledge on the symptoms and treatment of cervical cancer

Three hundred fifty nine (84.2%) of the respondents mentioned post coital bleeding is symptom of cervical cancer, 357(83.8%) painful coitus, 349(81.9%) post menopausal bleeding, 267(62.6%) vaginal bleeding, 2(0.47%) knows other symptom of cervical cancer.

Three hundred eighty one (89.4%) of the respondents know that cervical cancer can be treated by surgery, 349(81.9%) chemotherapy, 321(75.3%) radiotherapy. Frequency of screening for cervical cancer 125(29.3%) mention every five year, and 301(70.6%) mention other than 5 years.

5.3.4 Knowledge on the outcome of cervical cancer

Knowledge on the outcome of cervical cancer if not treated 388(91%), 355(83.3%), 245(57.1%), 155(36.3%), mention metastasis, death, chronic illness and bleeding respectively.

Knowledge on prevention of cervical cancer 389(91.3%), 366(85.9%), 361(84.7%), 359(84.2%), knows avoiding HPV infection, avoiding multiple sexual partner, vaccination, using condom will prevent from cervical cancer, 374(87.7%) have ever heard of cervical smears and 371(87%) know early stages of cervical cancer screening procedures, 317(74.4%) knows VIA, 373(87.5%) knows pap smear, 11(2.5%) wrongly mention blood test. The source of information for these screening procedures is 294(69%) from Brochures, posters, books

and other printed, 257(60%) from teachers, 98(23%) from health workers, 24(5.6%) from news media, 5(1.17%) from family, 3(0.7%) heard from other means.

5.3.5 Knowledge on who is at risk of cervical cancer

Three hundred forty three (80.52%) of the students mentioned that prostitutes are at risk of cervical cancer, the other risk groups for cervical cancer are women of 25 years and above 308(72.3%),elderly women 244(57.2%) girls from 9-18 years 59(13.8%).

The overall knowledge status of the respondents 309(72.5%) have good knowledge, and 117(27.4%) have poor knowledge. The knowledge of cervical cancer and screening was assessed by using 14 questions, which is composed of multiple choice options so correct answers are recoded as 1 and incorrect answers as 0. Then summed together after that mean was calculated. Finally students who score above and equal to the mean are regarded as having **good knowledge** and those who score below the mean are regarded as having **poor knowledge**.

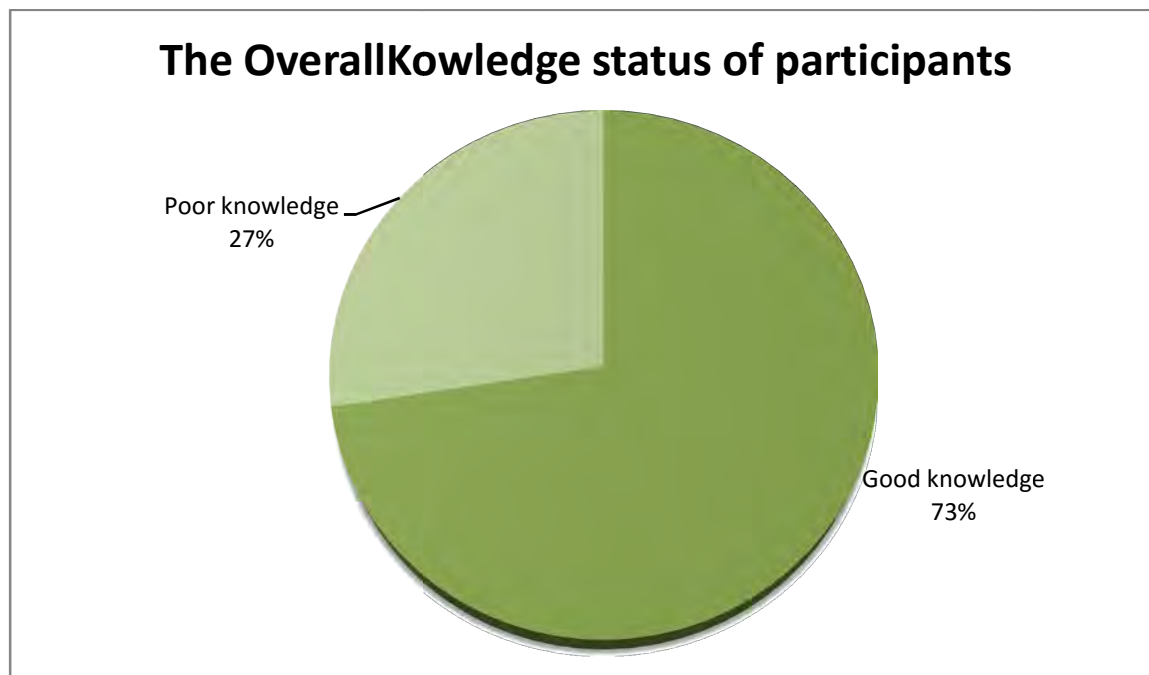


Table 3 Knowledge status of the respondents, Ethiopia, 2016**N=426**

Variable	Number	Percent
Ever Heard about cervical cancer	399	93
knowledge on causes of CC		
Initiation of sexual intercourse at early stage	350	82.1
Having multiple sexual partner	373	87.5
Having partner who had sexual intercourse with person who have CC	319	74
HIV infection and other STI	338	79.3
HPV infection	389	91.3
Old age	212	49.7
knowledge on symptoms of CC		
Vaginal bleeding between periods	267	62.6
Post coital bleeding	359	84.2
Foul smelling vaginal discharge	302	70.8
Painful coitus	357	83.8
Post menopausal bleeding	349	81.9
Knowledge on prevention of early stages of CC		
Using condom	359	84.27
Avoiding multiple sexual partner	366	85.9
Avoiding HPV infection	389	91.3
Vaccination	361	84.7
Knowledge on treatment of CC		
Surgery	381	89.4
Radiotherapy	321	75.3
Chemotherapy	349	81.9
Knowledge on outcome of CC if not treated early		

Metastasis	388	91
Death	355	83.3
Bleeding	155	36.38
Chronic illness	245	57
Knowledge on procedures to detect early stages		
Papsmear	373	87.5
VIA	317	74.4
Knowledge on how frequent should the screening be		
Every year	128	30
Once in two years	52	13.4
Once every three years	72	18.6
Once every 5 years	125	32.3
Other	10	2.5

5.4 Attitude of the respondents

Almost all 425 (99.7%) of the respondents said that consulting a health provider is important in case of vaginal bleeding between periods while 418(98.1%) reported that it is important to consult a health provider regularly for screening of cervical cancer. On the other hand, 368(86.3%) reported that having a smear test is not important to detect cervical cancer, and 58(13.6%) had the opinion that a smear test is not important to detect cervical cancer. A great majority 381(89.4%) of the respondents had the opinion that females between 9-18years should take vaccine against human papilloma virus to prevent cervical cancer.

Over all the attitude of the respondents is 332(77.7%) have positive attitude and 95(22.2%) have negative attitude. Attitude was assessed by 5 questions put on likert's scale the questions had positive and negative response that range from strongly agree, agree, neutral, disagree, and strongly disagree. The scoring system used with respect to students response was as follows strongly disagree as 1, disagree as 2, neutral as 3, agree as 4, and strongly agree as 5. Then the scores are summed and mean calculated, after that those who got above and equal the mean are regarded as having **positive attitude** and those who got below the mean will be regarded as having **negative attitude**.

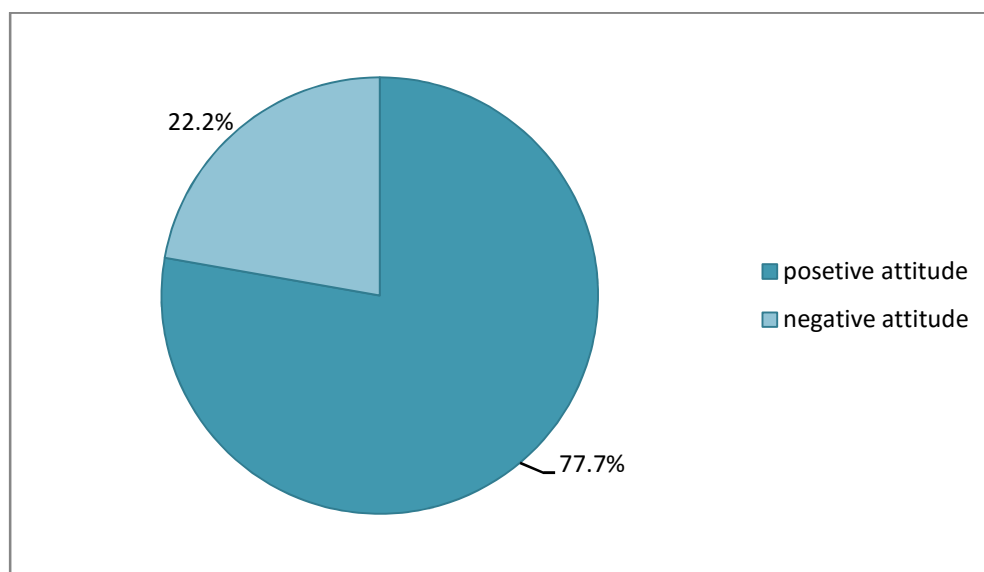


Figure 3 Attitude statuses of the respondents towards cervical cancer, Ethiopia, 2016

5.5 Practice of the students

Only 25(5.8%) of the respondents underwent gynecological examination. And 10(40%) of those who had the examination had it in the past 12 months while the rest had the examination before 12 months. Among those who underwent gynecological examination only 5(10%) underwent cervical cancer screening test,. Reasons mentioned by participants for not having had the screening included lack of information 239(56.1%) and think it's not the right time 119(27.93%). Overall, among those who are sexually active only 5.3% of the respondents had screening for cervical cancer.

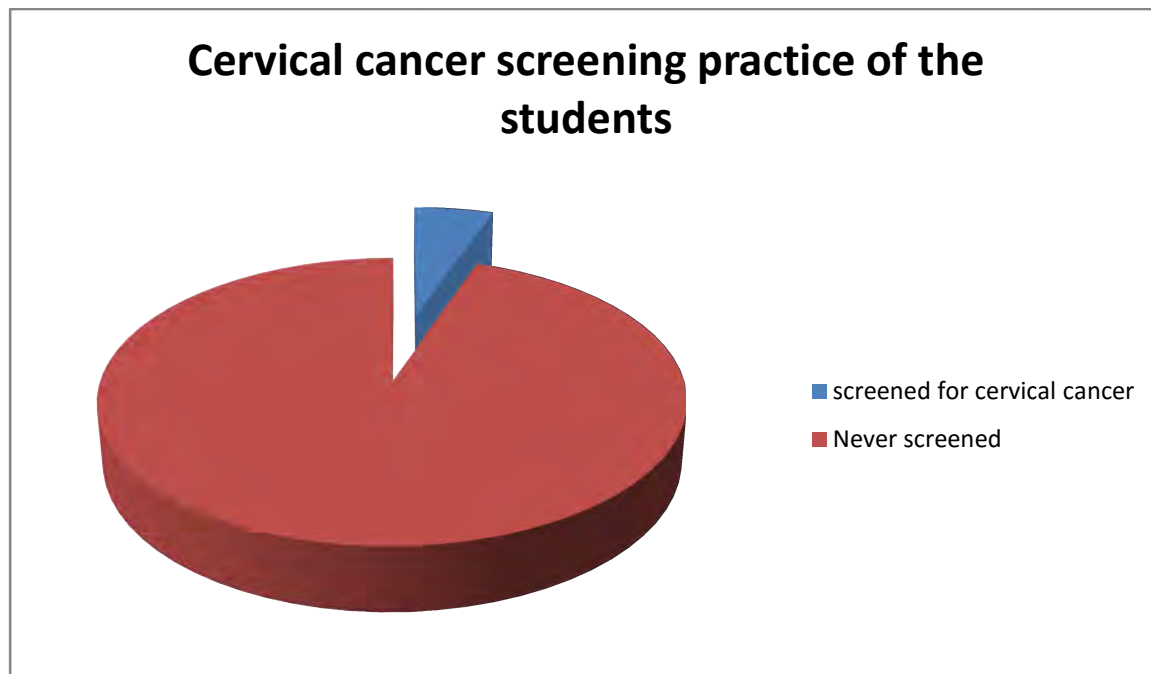


Figure 4 The practice of cervical cancer screening among the students Addis Ababa, Ethiopia, 2016.

Correlates of knowledge on cervical cancer

Socio-demographic characteristics of the respondents in relation to knowledge towards cervical cancer screening were analyzed using bivariate logistic regression. A statistically significant association between knowledge on cervical cancer and year of study, religion,

school, age, substance use, mother's education and father's education were detected on the bivariate analysis, but when multiple logistic regressions applied most of the variables which showed significant association with outcome variable disappeared (Table 4).

A total of seven variables that had statistically significant association with knowledge on cervical cancer on bivariate analysis were included in the multivariate analysis. Among them only two variables maintained the statistically significant association. The two variables were type of school and fathers' current educational level. Students from school of allied health science were **two** times more likely (**95%CI 1.02, 3.4**) to have good knowledge as compared to students from school of medicine. Students whose fathers had primary level education were 50% less likely (**95%CI 0.25, 0.92**) to have good knowledge compared to students whose fathers had college and above level education. School of allied health science students are two times [**95%CI 1.02-3.4**] more likely to have good knowledge than school of medicine.

Table 4 Correlates of knowledge on cervical cancer. Addis Ababa, Ethiopia, 2016

N= 426

Variables	Good knowledge		Poor knowledge		COR[95% CI]	AOR [95% CI]
AGE	#	%	#	%		
<21	62	63.27	36	36.73	1.00	1.00
21-24	205	74.82	69	25.18	2 [1.05-2.82]*	1.4[0.72-2.64]
25-32	41	80.39	10	19.61	2.4[1.2-5.3]*	1.6[0.6-4.7]
Religion						
Orthodox	134	75.28	44	24.72	1.00	1.00
Protestant	69	78.41	19	21.59	1.2[0.65-2.2]	1.4[0.71-2.64]
Muslim	48	62.34	29	37.66	0.5[0.31-0.96]*	0.6[0.30-1.1]
Catholic	35	70.00	15	30.00	0.8[0.4-1.53]	0.8[0.4-1.82]
Other	22	68.75	10	31.25	0.7[0.31-1.64]	0.61[0.25-1.6]
School						
School of medicine	189	68.48	87	31.52	1.00	1.00
School of pharmacy	30	77.50	9	22.50	1.6[0.72-3.5]	1.8[0.8-4.2]
School of allied health science	89	80.91	21	19.09	2[1.14-3.34]*	2[1.02-3.4]*
Year of study						
1st & 2nd year	43	54.43	36	45.57	1.00	1.00
3rd & 4th year	216	76.87	65	23.13	3[1.7-4.7]*	1.9[0.95-3.84]
5th & 6th year	50	75.76	16	24.24	3[1.3-5.4]*	1.8[0.7-4.7]
Substance usage						

Yes	64	83.12	13	16.88	2.1[1.1-3.9]*	2[0.9-3.8]
No	245	70.20	104	29.80	1.00	1.00%
Father educational level						
Illiterate	25	71.43	10	28.57	0.75[0.34-1.64]	0.9[0.32-2.35]
Primary	47	63.51	27	36.49	0.5[0.3-0.91]*	0.5[0.25-0.92]*
Secondary	21	60.00	14	40.00	0.45[0.22-0.94]*	0.5[0.21-1.12]
College and above	207	76.95	62	23.05	1.00	1.00
Mother education level						
Illiterate	66	71.74	26	28.26	0.9[0.51-1.54]	1.2[0.6-2.4]
Primary	64	79.01	17	20.99	1.3[0.7-2.4]	1.5[0.73-2.9]
Secondary	20	54.05	17	45.95	0.4[0.2-0.8]*	0.6[0.3-1.3]
College and above	149	74.13	52	25.87	1.00	1.00

Note * significant association P value <0.05 is taken as level of significance

6. Discussion

We did an institution based cross sectional study to assess the correlates of knowledge on cervical cancer among female medical students. We also assessed the attitude and practice of the students.

Our result shows that female health science students have good knowledge on cervical cancer and also positive attitude towards cervical cancer. But only a very few proportion of them had screening for cervical cancer.

The finding from this study suggests that majority 339(93%) of the respondents had heard of cervical cancer. This is high compared to a study done in Ukraine among Female Medical Students of Crimea State Medical University where 80% respondents had heard of cervical cancer (20) and a study done in northern India that reported only 20% of paramedical staff and students having had awareness about cervical cancer h(32).The gap could be due to difference in the nature of the population, prevalence of the disease, availability of information regarding cervical cancer. On the other hand, in the Ukraine study only 58% heard of screening tests, 17% of respondents knew about the HPV test while only 3% knew about the VIA testing. (20) This is not consistent with the current study which is 374(87.7%) have ever heard of cervical smears and 371(87%) know early stages of cervical cancer screening procedures, 317(74.4%) knows VIA, 373(87.5%) knows Pap smear. This increased figure on this study could be due to current emphasis given by the government regarding cervical cancer and there is time gap between the two researches.

In our study 373(87.5%), 350(82.1%), 338(79.3%), respectively, identified multiple sexual partners, early sexual initiation and HIV and other STI as risk factors for cervical cancer. This finding is not consistent with a study done on female nurses in Addis Ababa, Ethiopia where 53.5%, 47.3%, and 45.4% of the respondents, respectively, identified having multiple sexual partners, early onset of sexual activity, and sexually transmitted infections as risk factors for cervical cancer. (28)The difference could be that the study participants in our study assessed knowledge of female students from several departments but the previous

study included only female nurses. The finding from our study was also not in agreement with Indian study where 15%, 30%, and 12% of the respondents, respectively, identified having multiple sexual partners, early coitus and sexually transmitted diseases as risk factors for cervical cancer (32). This difference could be due to difference in the nature of the population, prevalence of the disease, availability of information regarding cervical cancer.

In our study 91.3% of participants know HPV as main cause of cervical cancer. This finding is not consistent with the study done in Addis Ababa, Ethiopia female nurses which is only 59.6% of nurses knew HPV as cause of cervical cancer.(28) The difference could be due to the study participants on the current study are composed of different departments but the other is only on female nurses.

Regarding the symptoms of cervical cancer 84.2% of the respondents mentioned post coital bleeding, 83.8% painful coitus, 81.9% post menopausal bleeding, 62.6% vaginal bleeding, 0.47% knows other symptom of cervical cancer. This finding is not consistent with the study done in Addis Ababa, Ethiopia female nurse mentioned bleeding after intercourse, pain during sexual intercourse, offensive vaginal discharge, abnormal bleeding between periods and has no symptoms in percents were 51.2%, 48.1%, 41.5%, 37.3%, 13.1% respectively. (28) The difference could be due to the study participants on the current study are composed of different departments but the other is only on female nurses. The above finding is also not consistent with the Ukraine study which is 26% mentioned vaginal bleeding, 15% mentioned post coital bleeding, 21% mentioned painful coitus and 27% know vaginal discharge. This shows the knowledge regarding symptoms of cervical cancer on our study is high. This may be due to the difference in the nature of population and accessibility of health related information's.

Knowledge on prevention of cervical cancer 389(91.3%), 366(85.9%), 361(84.7%), 359(84.2%), knows avoiding HPV infection, avoiding multiple sexual partner, vaccination, using condom will prevent from cervical cancer,

This finding is higher than a study conducted in Addis Ababa, Ethiopia female nurses majority (78.8%) of nurses knew that cervical cancer can be prevented if appropriate measures are taken, while 14.2% stated that cervical cancer cannot be prevented and 6.9% claimed they did know anything about prevention of cervical cancer. Regular medical checkup (screening) was mentioned by majority of the respondents 72.3% as a helpful prevention measure. (28) The difference could be due to the study participants on the current study are composed of lot of departments but the other is only on female nurses.

Surgery was mentioned by 89.4% of the respondents as cervical cancer treatment, 81.9% chemotherapy, 75.3% radiotherapy, this finding is higher than Addis Ababa study on nurses, which is 37.7% mention surgery, 29.6% chemotherapy, 9.2% radiation therapy; 15.4% said treatment according to the stage. The majority (83.8%) agreed that cervical cancer can be cured if detected early. (28) This shows that the knowledge of the students on cervical cancer treatments in our study is high. The difference could be due to the study participants on the current study are composed of different of departments but the other is only on female nurses.

Three hundred seventy four (87.7%) have ever heard of cervical smears and 371(87%) know early stages of cervical cancer screening procedures, 317(74.4%) knows VIA, 373(87.5%) knows pap smear, 11(2.5%) wrongly mention blood test, 2(0.4%) knows other procedures, 5(1.17%) didn't know any screening procedures. This finding is not consistent with the study done in Ukraine which is blood test 157(46%), papsmear 117(34%), VIA 12(3%). (20) And also not consistent with the study done in India VIA 2(2.1%), 65(68.4%) do not know screening methods. (29) This may have an explanation that knowledge on the current study is higher because of the time gap between the studies now emphasis is given for cervical cancer. The above finding is also not consistent with a research done in Taif University; only about 50 % of medical students have knowledge about cervical cancer screening same percentage or even knows about human papilloma virus vaccination. (21)

The source of information for screening procedures in our study is 294(69%) from Brochures, posters, books and other printed, 257(60%) from teachers, 98(23%) from health workers, 24(5.6%) from news media, 5(1.17%) from family, 3(0.7%) heard from other means. This figure is not consistent with the study done in India, which is from radio/TV 8(8.4%), newspaper 8(8.4%), friends/family 14(14.5%), internet 20(21%). (32).The above figure is not consistent with the study done in Ukraine, crima state medical university which is from health worker 95(35%), media 30(11%), internet 99(37%), family 26(10%), other 17(6%).(20)This may be due to the different in the nature of population and accessibility of health related information's.

On the other hand regarding the sexual activity information indicates that from the total participants 94(22%) had sexual intercourse at least once. Among those who had sexual intercourse almost half 48(51.6%) had sexual intercourse with only one person, the rest 48% had multiple sexual partner this figure is somewhat higher than other similar study in African and sub-Saharan African female students, a study done in south Africa among female university students indicate that 28% respondents has multiple sexual partner.(34) On the other study done among undergraduate students in Nigeria found that 54% were sexually active and 43% had multiple sexual partners,(35)

The overall knowledge status of the respondents is 309(72.5%) have good knowledge, and 117(27.4%) have poor knowledge. This figure is consistent with the study done in Southern Nigeria which is 66% of the respondents in DELSUTH compared to 59% in UBTH had good level of knowledge. (36)

Attitude towards cervical cancer screening was 332(77%) have positive attitude and 95(22.2%) have negative attitude. This finding is consistent with the South Nigeria study which is 14% of the respondents in DELSUTH have negative attitude compared to 21% in UBTH. (35)

The practice of cervical cancer screening is very low 5(5.3%) in our study, which is not consistent with study of South Nigeria, (36) and Ukraine (20), which is 9%, and 32% respectively. The result is much lower in our study. This could be due to lack of information about the screening availability in the country and high number of participants not being eligible for the screening.

In Multivariate Analysis School and father's education status are significantly associated with good knowledge status. School of allied health science is two times **(95%CI 1.02, 3.4)** more likely to have good knowledge than school of medicine. This could be due to school of medicine consists departments of Anesthesia, physiotherapy, medical radiology and dental medicine in addition to medicine department itself even though almost half of the participants are from medicine department the other departments also play a role in knowledge score and except medicine the rest departments knowledge on cervical cancer is limited so this could be one reason for the school of medicine to have low knowledge status than school of allied health science and the other reason could be most of the participants in allied health science are from 3rd and 4th year in which the participants could have more cumulated knowledge of cervical cancer through experience.

Students with Fathers whose current educational status is primary level are 50% less likely **(95%CI 0.25, 0.92)** to have good knowledge than students with father's whose current education is college and above. This could be due to logically fathers who are more literate will have good understanding and knowledge of health related issues than that of fathers who are not literate this difference will increase with their level of education as well and their knowledge will also be reflected in their family.

In a study done on assessment of knowledge, level of perception and the attitude of female staff and students of Niger Delta University, Nigeria There is a significant association between awareness and practice of cervical cancer screening amongst staff and students ($X^2 = 29.4, P=0.00$). (26)

In a study done in Ethiopia Preventive practice of cervical cancer was significantly associated with younger age, work experience, being diagnosed with cervical cancer, and ever cared patient with cervical cancer and ever visited a health institution. (28)

Cervical Cancer and Human Papilloma Virus Knowledge and Acceptance of Vaccination among Medical Students in Southwest Nigeria, Older age and higher levels of study were significantly associated with good knowledge of HPV. Good knowledge of HPV and HPV vaccination respectively were significantly associated with full acceptance of vaccination. (32)

7. Strengths and limitations of the study

Strengths of the study

- In an attempt to keep the validity and reliability of the study a pretesting was done, and appropriate analysis was done.
- Selection was done using random sampling to avoid selection bias
- Self-administered questionnaires were used to avoid social desirability bias.

Limitations of the study

- Quantitative method may not be adequate to obtain in-depth information about sensitive issues.
- Medical knowledge acquired through courses may create gap between medicine students and other health science students.
- In case of self administered questionnaire incompleteness may be the major problem.

8. Conclusions

- More than half of the respondents knew about risk factors and symptoms of cervical cancer and most of the students heard about cervical cancer.
- Significant number of respondents knows risk factors, causes, symptoms, preventive methods, screening procedures and treatment options.
- Over all knowledge on and attitude towards cervical cancer among female health science students was good
- However, only very small proportions of female health science students have undergone screening procedure.
- On the correlates of knowledge on cervical cancer, School of the students and father's education status are significantly associated with good knowledge status.

9. Recommendations

Based on the findings of the study the following recommendations are proposed for consideration by the respective stakeholders

- 1- Federal Ministry of Health: Establish accessible screening program both on national and regional levels as well in higher institutions in order to target students to cervical cancer screening for ministry of health
- 2- Developing policy on health education and promotions targeting on prevention of cervical cancer in higher institutions in order to target students to increase awareness and changing attitude more to positive on cervical cancer screening and prevention
- 3- Further study should be conducted at schools, community and national level to target all females and to solve other unclear findings.

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Annex 1 Information Sheet and Consent Form

Information Sheet and Consent Form to assess the correlates of knowledge on cervical cancer among female students in Addis Ababa University College of health science. Ethiopia, 2016

Name of the Principal Investigator: Rozina Tariku Assefa

Name of the Organization: Addis Ababa university school of public health

Name of the sponsor: self

Introduction

This information sheet and consent form is prepared by the investigator whose main aim is to assess the correlates of knowledge on cervical cancer among female students in Addis Ababa University College of health science. Ethiopia

The investigator is MPH student from Addis Ababa university school of public health.

To be filled by female students of Addis Ababa University College of health science students.

Purpose of the study:

The purpose of this research is to assess the correlates of knowledge on cervical cancer among female students in Addis Ababa University College of health science. Ethiopia

Study Procedure:

If you agree to participate in the study you will be expected to answer a couple of questions about the knowledge attitude and practice of cervical cancer screening.

Risk and/or Discomfort:

There is no known risk of participating in this study. However you may feel tiredness and wasting your time about 30 minutes but this may not be too much.

Benefits:

You may not directly benefit from participating in this study, however information obtained from this study may be used to improve on the learning process.

Incentives: You will not be provided any incentives to take part in this project.

Confidentiality and Anonymity:

To protect your privacy and confidentiality the interviews will take place in your class room. Anything you write will be confidential. All written information will not be seen by other

people outside the study and kept locked. However, the information may be seen by study supervisor from College of Medicine but your privacy and confidentiality will still be guaranteed as your name will not be written, instead unique study identification numbers (code) will be used which cannot be linked to you.

Right to Refuse or Withdraw:

Your participation in this study is on voluntary basis. You are free to decline participation or withdraw from study participation and any time. The services you receive will not be affected by your decision on whether to participate in the study or not.

Persons to contact: If you have any question you can contact the investigator by the following address and you may ask at any time you want.

1 Rozina Tariku: Addis Ababa University school of public health

Mobile: + 251 913821621

E-mail: beab33@gmail.com

Consent form

This consent form has been read and explained to me and I have understood, and my questions have been addressed. I therefore willingly agree to take part in the study.

Do you wish to participate in the study?

☐
☐

Yes, I want to participate in the study (please go to the next page)

No, I don't want to participate.

THANK YOU VERY MUCH!!

Annex.2 Questionnaire

Part one:

I: SOCIO-DEMOGRAPHIC INFORMATION OF RESPONDENTS

Instruction: please, encircle the number listed before the option to indicate your response and fill the blank spaces for those without option.

No	Questions	Response / option
101	Age	-----in complete years
102	Religion	1. Orthodox 2. Protestant 3. Muslim 4. Catholic 5. Others(specify)-----
103	Ethnicity	1. Oromo 2. Tigre 3. Amhara 4. SNNPR 5. Other (specify)-----
104	What is your department?	1. Medicine 2. Nursing 3. Anesthesia 4. Medical laboratory science 5. physiotherapy 6. Dental medicine 7. Midwifery 8. Pharmacy 9.other specify_____
105	What is your year of study?	1. First year

		2. Second year 3. Third year 4. Forth year 5. Fifth year 6. Sixth year
106	What is your current marital status?	1. married / living together 2. Divorced 3. separated 4. widowed 5. never been married (skip to Q 109)
107	If you have partner what is your Partner's educational level?	1. Cannot read and write 2. Able to read and write 3. Primary (1-8) 4. Secondary (9-12) 5. College and above
108	If your partner's educational level is college and above what is your partner's Field of study?	1. Technology 2. Health science 3. Social science 4. Agriculture 5. Applied science 6. other specify _____
109	Do you have boy friend or girl friend?	1. Yes 2. No -----if no skip to Q 112
110	If you have boy friend or girl friend what is his/her educational level?	1. Cannot read and write 2. Able to read and write

		3. Primary (1-8) 4. Secondary (9-12) 5. College and above
111	If your boy friend/girlfriend educational level is college and above what is his/her Field of study?	1. Technology 2. Health science 3. Social science 4. Agriculture 5. Applied science 6. other specify _____
112	Are you currently employed	1. Yes 2. No
113	Do you have monthly income (pocket money)?	1. Yes 2. No-----skip to Q 115
114	If your answer is yes for Q113, How much you get?	_____
115	What is your father's highest educational level?	1. Cannot read and write 2. Able to read and write 3. Primary (1-8) 4. Secondary (9-12) 5. College and above
116	What is your mother's highest educational level?	1. Cannot read and write 2. Able to read and write 3. Primary (1-8) 4. Secondary (9-12)

		5. College and above
117	Which of this substance do you use? (more than one answer is possible)	1. Chat 2. Alcohols 3. Marijuana 4. Narcotic drug 5. Smoking cigarette 6. Other(specify)_____ 7. I use none of them.
118	For how long did you use it? (please write your response in weeks if less than a month and in month if less than a year)	____ weeks ____ months ____ years

II: REPRODUCTIVE HISTORY OF RESPONDENTS

Instruction: please, encircle the number listed before the option to indicate your response and fill the blank spaces for those without option

201	How old were you when you see your first menstruation?	-----age in complete years
202	Have you ever had sexual intercourse?	1. Yes 2. No -----if no skip to the next session(part two)
203	If yes, how old were you when you had sexual intercourse for the first time?	_____ age in complete years
204	How many people in total have you ever had sexual intercourse with?	1. One person 2. Two people 3. Three people

		4. Four people or more 5. I don't know
205	Have you ever been pregnant?	1. Yes 2. No.....if no skip to Q 212
206	If yes how many times have you been pregnant?	_____
207	Are you currently pregnant	1. Yes 2. No-----
208	Have you ever given birth before?	1. Yes 2. No----- if no skip to Q 210
209	If yes how many times?	_____
210	Have you ever had abortion?	1. Yes 2. No----- if no skip to Q 212
211	If yes how many times you practiced?	_____
212	Have you ever used modern contraceptive?	1. Yes 2. No-----if no skip to part tow Q
213	If yes which type of modern contraceptive did you used? (more than one answer is possible)	1. Combined oral contraceptives(COC) 2. Progestin only pills (POP) 3. Inject able 4. Implants 5. Intra uterine contraceptive device (IUCD) 6. Others(specify):
214	For how long	_____
215	Are you currently using contraceptives?	1. Yes

		2. No-----if no skip to part tow Q
216	If yes which type of modern contraceptive are you using? (more than one answer is possible)	1. Combined oral contraceptives(COC) 2. Progestin only pills (POP) 3. Inject able 4. Implants 5. Intra uterine contraceptive device (IUCD) 6. Others(specify):_____

Part two:

KNOWLEDGE ASSESSMENT TOOL ON CERVICAL CANCER

Instruction: please, encircle the number listed before the option to indicate your response and fill the blank spaces for theses without option.

301	Which problems of the female genital tract do you know? (more than one answer is possible)	1. Leucorrhoea 2. Infections or sexually transmitted diseases 3. cancer of the uterine cervix 4. ovarian cysts 5. uterine tumor or myoma 6. If any other(specify)----- 7. I don't know
302	Have you ever heard about cancer of the uterine cervix?	1. Yes 2. No -----if no skip to Q 309
303	If yes where did you hear about it? (more than one answer is possible)	1. News Media 2. Brochures, posters, books and other printed 3. Health workers 4. Family 5. Religious leaders 6. Teachers 7. Other (specify)-----
304	What are the risk factors of cervical cancer? (more than one answer is possible)	1. protected sexual intercourse 2. Early initiation of sexual intercourse 3. Having multiple sexual partner 4. Partner having sex with female having

		cervical cancer. 5.HIV and other sexually transmitted infections 6. Human Papilloma virus 7. Old age 8. Others (specify)_____ 9. I don't know
305	What are the symptoms of cancer of the cervix? (more than one answer is possible)	1. Vaginal bleeding 2. Post coital bleeding 3. Vaginal foul smelling discharges 4. Painful coitus 5. Post-menopausal bleeding 6. Abdominal pain 7. Others (specify)----- 8. I Don't know
306	How can cervical cancer be treated?	1. Surgery 2. Chemotherapy 3. Radiotherapy 4. Antibiotics 4. Others (specify)----- 5. I don't know
307	What will be the outcome of cervical cancer if not treated early?	1. Metastasis 2. Chronic illness 3. Self-cure

		4. Bleeding 5. Death 6. If others (specify)----- 7. I don't know
308	How can cervical cancer be prevented? (more than one answer is possible)	1. Avoid multiple sexual partners 2. Avoid Human papilloma virus infection 3. Use condoms 4. Vaccination 5. Avoid protected sexual intercourse 6. Others(specify) ----- 7. I don't know
309	Have you ever heard about cervical smears?	1. Yes 2. No
310	Do you know any screening procedures to detect early stages of cervical cancer? (pre-malignant cervical lesion)	1. Yes 2. No ----- if no skip to Q 316 3. I don't know
311	If yes what are these procedures?	1. Visual inspection of cervix with acetic acid 2. Pap Smear 3. blood test 4. Other(specify)----- 5. Don't know
312	From whom you have heard these procedures?	1. News Media 2. Brochures, posters, books and other

		printed 3. Health workers 4. Family 5. Religious leaders 6. Teachers 7. Other (specify)-----
314	How frequently should the screening be done for early stages (pre-malignant cervical lesion done)?	1. every year 2. once in two years 3. Once every three years 4. Once every 5 years 5. Other specify

Part Three:

ATTITUDE ASSESSMENT TOOL ON CERVICAL CANCER SCREENINGS

Instruction: For the following five questions please select one of the options that best describes your opinion.

401	Consulting a health provider I s important in case of vaginal bleeding between periods is important.	1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree
402	It is important to consult a health provider regularly for screening of cervical cancer.	1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree
403	Having a smear test is important to detect cervical cancer.	1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree
404	Cervical cancer screening service must be available in all health facilities in Ethiopia.	1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree
405	All females between 9-18years should take vaccine against	1. Strongly disagree 2. Disagree

	human papilloma virus to prevent cervical cancer.	3. Neutral 4. Agree 5. Strongly agree
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PART FOUR

ASSESSMENT TOOLS ON PRACTICE CERVICAL CANER SCREENING

Instruction: - please, encircles the number listed before the option to indicate your response and fill the blank spaces for those without option.

501	Have you ever had any gynecological examination?	1. Yes 2. No --if no skip to Q 505
502	If yes when was your last gynecological examination?	1. In the last 12 months 2. Between 12-23 months 3. Between 24-35 months 4. Between 36-47 months 5. >47 months 6. Not at all
503	Have you ever had cervical cancer screening test.	1. Yes 2. No—if no skip to Q506
504	If yes for Q 503, what screening procedure did you undergo	1.VIA 2.Papsmear 3.Other specify_____
505	When was the last time you had pap smear test	1. In the last 12 months 2. Between 12-23 months 3. Between 24-35 months 4. Between 36-47 months

		5. >47 months 6. Not at all
506	If no for Q 503, what is the reason for not having cervical cancer screening test?	1. The test is not necessary 2. The price for screening is not affordable 3. Due to lack of information about the test 4. It is not the right time 5. other specify _____

Thank you.

ASSURANCE OF PRINCIPAL INVESTIGATOR

The undersigned agrees to accept responsibility for the scientific ethical and technical conduct of the research project and for provision of required progress report as per terms and condition of the research publications office in effect at the time of Grant is forwarded as a result of this application.

Name of the student: **Rozina Tariku**

Date: _____ Signature _____

Approved By:

Mr. Abiy Seifu (Adviser)

Date _____ Signature: _____