

ADDIS ABABA UNIVERRRSITY
COLLEGE OF HEALTH SCIENCES
SCHOOL OF NURSING AND MIDWIFERY
DEPARTMENT OF MIDWIFERY
POST GRADUATE PROGRAM

**HUMAN PAPILLOMAVIRUS KNOWLEDGE, PERCEPTION, AND
WILLINGNESS TO RECEIVE VACCINATION AMONG FEMALE
UNIVERSITY STUDENTS IN ADDIS ABABA UNIVERSITY, ETHIOPIA,
2022: A MIXED METHOD**

BY: TEFERI REGASA (BSC)

**A RESEARCH THESIS SUBMITTED TO ADDIS ABABA UNIVERSITY, COLLEGE OF
HEALTH SCIENCES, SCHOOL OF NURSING AND MIDWIFERY IN PARTIAL
FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER IN
MATERNITY AND REPRODUCTIVE HEALTH NURSING**

JUNE, 2022

ADDIS ABABA, ETHIOPIA

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APPROVAL SHEET
ADDIS ABABA UNIVERSITY
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I, the undersigned MSc student, declare that I have submitted my original work on a title Human papillomavirus knowledge, perception, and willingness to receive vaccination among female University students in Addis Ababa University, Ethiopia, 2022, a mixed method for the examination.

Submitted by:

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This thesis work has been submitted for examination with my approval as an advisor.

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APPROVAL BY THE BOARD OF EXAMINATION

This thesis by Teferi Regasa is accepted in its present form by the board of examiners as satisfying thesis requirement for the degree of masters in maternity and reproductive health nursing.

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STATEMENT OF DECLARATION

By my signature below, I declare and affirm that this thesis is my own work. I have followed all ethical principles of scholarship in the preparation, data collection, data analysis and completion of this thesis. All scholarly matter that is included in the thesis has been given recognition through citation. I affirm that I have cited and referenced all sources used in this document. Every effort has been made to avoid plagiarism in the preparation of this thesis. This thesis is submitted in partial fulfillment of the requirement for a graduate degree from the Addis Ababa University at College of Health Sciences, School of Nursing and Midwifery, Department of Midwifery. The thesis is deposited in the Addis Ababa University Digital Library and is made available to local, national and international scientific community. I solemnly declare that this thesis has not been submitted to any other institution anywhere for the award of any academic degree, diploma or certificate.

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LIST OF ABBREVIATIONS AND ACRONYMS

AAU	Addis Ababa University
AAIT	Addis Ababa institution of technology
CoBE	College of Business and Economics
CoEBS	College of Education and behavioral studies
CoHS	College of health science
CoHLJC	College of humanities, language studies, journalism and communication
CoLGS	College of law and governance studies
CoNS	College of Natural science
CoSS	College of Social Science
EIABCD	Ethiopian Institute of Architecture Building Construction and Development
GAVI	Global Alliance for Vaccines and Immunizations
HIC	High-income Countries
HPV	Human papillomavirus
HR	High-Risk
LMICs	Low and Middle-income Countries
LR	Low-Risk
PHR	Probable High-Risk
SPSS	Statistical Package for Social Sciences
STI	Sexually Transmitted Infection
UCAA	University College of Addis Ababa

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ABSTRACT

Background: -Cervical cancer is considered as a leading cause of morbidity and mortality among females worldwide. Human papillomavirus (HPV) is a highly prevalent sexually transmitted infection associated with increased cancer risks. Effective HPV vaccines are recommended for females in the adolescent years, but uptake has been less than optimal. **Objective:** - To assess HPV knowledge, perception and willingness to receive vaccination among female students in Addis Ababa University, Addis Ababa, Ethiopia, 2022. **Method:** - Institutional based convergent mixed method was applied. The data were collected from February 7 to April 15, 2022. A total of 398 female students were recruited for quantitative and 12 for qualitative study and data saturation was used as a guide to decide number of participants. Multi stage sampling technique was used to select study participants. The data was entered into Epi Data version 4.6. and analyzed using SPSS version 25 (quantitative data) and thematic analysis (qualitative data). Bivariate and multivariable logistic regression analysis were used to determine associations of variables. **Result:** - In this study, 161(41%) of the students had good knowledge, 226(57.5%) had more favorable perception regarding to HPV and its vaccine and 30% of the respondents were willing to receive the vaccine. Year of study, having history of sexual intercourse, having family history of vaccination and perception towards HPV and its vaccine were factors associated with students' willingness to receive the HPV vaccine. Misconception about HPV vaccine and lack of awareness about health risk associated with HPV were identified as factors that hinder students from receiving the vaccine in qualitative study **Conclusion and recommendation:** - Considering poor knowledge of HPV and its vaccine and willingness of the students to receive the vaccine, educational programs are required to aware female students in Ethiopia about HPV and related diseases as well as its vaccine. Inclusion of HPV vaccine in national immunization program which is in line with WHO recommendation should be considered as 118(30%) of the participants show willingness to get vaccinated.

Key words: - HPV; Female University Students; Knowledge; Perception

1. INTRODUCTION

1.1. Background

Human papillomaviruses (HPV) are among non-enveloped double stranded DNA viruses in the Papillomaviridae family and the most common sexually transmitted infection of the reproductive tract. Both sexually active women and men will be infected at some point in their lives(1). Out of 200 known human papillomaviruses, at least 40 of them spread through sexual contact(2). While many of human papillomaviruses (HPV) establish an infection that is cleared by the host immune system, small types are the most concerning since they are linked to cancer development(3,4).

Almost all cases of cervical cancer are caused by HPV with certain types also causes cancers of the vulva, and vagina in females, penile in males and anal and oropharyngeal cancer in both females and males(5). The serotypes of HPV are classified as high-risk (HR), probable high-risk (PHR), and low-risk (LR). Thirty of these targets the genitalia and approximately 15 types are cancer-causing (high risk HPV). Among the subtypes, HPV 16 and 18 are the most commonly observed high-risk serotypes with oncogenic properties and cause 70% of cervical cancers(4)

Globally, the first HPV vaccines were rolled out in 2006 and many countries have included it in their national immunization schedules. Currently, three prophylactic vaccines (Gardasil, Gardasil 9, and Cervarix) are available against HPV infection. Gardasil 9, is a 9-valent HPV vaccine that prevent HPV types 6 and 11, which cause 90% of genital warts, HPV types 16 and 18, two high-risk HPVs that cause about 70% of cervical cancers and HPV types 31, 33, 45, 52, and 58, high-risk HPVs that account for an additional 10% to 20% of cervical cancers(2,6). Cervarix prevents infection with types 16 and 18, and Gardasil prevents infection with types 6, 11, 16, and 18 infections(6). All the three HPV vaccines are effective when administered to young adolescents before they become sexually active, aged 9–14 years(7).

In 2018, HPV vaccine was introduced for the first time in Ethiopia by the Ministry of Health, with the support from the Global Alliance for Vaccines and Immunizations (GAVI). Initially, the government of Ethiopia had planned to provide the HPV vaccine through routine immunization program for six million girls of 9-14 years of age(8). However, due to a global HPV vaccine shortage, the vaccine is being delivered in a single age cohort (14 years old girls) through a school-based approach and in health centers(9).

1.2. Statement of the problem

Globally, in 2020, an estimated 604,127 women were diagnosed with cervical cancer and about 341,831 women died from the disease (particularly middle-aged women), 90% of whom were in low-income countries of the world, where access to prevention, screening, and treatment services are inadequate. The highest regional incidence and mortality is in Sub-Saharan Africa with rates elevated in Eastern Africa, Southern Africa, and Middle Africa. Incidence rates are 7 to 10 times lower in Northern America, Australia, and Western Asia, with mortality rates varying up to 18 times(10)

In Ethiopia, cervical cancer is a major reproductive health problem and accounts for a large proportion of cancer-related morbidity and mortality in women. It ranks as the second leading cause of cancer mortality among women next to breast cancer and the third leading cause of cancer deaths in women aged 15 to 44(11). Annually, an estimate of 6,300 new cervical cancer cases are diagnosed and 4884 deaths occur in Ethiopia(12). As of 2020, the age specific incidence and mortality rate was 21.5 and 16 deaths per 100,000 females, respectively(13)

Around 80% of sexually active women are at risk of contracting Human Papilloma Virus [HPV], despite a global target of 70% to eliminate intensive cervical cancer(14). Most women in underdeveloped and industrialized countries, especially female university students, have little understanding or awareness of HPV and associated cervical cancer(15). In addition, there has been a scarcity of information on how to increase their knowledge of HPV and its vaccinations to ensure a successful vaccination program in the future.

Although, HPV infection is preventable and avoidable, its incidence among women is becoming high, especially in low and middle-income countries. This can be attributed mainly due to the lack knowledge on the risks of HPV, low socioeconomic status, absence of implementation of the HPV vaccination, low participation of the target group in effective prevention techniques(16). On the other hand, few developing countries fail to include HPV vaccines in their immunization programs considering the cost involved in vaccine delivery and competing public health priorities(17).

Different guidelines and strategies have been established by WHO and other-related bodies in prevention and control of HPV infection. Health education measures which intended to improve

the use of condoms, reducing the number of sexual partners, promoting safer sex strategies and timely screening for cervical cancer have been employed with the goal of decreasing the transmission of HPV infection. In addition, prophylactic HPV vaccines, have been developed with the aim of reducing the burden of HPV-related diseases such as cervical cancer. HPV vaccine is the most promising method for HPV prevention(18)

Adequate knowledge about HPV infection, HPV vaccine, and cervical cancer is very important for female university students to improve their own health as well as the health of the entire community. Most of the young female students in the universities are in the premarital phase of life who will become healthy parents and populate the future society(19). In addition, Increasing the level of knowledge of female university students play important role for the promotion of healthy behaviors and the use of preventive methods like HPV vaccination(20)

In the study setting there is a gap in literature that assess knowledge, perception and willingness to receive HPV vaccine among female university students. This may be due to late introduction of HPV vaccination program in the country. Therefore, this study aimed to determine overall level of human papillomavirus (HPV) knowledge, perception and willingness to receive HPV vaccine among female university students in Addis Ababa university, Ethiopia.

1.3. Significance of the study

The study on female university student is very important as they play crucial role in educating their community about HPV, necessity of screening for cervical cancer, and the importance of receiving HPV vaccine. In addition, these students are future parents, and if they are aware of HPV infection and cervical cancer, they will play vital role in making positive decisions in vaccinating their future children.

The study's findings may provide suggestions for promoting the HPV vaccine among female college students, as well as aid to cervical cancer prevention efforts in Ethiopia. The findings of this study will also be useful to local policymakers in Ethiopia, who will have new efficacy, economic, and qualitative data to guide funding decisions for school-based HPV vaccine uptake as a prevention program for improving the health of the young women population, as well as regional non-governmental and governmental organizations in the country who support education.

Furthermore, the result of this study will provide valuable information for other researchers to conduct further investigation on the problem.

2. LITERATURE REVIEW

As students begin their university life, they start to experience sense of independence that may lead them to potential increase in social and sexual pressures. It can be assumed that with these increased social and sexual pressures, female university students may engage in unprotected sex and put themselves at bigger risk for Human Papillomavirus (HPV) infection. Therefore, this chapter will plan to provide a review of literature on HPV knowledge, perception and willingness to receive vaccination among female university students. It will also discuss factors that affect knowledge, perception and willingness to receive HPV vaccination among female university students.

2.1. Magnitude of Human papillomavirus Infection

Globally, the prevalence of HPV among women with normal cytology is 12%, while the rates are much higher in Sub-Saharan Africa which is 24%(21,22). In all females, the highest prevalence of HPV was found in Asian regions (57.7% in Eastern and Central Asia, 44.4% in Southern Asia) followed by Sub-Saharan Africa which were 42.2% and 32.3% in Southern and Eastern Africa respectively. In European countries, the HPV prevalence was low (<30%). Young women aged <25 years are highly affected by HPV with prevalence rate of 19.2% globally and 43.9% in Sub-Saharan Africa(22).

Studies suggest that about three out of four people have HPV at some point in their lives(4). A woman's lifetime risk of acquiring HPV infection is more than 80%, and most infections occur within 3-4 years of sexual contact. HPV infections are observed in over 99% of patients with cervical cancer (23). Along with women attending sexually transmitted disease (STD) clinics, college students have the highest prevalence of HPV infection(24).

2.2. Female students' Knowledge about Human papillomavirus and its vaccine

Human papillomavirus (HPV) is the most common sexually transmitted infection (STI). HPV is a different virus than HIV and HSV (herpes). There were about 43 million HPV infections in 2018, many among people in their late teens and early 20s. There are many different types of HPV. Some types can cause health problems including genital warts and cancers. But there are vaccines that can stop these health problems from happening(25)

In a study conducted in USA at Oakland University among female College students on behavioral perceptions of human Papillomavirus Vaccination, majority of participants (73%) confirmed that HPV infections cause cervical cancer, while a minority (19%) thought that it causes ovarian cancer. Although 52% of them knew that HPV is STI that can cause genital warts, 73% of the participants thought that only women can be infected with HPV and manifest the symptoms. About two thirds of participants (65%) believed that all HPV infections are caused by one strain of the virus(26)

Similar study conducted in China on awareness and knowledge about human papillomavirus infection among students at Secondary Occupational Health school suggested that, awareness and knowledge on HPV infection were insufficient. In the study it was found that 45.3% of the respondents had heard about cervical cancer, 21.9% had heard about HPV and 24.7% had heard about HPV vaccine (27). In addition the study also found as 78.6% of the respondents didn't know men could be infected by HPV and 78.5% of the participants know that HPV infection could cause cervical cancer and some other cancers(27)

According to cross-sectional study conducted on knowledge of human papillomavirus and uptake of its vaccine among female undergraduate students in Nigeria only 34 (14.8%) out of 229 had good knowledge of HPV infection. The study revealed 109 (47.6%) of the students had heard of HPV infection, 103 (45.0%) and 101 (44.1%) knew that HPV was a viral infection and is sexually transmitted, respectively. Only 81 (35.4%) knew that HPV can cause cervical cancer while 84 (36.7%) affirmed that HPV infection can be prevented by vaccination(4)

Other study conducted in selected universities of South Africa concluded that female students at the selected university had insufficient knowledge regarding HPV and its vaccines. The study showed that out of 310 respondents, 56.8% had never heard about the HPV, while 43.2% had heard about the HPV and its vaccines, 30.3% knew HPV causes cervical cancer and 56.8% of the respondents did not know whether the HPV vaccines prevented cervical cancer or not(28)

According to cross-sectional study conducted in Minjar-Shenkora District, North Shoa Zone, Amhara region, Ethiopia among primary school students, majority of the students 398 (80.5%) knew that HPV can cause cervical cancer, about 311 (62.9%) and 413 (83.6%) of participants know that one might get HPV through sexual contact and HPV infection have a vaccine respectively(14)

Furthermore a cross-sectional study conducted on knowledge and awareness of cervical cancer and human papillomavirus among female students in University of Gondar, Ethiopia showed that more than half of the participants (59.6%) did not know the main cause of cervical cancer, whereas just about 19.5% of them identified HPV as the main cause of cervical cancer(29). Other Cross-sectional study done at Jimma University, Ethiopia on knowledge, attitude and acceptability towards human papilloma virus and its vaccine among undergraduate female medical students showed low knowledge level towards HPV infection and its vaccination(30)

2.3. Female students' perception towards HPV and HPV vaccine

Study done in USA on Sample of high school adolescents showed that many students did not perceive to be at risk for HPV infection. The study indicated as more females (96.2%) than males (65.6%) agreed or strongly agreed that they would feel ashamed if found out they had an HPV infection(6). Similar study done among college students in USA reported that 23.4% of students has low perceptions of susceptibility to contract HPV with 20% of respondents agreeing that they are at risk for HPV or likely to contract HPV in their lifetimes (31)

Similar cross-sectional study conducted on perception and knowledge of human papillomavirus (HPV) vaccine for cervical cancer prevention among fully vaccinated female university students in Malaysia reported that, out of 426 participants 216 respondents (56.2%) had the perception that women who had been vaccinated would be free from cervical cancer in the future. The study also showed 186 (48.4%) respondents perceived that they did not require regular Pap smear after HPV vaccination, 266 respondents (69.3%) did not perceive themselves to be susceptible to HPV infection, 368 of them (95.8%) perceived HPV infection as a serious disease, and 347 (90.4%) perceived the benefit of HPV vaccination(32)

In cross-sectional study done among 390 university students in the city of Lahore, Pakistan on knowledge, attitudes, and perception towards human papillomavirus, majority of the students (53%) participating in the study perceived that there is no vaccine against HPV, and nearly 64% reported that the HPV vaccination does not prevent cervical cancer(33). Another similar study conducted in Pakistan among Pre-university Students revealed that, out of 716 students less than 20% perceived themselves vulnerable to HPV infection(20)

According to qualitative study conducted on Barriers to receiving human papillomavirus vaccination among female students in a university in Hong Kong, perception as being low risk due

to an absence of sexual contact, lack of confidence in the safety of the vaccine, suspicion of parents concerning the intention to get vaccinated, lack of positive discussion among peers, insufficient information from primary-care providers, difficulty in choosing a suitable HPV vaccine and cost of the vaccine are among the major barriers of HPV vaccination(34)

In another qualitative study conducted in Western Uganda on Perceptions of human papillomavirus vaccination of adolescent schoolgirls, HPV vaccination was understood to safely prevent cervical cancer, which was perceived to be a severe incurable disease. The study reported that perceived benefits and safety of HPV vaccination enhanced girls' acceptability of HPV vaccination(35)

2.4. Female students' HPV vaccine uptake status

Globally only 15% of girls and 4% of boys in the target age group (9-14) for HPV vaccination were fully protected in 2019. While girls in low and Middle-income Countries (LMIC) lack HPV vaccines, most girls in High-income Country (HICs), where burden is lower, get vaccinated. Australia and New Zealand, and Latin America achieved the highest HPV vaccine coverage's (77% and 61% respectively), followed by Europe and North America (35%). In contrast, Northern Africa, Oceania and Asia all had very low coverage rates. Despite that only a third of Sub-Saharan African countries have included HPV vaccination in their national schedule and achieved nearly 20% coverage due to overall good program performance(36)

According to cross-sectional study conducted in USA on HPV vaccine knowledge, attitudes, and uptake in college students ,HPV vaccine uptake was reported by 47.3% (181/383) of the females and 15.8% (60/383) of the males(31)

In multicentric cross-sectional study conducted in mainland ,China on Human Papillomavirus (HPV) Vaccine Uptake and the Willingness to Receive the HPV Vaccination among Female College Students, only 463 out of 4220 (11.0%) reported that they had been vaccinated against HPV, and 3757 participants (89.0%) reported that they did not have the vaccination(37)

Different literatures revealed lower magnitude of HPV vaccine uptake in Middle East and Asian countries. For instance only 30 (12.2%) of the total 246 respondents had received the HPV vaccine in Indonesia, where as 16.7% out of 215 participants had been vaccinated with HPV vaccine in a study in Lebanon on female college students(7)

More than a decade after launch of HPV vaccine as a preventive measure against cervical cancer, uptake of vaccination by the target population of young people is still terribly low in sub-Saharan African countries. For-instance in study conducted in Nigeria only 1 out of 229 students(0.4%) reported to have received the HPV vaccine(4).

In another cross-sectional survey conducted on knowledge, attitude and uptake of human papillomavirus vaccination among female undergraduates in Lagos State, Nigeria only ten out of 400 (2.6%) of the respondents have received HPV vaccine, out of which 60% completed the vaccine doses(38)

A mixed method study conducted in Lira District, Uganda on Level and factors associated with uptake of human papillomavirus infection vaccine among female adolescent reported low uptake of HPV which was 17.6%. Out of the 460 participants, 49.6%, (228/460) had not received any dose of HPV vaccine, 18.0% (83/460) had received one dose, 14.8% (68/460) had received two doses, and 17.6% (81/460) had completed all the three doses(23)

In contrast, as a cross-sectional study conducted in Minjar-Shenkora, Amhara region, Ethiopia among primary school female students showed that 393 out of 591 (66.5%) have ever received HPV vaccine, of whom 249 (42.1%) of them received one dose and the rest 144 (24.4%) received two doses(14).

2.5. Female students' willingness to receive HPV vaccination

According to cross-sectional study conducted in Indonesia on Knowledge, Attitude and Acceptability of the Human Papilloma Virus Vaccine and Vaccination Among University Students, 228 (95.8%) students out of 238 were willing to receive the HPV vaccination(7).

Another cross-sectional study done in Ottawa, Canada on Attitudes of undergraduate university women towards HPV vaccination indicated that, 99 (48.3%) out 205 students in the unvaccinated group reported that they were willing to be vaccinated at some point in the future. In the same study 34 students who had not received all the 3 doses willing to complete all doses of the vaccine(39)

According to multicenter study conducted in China on Human Papillomavirus (HPV) Vaccine Uptake and the Willingness to Receive the HPV Vaccination among Female College Students, 2010(53.5%) out of 3757 students who had not received the HPV vaccination were willing to

receive. In the same study, the reason for students unwilling to get the HPV were cost of the vaccine, fear of possible side effects of the vaccine and absence of sexual activity(40)

A cross-sectional study conduct in Mainland, China on Willingness to Accept Human Papillomavirus Vaccination and its Influencing Factors among Female College Freshmen indicated that 1208(32.08%) out of 3867 students were willing to obtain HPV vaccination(40).

In descriptive cross-sectional study conduct in Nigeria on Cervical Cancer and Human Papilloma Virus Knowledge and Acceptance of Vaccination among Medical Students, 128 (75.7%) out of 169 students were willing to be vaccinated if the vaccine is free, 6 (3.6%) were not willing to obtain the vaccine and 35(20.7%) were not sure whether or not to receive the vaccine. The main reasons that reported to affect students' willingness to receive the vaccine in the study were inadequate information, high cost of vaccine, poor access to vaccine, worry about efficacy, worry about safety and religious barriers(41).

2.6. Factors associated with knowledge of HPV and HPV vaccination

Study conducted in Malaysia on perception and knowledge of human papillomavirus (HPV) vaccine for cervical cancer prevention among fully vaccinated female university students in the era of HPV vaccination showed that perceived susceptibility to HPV infection and perceived seriousness of HPV infection were factors that correlated well with knowledge of HPV infection (32)

Another study conducted in China reported that age, grade and major field of study were three independently significant predictors of HPV knowledge and its vaccine. The study revealed that, students with higher ages, grades and medical specialty were more likely to have heard about CC, HPV and HPV vaccine(27)

According to study conducted in Lagos State, Nigeria respondent's age, level of study, course of study, knowledge of HPV vaccine, previous sexual experience and use of condom were statistically significant with knowledge of HPV and its vaccine(38)

In another study conducted on level and factors associated with uptake of human papillomavirus infection vaccine among female adolescents in Lira District, Uganda, attaining an education of secondary ordinary level, positive attitude towards the vaccine, receiving vaccine doses from more than one site and encouragement from Health workers and Village Health Teams, participating in

community outreaches, availability of vaccines and receiving full information about the vaccine are factors associated with HPV vaccine uptake(23).

Study conducted in Ethiopia on practice and associated factors of human papillomavirus vaccination among primary school students reported that, being knowledgeable, having a positive attitude, and residence of students, being rural were significantly associated with HPV vaccination(14)

2.7. Factors associated with willingness to receive HPV vaccination

Study conducted on Knowledge, attitudes, and perceptions associated with HPV vaccination among female Korean and Chinese university students revealed that perceptions of the seriousness of HPV infection and negative emotions like feeling ashamed, anxiety and depression were found to have a significant effect on vaccination intention(42). The same study also revealed that Knowledge of HPV, positive attitude towards HPV vaccine, sexual experience and awareness of genital warts were factors that influence willingness of HPV vaccination.

Another study conducted on Female College Freshmen in Mainland China indicated that students who perceived risk of HPV and perceived severity of developing cervical cancer were more likely to receive the HPV vaccine. The same study revealed as perceived barriers played a key negative role in young female students' willingness for HPV vaccination(40).

Another study conducted in Malaysia on Knowledge, Perception and Attitude Towards Human Papillomavirus among Pre-university Students revealed that Perceived benefits and knowledge of HPV vaccine and cervical cancer were significantly associated with their awareness willingness to accept HPV vaccination(20).The study indicated that students who have higher knowledge about HPV and ,HPV vaccine were willing to obtain the vaccine.

2.5 Conceptual framework

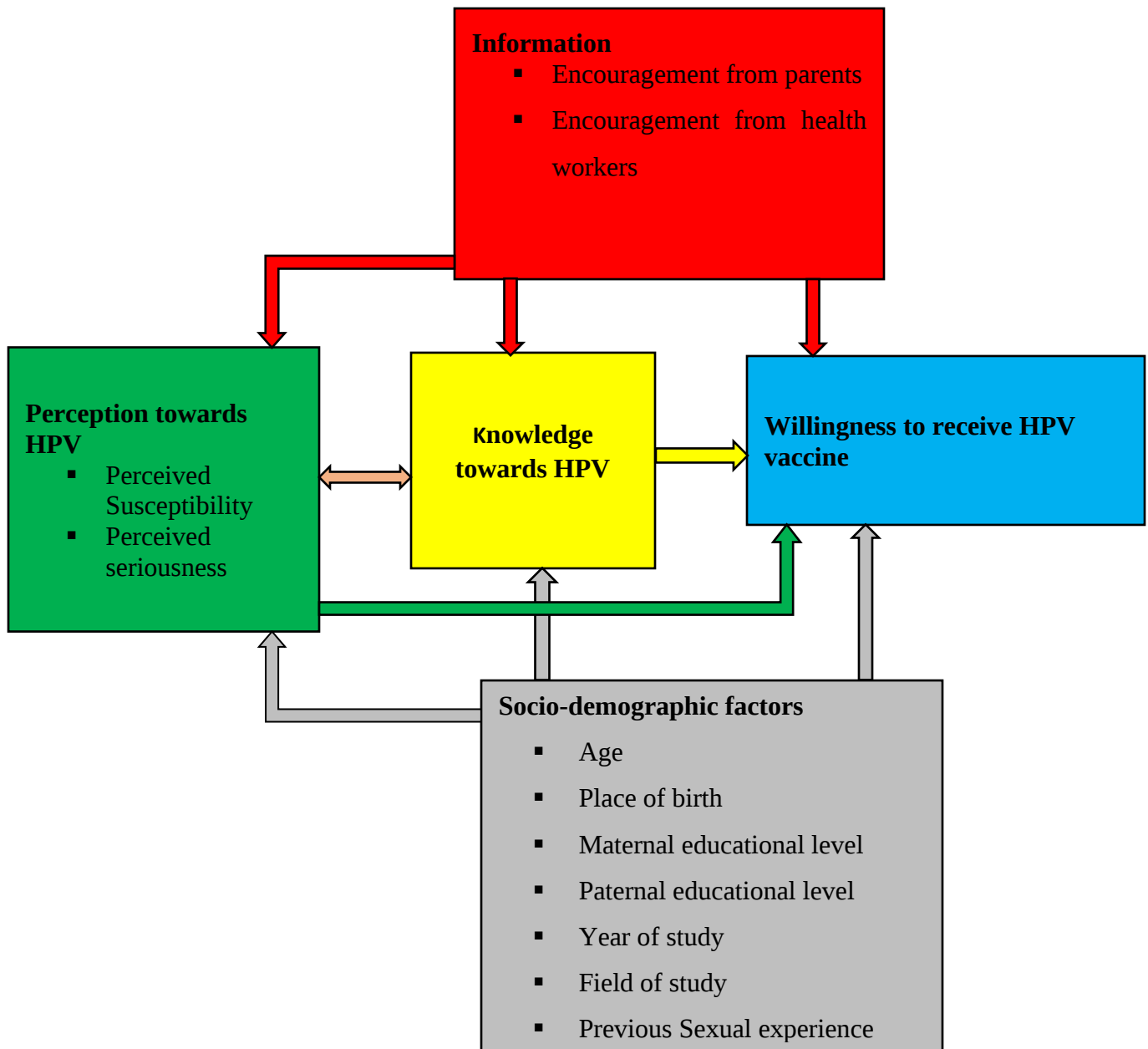


Figure 1: Conceptual framework for human papillomavirus knowledge, perception, and vaccine uptake (Source: Self-constructed using the literatures above)

3. OBJECTIVES

3.1. General objective

- To assess the Human papillomavirus [HPV] knowledge, perceptions and willingness to receive HPV vaccination among female students at Addis Ababa University, Addis Ababa, Ethiopia, 2022

3.2. Specific objectives

- To determine the level of knowledge of HPV infection among the study participants
- To determine level of perception of HPV infection among the study participants
- To assess willingness to receive the HPV vaccination among the study participants
- To examine factors associated with knowledge, perception and willingness to receive HPV vaccination among study participants
- To explore the students' perception about HPV infection and accessibility of HPV vaccine

4. METHODS

4.1. Study area and period

The study was conducted at Addis Ababa University, which is found in Addis Ababa, Ethiopia. Addis Ababa is the capital city of Ethiopia, and the head quarter of African union and other international organizations.

Addis Ababa University (AAU), which was established in 1950 as University College of Addis Ababa (UCAA), is the oldest and the largest higher learning and research institution in Ethiopia. Since its establishment AAU has been an all-rounded center in teaching, learning, research and community services. Beginning with enrolment capacity of 33 students in 1950 AAU now has 46,000 students (28000 undergraduate, 16,000 masters and 2000 PhD students) in its 17 campuses and 10 colleges.

The university has 10 colleges, 2 technology institutes, 11 research centers, 12 schools, 55 departments, and 2 teaching hospitals. The numbers of regular undergraduate students in each college are - Addis Ababa institution of technology (AAIT) had 2461 students, College of Business and Economics (CoBE) had 1243 students, College of Education and behavioral studies (CoEBS) had 94 students, College of health science (CoHS) had 2493 students, College of humanities, language studies, journalism and communication (CHLJC) had 77 students, college of law and governance studies (CoLGS) had 282 students, College of Natural science (CoNS) had 1202 students, College of Social Science (COSS) had 348 students, College of veterinary medicine and agriculture had 266 students Ethiopian Institute of Architecture Building Construction and Development (EIABCD) had 892 students, and Skunder Boghossian College of performing and visual arts had 232 students. In the University, female students account of 33% of the total students. There are seven student clinics and two counseling centers (Addis Ababa university main campus registrar January, 2021)

The data was collected from February 7 to April 15/ 2022

4.2. Study approach

The study was implemented a convergent mixed method.

A convergent mixed method is One-phase design in which both quantitative and qualitative data are collected and analyzed, then the quantitative and qualitative data analyses will be compared to see if the data confirmed or disproved each other. The quantitative data is explained using qualitative data.

4.3. Quantitative methods

4.3.1. Study design

Institutional based cross-sectional study was applied among female undergraduate students of Addis Ababa University to assess HPV knowledge, perception and vaccine uptake.

4.3.2. Population

4.3.2.1 Source Population: All regular female undergraduate students of Addis Ababa University.

4.3.2.2. Study Population: Randomly selected regular female undergraduate students of Addis Ababa University.

4.3.3. Eligibility criteria

4.3.3.1. Inclusion Criteria: All Addis Ababa University female students attending regular undergraduate program, willing to participate and available in the class at selected campuses of the university during data collection period were included in the study.

4.3.3.2. Exclusion Criteria:

- Female students who were critically ill. During data collection period one student from department of Pre-Engineering complained as she was very ill and unable to fill the questionnaire.

4.3.4. Sampling Methods

4.3.4.1 Sample size determination

The sample size was calculated using the following single population proportion formula;

$$n = \frac{(Z \alpha/2)^2 \cdot P \cdot (1-P)}{d^2}$$

Where,

n = minimum sample size

P = proportion of human papillomavirus knowledge, perception and vaccine uptake. For this study, value of P taken as 19.5% from study done in University of Gondar(29).

Z = Standard score for 95% confidence level = 1.96

D= margin of error =5%

Furthermore, non-response rate of 10% assumed and design effect of 1.5 taken to control clustering effect since multi-stage sampling technique will be used. Based on the above assumptions sample size calculated as follows

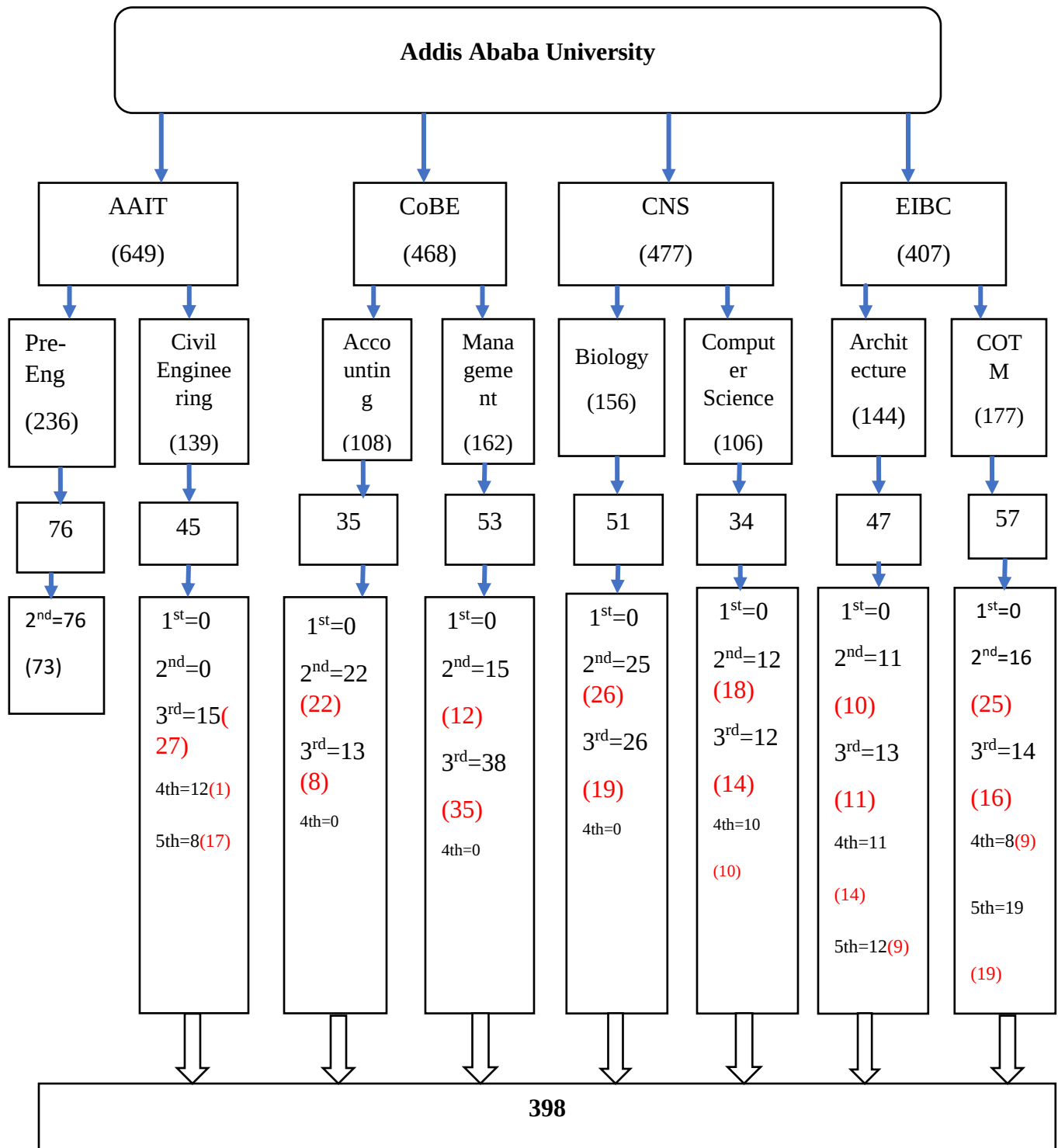
$$n = \frac{(1.96)^2 (0.195) (0.805) (1.5)}{(0.05)^2}$$

n=362 and adding 10% non-response rate final sample size was n=398

4.3.4.2 Sampling procedure

Multi stage sampling technique was used to select study participants. Out of ten colleges in Addis Ababa University, four colleges with the highest number of female students were purposively selected. The purposively selected colleges were Addis Ababa Institute of Technology, College of Business and Economics, College of Natural Science and Ethiopian Institute of Architecture Building Construction and Development. Then two departments from each college with the highest number of female students were selected to find adequate number of sample size. Female students in college of health sciences were excluded in order to minimize contamination of information as they may learn about HPV in academic classes.

Finally calculated sample size was allocated based on probability proportional to the size of female students in each selected department and year of study respectively. The stratification by year of study was made due to variable of interest might vary across the year. The study participants from each selected department and year of study were picked up using simple random sampling technique



Key: - Numbers written in red color were actually collected data.

Figure 2. Sampling procedures of female students in Addis Ababa University 2022

4.3.5 Study variables

4.3.5.1 Dependent variable

- Knowledge about HPV
- Perception towards HPV
- Willingness to receive HPV vaccination

4.3.5.2 Independent variables

- Age
- Perceived Susceptibility
- Maternal educational level
- Paternal educational level
- Year of study
- Field of study
- Encouragement from health workers
- Knowledge towards HPV
- Perceived seriousness
- Place of birth
- Sexual experience

4.3.6 Operational definition and definition of terms

Knowledge of HPV and HPV Vaccination

A 15-item knowledge questionnaire adapted from previous studies(4,6,24) were used to assess the participants' knowledge regarding HPV infection, the relationship of HPV infection with the development of cervical cancer and genital warts, transmission routes, prevention of HPV infection. The response options are “true”, “false”, or “unsure”. A correct response was given a score of 1 and an incorrect or “unsure” response was scored 0. The possible total knowledge score ranged from 0 to 15, with higher scores (above mean score) representing higher levels of knowledge.

Women's perception about the HPV, risk factors, and cervical cancer

The Oxford Advanced Learner's Dictionary (2010:1132) defines a 'perception' as a particular attitude towards something or view point. In this study, belief and perspective of female students about human papillomavirus, risks and its vaccine will be measured based on their perceived vulnerability of the disease, perceived severity of the disease, and perceived benefits of the vaccination. A 10-item knowledge questionnaire adapted from previous studies(6,38,43) were used to measure women's perception about the HPV, risk factors, and cervical cancer was measured by a Likert scale with 5 response options. The response options involve 'Strongly Disagree = 1, Disagree = 2, Neutral = 3, Agree = 4, and Strongly Agree = 5.' The total score was computed for each respondent and it ranges from 10-50. A higher score (above mean score) indicates more favorable perception. The score was computed only for perception.

HPV vaccine uptake and willingness to receive HPV Vaccination

The participants will be asked to indicate their HPV vaccination status. Those who had not received the HPV vaccination were asked about their willingness to receive the HPV vaccine in the near future(37). The response option was "yes" or "no".

Human papillomavirus (HPV): is the most common viral infection of the reproductive tract that infect most sexually active women and men(1)

Human papillomavirus vaccine: is a vaccine used to protect against infection with human papillomaviruses (HPV)(2)

4.3.7 Data collection tool and procedures

Data was collected by structured questionnaire adapted from other studies to assess women's knowledge(4,6,24) and perception(6,38,43), and HPV Vaccine uptake. The questionnaire consists of twelve socio-demographic items for women, 11 Sexual and reproductive health characteristics items, 15 knowledge items, and 10 Likert scale type items.

Two data collectors with BSc in Nursing and previous experience on data collection were recruited. Training for data collector was given by the principal investigator about the main principles that have to be respected during data collection and how each question in the questionnaires have to be understood

4.3.8 Data quality management

The Data quality assurance was done before, during and after data collection process. Before data collection: a structured self-administered questionnaire was prepared by reviewing relevant literatures. The questionnaire was prepared in English, because it is a medium of learning at the higher education institutions. Training was given for data collectors on the objectives and relevance of the study, data collection, confidentiality of information and informed consent.

Pretesting of the questionnaires were done by taking 5% (20) of the sample among female undergraduate students of college of social science of AAU. The college was not included in the actual data collection. There was a close supervision during the data collection process and checking of questionnaire for completeness and consistency. After data collection, the principal investigator checked completeness of the data, gave non-over lapping numerical code for each questionnaire and entered into EPI- data version 4.6.0.4.

4.3.8 Data processing and analysis

The collected data were checked for completeness, coded and entered into Epi Data version 4.6. Then, the entire data were corrected for errors and exported to statistical Package for Social Sciences (SPSS) version 25 for analysis. The descriptive statistics (means, percentages, or frequency) were calculated and the bivariate logistic regression analysis was used to see the relationship between dependent and independent variables. Mean was used for normally distributed continuous variables and independent samples t-test was used to compared mean score for the knowledge and perception. Variables having a p-value of ≤ 0.25 in bivariate analysis were considered to have an association with the dependent variable and entered into multivariate analysis. The strength of the association was measured using an odds ratio and interpreted by using a 95% confidence interval, and $p < 0.05$ were statistically significant in multivariate analysis. Goodness of fit was checked by using Hosmer-Lemeshow goodness of fit. Then result of the data was presented using text, tables, figures and graphs.

4.4 Qualitative methods

4.4.1. Study design

An exploratory, descriptive, qualitative approach was employed. It aimed to gain a deeper understanding of the knowledge and perceptions of female students towards HPV and its vaccine.

4.4.2. Study participants

Twelve (12) In-depth Interviews were conducted with female students who met the eligibility criteria. Their age ranges from 19-23. A purposive sampling strategy was used to select the participants and they were contacted through student representative in selected colleges of the university. The sample size was determined based on data saturation; recurrent patterns became evident in the participants' narrations

4.4.3 Sampling methods

The study sample contained female undergraduate students of Addis Ababa University. A purposive sampling method was used to select the eligible students. Sampling and data collection were continued until reaching data saturation and obtaining no new data from the interviews.

4.4.4. Eligibility criteria

4.4.4.1. Inclusion criteria

- Female students attending regular undergraduate program
- Students whose age was 18 years and above, and had given written consent to participate in the study.

4.4.4.2. Exclusion criteria

- Those who were not willing to participate.

4.4.5. Data collection tools and procedure

The Researcher conducted face-to-face interviews with participants. An interview guide was utilized to outline the open-ended topics. The researcher piloted the schedule of the interview on two female students who met the eligibility requirements. The interview was contained open-ended questions that cover socio-demographic characteristics, knowledge of HPV infection and its vaccine as well as their perception towards HPV infection and its vaccine.

The interviews covered the central question **What have you heard about HPV infection? Where did you hear it? Have you received the HPV vaccine? What made you want to get the vaccine? If**

you haven't received the vaccine, would you be willing to be vaccinated if there is vaccination against HPV? Would you advise your friends/ families to get the vaccine? What do you think some girls not willing to be vaccinated?'

The principal investigator and one research assistance having qualitative data collection experience conducted the interviews. The participants were selected based on their availability in each selected college. With the participants' verbal consent, the assistant researcher audio-recorded the interviews and the investigator took notes during the interview to capture the original accounts of the participants' responses. At the same day, the audio records were transcribed word by word and used as the primary research data. One-to-one interviews were conducted in Amharic and Afaan Oromoo in a quiet and private room, free from disturbances, and where study participants feel safe. The audio-recorded interviews session ranged from 15-25 minutes

4.4.6 Trust worthiness

Credibility

To ensure credibility the researcher discussed data coding, data analysis and interpretation continuously throughout the research process with advisors' and other researchers who have experience in doing qualitative researches.

Dependability

The findings of the study were audited and verified by advisors and other researchers who have experience in qualitative research to examine the data. The audio records and process used during data analysis are available for cross-checking

Transferability

To ensure transferability, the research sample, environment and process have stated clearly. Participant statements were quoted directly, and detailed definition was developed between the studied context and the study itself.

Conformability

To establish conformability, when the interview was conducted, field notes were taken. More over the interviews were audio-recorded and the raw data is available. The data were analyzed using codes, categorization and forming theme from coded data to eliminate personal biases

4.4.7. Data analysis

Descriptive statistics were used to summarize sociodemographic characteristics of participants. Analysis of the data was started simultaneously with data collection and thematic analysis was used. The researcher followed systematic approach with the following six steps: Step 1: Verbatim transcription and in this step, the audio recordings of individual interviews were transcribed and translated verbatim from Amharic and Afaan Oromoo to English by a language expert. Step 2: Coding and data was organized in meaningful and systematic way. Step 3: Generating themes and in this step, the researcher looked over the codes for clarity and consistency by selecting a given text, several codes were combined into a single theme. Step 4: Reviewing themes. Step 5: The researcher interpreted the coded data, described the themes and categorize the data. In this step, the final list of themes was named and defined. Step 6: The researcher wrote up the result of analyzed data(44).

4.5 Ethical considerations

Ethical approval for this study was obtained from Addis Ababa University, College of health Sciences, and School of Nursing and Midwifery research ethics committee with (protocol number SNM/M. D/017/14). A written permission to carry out the research was submitted to all selected colleges of Addis Ababa University.

The objectives of the study, the risks and benefits of participating in the study was communicated prior to asking willingness of the study participants to participate in the study.

Informed verbal and written consent were obtained from each respondent prior to data collection. After getting informed consent from the respondents, the right of the respondents to refuse answer for few or all of the questions was also valued

Participants were informed that their participation will be purely voluntary and assured of the confidentiality of identity and other personal information. Except the principal investigator and the research team, no other people will have access to the collected data.

4.6 Dissemination of the result

The results of the study will be presented to Addis Ababa University College of Health Sciences, School of Nursing and Midwifery, department of Midwifery and Postgraduate Library, after completion of the study. Efforts will be made to Publish on peer-reviewed journals and present it at seminars and scientific conferences

5. RESULT

5.1 Result of quantitative study

The result of this study has explained in seven parts. The first part of the study is mainly focusing on socio-demographic characteristics of female university students in Addis Ababa university. The second part addressed about sexual history of study participants. The other parts focused on source of information about HPV infection and its vaccine, willingness to receive the HPV vaccine, knowledge of HPV and its vaccine, perception towards HPV vaccine and factors associated with knowledge, perception and willingness to receive the vaccine respectively. The final part presented the result of qualitative study.

5.1.1 Socio-demographic characteristics of the study participants

A total of 393 female students were included in this study with 98.7% response rate. Two students refused to participate and 3 students didn't complete the questionnaire. The mean age of the study participants was 20.69 (± 1.206) ranging from 18-26 years. Among the participants, 205 (52.2%) were from town other than Addis Ababa by residence, 379 (96.4%) of them were single by marital status and about 267 (67.9%) of them were followers of Orthodox. The results of socio-demographic characteristics of study participants were shown in (Table 1)

Table 1 Socio-demographic characteristics of study participants (n=393)

Variables		Frequency	Percent
Age(years)	18-22	362	92.1
	23-26	31	7.9
Department	Accounting	30	7.6
	Architecture	44	11.2
	Biology	45	11.5
	Biomedical Engineering	22	5.6
	Civil Engineering	21	5.3
	Computer science	42	10.7
	COTM	69	17.6
	Management	47	12.0
	Pre-Engineering	73	18.6
Year of study	Second	172	43.8
	Third	143	36.4
	Fourth	34	8.7
	Fifth and above	44	11.2
Religion	Orthodox	267	67.9
	Muslim	47	12.0
	Protestant	67	17.0
	Catholic	3	.8
	Others	9	2.3
Residence	Addis Ababa	188	47.8
	Other town/city	205	52.2
Mother's level of education	No formal education	48	12.2
	Primary school	45	11.5
	Secondary school	106	27.0
	College and above	194	49.4
Mother's occupation	Government employee	113	28.8
	Private	127	32.3
	Unemployed/ House wife	153	38.9
Father's level of education	No formal education	33	8.4
	Primary school	21	5.3
	Secondary school	76	19.3
	College and above	263	66.9
Father's occupation	Government employee	156	39.7
	Self employed	182	46.3
	Unemployed	55	14
Marital status	Single	379	94.5
	Married	14	3.5

Sexual history of the participants

Among the study participants majority of them, 359 (91.3%) of the respondents are not currently sexually active, while only 34 (8.7%) said that they had sexual intercourse before the study. Out of the participants who had sexual intercourse 17 (50%) of the respondents had sexual intercourse between the age of 15-19 and the rest had sexual intercourse after the age of nineteen. The result also shows that 21 (61.8%) of the respondents had had one sexual partner, whereas 13(38.1%) had two or more sexual partners. Among the participants who had sexual intercourse before, 15(44.1%) and 8(23.5%) of the respondents sometimes and always use a condom during sexual intercourse respectively, while 10 (29.4%) of the respondents never used condom during sexual intercourse and 1(2.9%) of the participant responded as she was not currently sexually active.

The result also indicated that 365(92.9%) of the students had no family history of vaccination. In this study family history of vaccination represent female students whose little sisters have vaccinated against HPV.

Sources of information about HPV vaccine

Among the study participants, majority of them 270(68.7%) have not heard about HPV vaccine while only 123(31.3%) have heard about HPV vaccine from different sources. Social media and internet were the major sources of information for study participants who have heard about HPV vaccine 53(45.3%) followed by television/radio 31(26.5%), formal class 15(12.8%), healthcare provider 12(10.3) and others 6(5.1%) respectively. Six participants who have responded as they have heard about HPV vaccine haven't identified their sources of information (Figure 3)

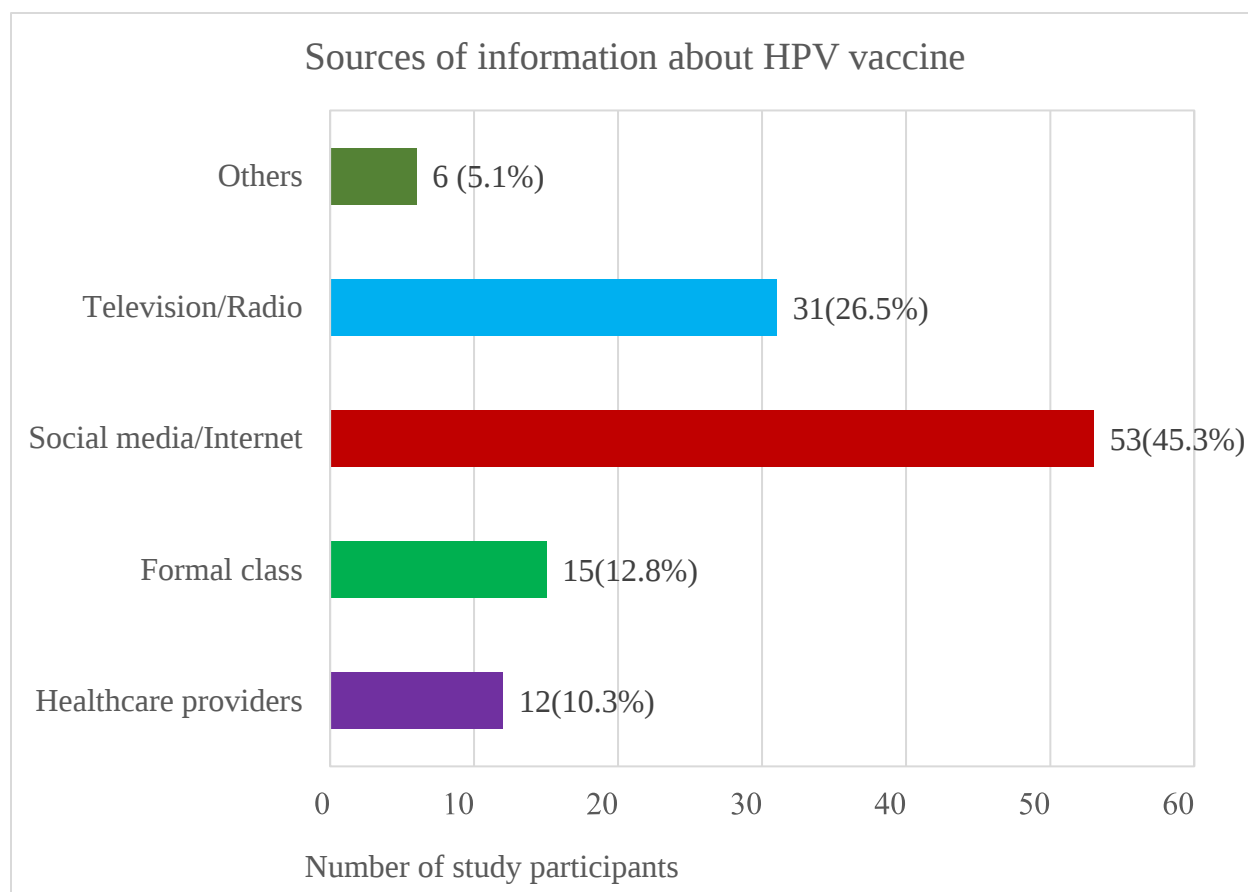


Figure 3. Distribution of sources of information about HPV vaccine among female students in Addis Ababa University, Ethiopia, 2022 (n=123)

5.1.2. Knowledge about HPV, Vaccination, Risk factors and Cervical cancer

In this study, 15 items were used to assess knowledge of HPV, HPV vaccination, risk factors and cervical cancer. The lowest score was 0 and the highest was 15. The mean total knowledge score was 5.44 with standard deviation (± 3.597). Participants who score less than mean score (5.44) were considered as having poor knowledge, while those scores greater than 5.44 were regarded as having good knowledge. Out of the 393 participants who fully filled the questionnaire, 161 (41%) had good knowledge and 232 (59%) had poor knowledge.

Among the study participants, only 183 (46.6%) of them know that HPV can cause cervical cancer. All the participants' responses to knowledge statements were summarized in (Table 2)

Table 2 knowledge about the human papilloma virus [HPV], risk factors and cervical cancer among female students in Addis Ababa university, Ethiopia, 2022 (n=393)

Knowledge statements	Yes	No
HPV is a viral infection	223(56.7)	170(43.3)
HPV can cause anal cancer	109(27.7)	284(72.3)
HPV is a sexually transmitted infection	189(48.1)	204(51.9)
Multiple sexual partners predispose to HPV infection	201(51.1)	192(48.9)
HPV can cause cervical cancer	183(46.6)	210(53.4)
HPV can cause genital warts	111(28.2)	181(71.5)
HPV infection can be prevented by vaccination	212(53.9)	181(46.1)
HPV infection can be prevented by use of condom	111(28.2)	282(71.8)
HPV infection can be prevented by regular HPV screening	118(30)	275(70)
Early sexual debut increases the risk for HPV infection	164(41.7)	229(58.3)
The best time for HPV vaccine is age 11 to 12 yrs. Old	63(16)	330(84)
Being sexually active puts a woman greater risk of CC	129(32.8)	264(67.2)
HPV can cause penile cancer	67(17)	326(83)
HPV Can infect both men and women	106(27)	286(72.8)
There is a vaccine available to prevent HPV infection in Ethiopia	142(36.1)	251(63.9)

5.1.3. Perceptions towards HPV and its vaccine

In this study, 10 items were used to assess perception of participants towards HPV and its vaccine. The lowest perception score was 10 and the highest was 47. The mean score was 32.96 with standard deviation (SD, 5.7). Participants who score less than mean score (32.96) were considered as having less favorable perception whereas those who scores greater than or equal to 32.96 were considered as having more favorable perception. Overall, 226 (57.5%) of the participants had more favorable perception and 167 (42.5%) had less favorable perception regarding to HPV infection, risk factors and HPV vaccine.

Less than half of the participants 143 (36.4%) agreed or strongly agreed that they would want to take the HPV vaccine because they feel at risk of getting HPV infection. Majority of the

participants, 243 (61.6%) agreed or strongly agreed that HPV infection increases the likelihood of getting cervical cancer as shown in (Table 3)

Table 3. Perception about the HPV, risk factors, and cervical cancer among female students in Addis Ababa University, Ethiopia, 2022 (n=393)

Perception statements	Disagree No (%)	Neutral No (%)	Agree No (%)
I will take the vaccine because I feel at risk of getting HPV infection	118(30)	132(33.6)	143(36.4)
HPV infection increases the likelihood of getting CC	32(8.1)	119(30.3)	242(61.6)
I feel I know enough information about cervical cancer	243(61.8)	83(21.1)	67(17)
	52(13.2)	64(16.3)	277(70.5)
I would tell my sexual partner if I had HPV			
If I had HPV, I would be at risk for transmitting it to others	95(24.2)	97(24.7)	201(51.1)
I would need the HPV vaccine if I had multiple sexual partners	64(16.3)	114(29)	215(54.7)
Women should do pap smear once a year	56(14.2)	192(48.9)	145(36.9)
I would need the regular condom use when engaging in sexual activity	69(17.6)	125(31.8)	199(50.6)
If a woman receives HPV vaccine, she doesn't need to do pap smear any more	152(38.7)	183(46.6)	58(14.8)
The HPV vaccine is an effective way to prevent HPV infection	44(11.2)	126(32.1)	223(56.7)

5.1.4 Willingness to receive the HPV vaccination

Among the study participants only 6(1.5%) of the respondents have received the HPV vaccine and 118(30%) of the respondents were willing to receive the vaccine (Figure 4)

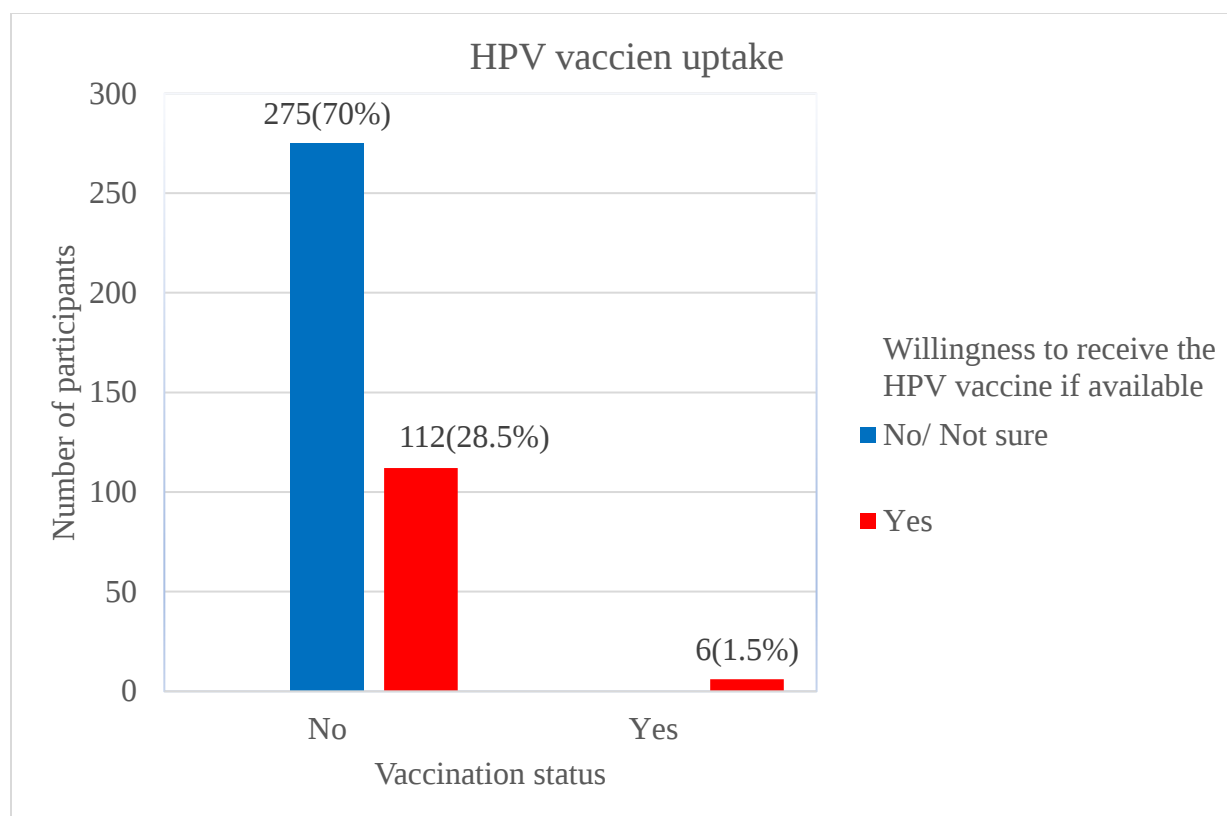


Figure 4. HPV vaccine uptake status and willingness to receive the vaccine if available among female students in Addis Ababa University, Ethiopia, 2022 (n=393)

5.1.5. Factors associated with knowledge of HPV and its vaccine

In bivariate logistic regression analysis, a total of sixteen variables (nine socio-demographic variables and seven behavioral factors) were tested to check for association with dependent variable (knowledge of HPV and its vaccine). Among the variables, eight of them (Age of participants, year of study, student's mothers' level of education, student's mothers' occupation, Father's level of education, father's occupation, hearing about HPV vaccine and perception towards HPV and its vaccine) were found to have significant association with knowledge of HPV and its vaccine. The six variables that were found to have significant association with knowledge of HPV and its vaccine in binary logistic regression were put in to multiple logistic analysis model.

In multivariate analysis student's mothers' occupation, mother's level of education, hearing about HPV vaccine and perception towards HPV and its vaccine were significantly associated with knowledge of HPV and its vaccine. Students who have heard about HPV vaccine were 2.18 times more likely have good knowledge about HPV and its vaccine than those who have not heard about

HPV vaccine (AOR =2.18; 95% CI= 1.34- 3.54; P= .002). Similarly, students who have more favorable perception towards HPV and its vaccine were 3.2 times more likely to have good knowledge than those who have less favorable perception (AOR =3.2; 95% CI=2.0- 5.14; P= .001) as shown in (Table 4)

Table 4 Bivariate and multivariate regression analysis of factors associated with knowledge of HPV and its vaccine among female students in Addis Ababa University, Ethiopia, 2022.

Variables		Knowledge		COR (95%CI)	AOR (95%CI)	P-value
		Poor	Good			
Age	18-22	208	154	1	1	
	23-26	24	7	0.39(0.17, 0.94) **	1.03(0.10, 1.15)	.082
Year of study	2 nd	87	85	1	1	
	3 rd	89	54	0.62(0.4, 0.98) *	0.74(0.45, 1.22)	.243
	4 th	25	9	0.37(0.16, 0.84) *	0.48(0.2, 1.17)	.105
	5 th and above	31	13	0.43(0.21, 0.88) *	1.02(0.36, 2.91)	.967
Residence	Addis Ababa	116	72	1	1	
	Other town	116	89	1.24(0.83, 1.85)	0.95(0.58, 1.55)	.846
Mother's level of education	No formal education	21	27	1	1	
	Primary school	25	20	0.62(0.27, 1.41)	0.58(0.21, 1.58)	.284
	Secondary school	68	38	0.44(0.22, 0.87) **	0.34(0.13, 0.88) **	.026
	College and above	118	76	0.5(0.26, 0.95) **	0.56(0.2, 1.62)	.288
Mother's occupation	Gov't employee	72	41	1	1	
	Private	71	56	1.39(0.82, 2.33) *	2.04(1.04, 4.02) **	.038
	Unemployed	89	64	1.26(0.77, 2.08)	1.31(0.63, 2.72)	.47
Father level of education	No formal education	15	18	1	1	
	Primary school	14	7	0.42(0.13, 1.3) *	0.51(0.14, 1.85)	.309
	Secondary school	39	37	0.79(0.35, 1.79)	1.39(0.48, 4.01)	.54
	College and above	164	99	0.5(0.24, 1.04) *	0.7(0.24, 2.04)	.507
Father occupation	Gov't employee	87	69	1	1	
	Self employed	108	74	0.86(0.56, 1.33)	0.63(0.35, 1.1)	.105
	Unemployed	37	18	0.61(0.32, 1.17) *	0.44(0.21, 0.93) **	.032
Heard about HPV Vaccine?	No	178	92	1	1	
	Yes	54	69	2.47(1.60, 3.82) ***	2.18(1.34, 3.54) **	.002
Perception towards HPV and its vaccine	Less favorable	124	24	1	1	
	More favorable	108	118	3.15(2.04, 4.86) ***	3.2(2.0, 5.14) ***	.001

Keys: * P <.25, ** P<.05, ***P<.001 1 – reference category

5.1.6. Factors associated with perception towards HPV and HPV vaccine

In bivariate logistic regression analysis, a total of sixteen variables (nine socio-demographic variables and seven behavioral factors) were tested to check for association with dependent variable (perception towards HPV and its vaccine). Among the variables, five of them (Age of participants, year of study, heard about HPV vaccine, sexual history of participants and knowledge of HPV and its vaccine) were found to have significant association with perception towards HPV and its vaccine. The variables that have significant association with perception towards HPV and its vaccine in binary logistic regression were put in to multiple logistic analysis model.

In multivariate analysis, year of study, hearing about HPV vaccine and knowledge of HPV and its vaccine were significantly associated with perception towards HPV and its vaccine. Students who were in third year of study were 0.47 less likely to have more favorable perception than those who were in second year of study (AOR =0.47; 95% CI=0.29-0.76; P= .002). In other ways, students who have heard about HPV vaccine (AOR =2.71; 95% CI=1.02-2.67; P= .043), having good knowledge about HPV and its vaccine (AOR =2.91; 95% CI=1.84,4.63; P= .001) were 2.71 and 2.91 times more likely to have more favorable perception than their counterparts respectively as shown in (Table 5)

Table 5 Bivariate and multivariate logistic regression analysis of factors associated with perception towards HPV and its vaccine among female students in Addis Ababa University, Ethiopia, 2022.

Variables		Perception		COR (95%CI)	AOR (95%CI)	P-value
		Less Fav.	More Fav.			
Age of participant	18-22	15	211	1	1	
	23-26	1	15	0.67(0.32, 1.4)	0.75(0.43,1.29)	.291
		16				
Year of study	2 nd	56	116	1	1	
	3 rd	76	67	0.43(0.27, 0.67) ***	0.47(0.29,0.76) **	.002
	4 th	12	22	0.89(0.41, 1.92)	1.53(0.61,3.83)	.367
	5 th and above	23	21	0.44(0.23,0.86) **	0.9(0.37, 2.21)	.82
Residence	Addis Ababa	82	106	1	1	
	Other town	85	120	1.09(0.73, 1.63)	0.97(0.61, 1.55)	.894
Mother's occupation	Gov't employee	43	70	1	1	
	Private	62	65	0.64(0.39, 1.08) *	0.61(0.35, 1.09)	0.09
	Unemployed	62	91	0.9(0.55, 1.48)	0.9(0.51, 1.58)	.071
Father's level of education	No formal education	11	22	1	1	
	Primary school	11	10	0.76(0.15, 1.4) *	(0.18,2.02)	0.40
	Secondary school	33	43	0.65(0.28,1.53)	(0.29, 1.88)	.05
	College and above	11	151	0.67(0.31, 1.45)	(0.33, 1.81)	.052
		2				.054
Sexual history	No	15	203	1	1	
	Yes	6	23	1.61(0.76, 3.4) *	1.56(0.68,3.57)	.293
		11				
Heard HPV Vaccine?	No	12	142	1	1	
	Yes	8	84	1.94(1.24,3.04) **	2.71(1.02,2.67) **	.043
		39				
Knowledge of HPV	Poor knowledge	12	108	1	1	
	Good knowledge	4	118	3.15(2.04, 4.86) ***	2.91(1.84,4.63) ***	.001
		43				

Keys: * P <.25, ** P<.05, ***P<.001 1 – reference category

5.1.7. Factors associated with willingness to receive HPV vaccination

Among the study participants only six (1.5%) were vaccinated against HPV infection while 387 were not vaccinated. Regarding to their willingness to vaccination, 118(30%) of the study participants were willing to receive the HPV vaccine if available.

Binary logistic regression method was used to see the association of each independent variable with the outcome variable “willingness to receive the vaccine. In binary logistic regression, years of study, student’s mothers level of education, student’s mothers occupation and family history of vaccination were among the sociodemographic factors that were found to have significant association with willingness to receive HPV vaccine if available and History of sexual intercourse, hearing about HPV, awareness about prevention of HPV infection and perception towards HPV were among the behavioral factors that have shown statistical significance with willingness to receive the HPV vaccine. Variables that were significant in Binary logistic regression were put in to multiple logistic analysis model.

The multivariate analysis indicated that female students who had family history of vaccination were 10.05 times more likely willing to be vaccinated against HPV infection than those who have no family history of vaccination (AOR=10.05; 95%CI=3.48-29.01; $P<.001$). Similarly, having history of sexual intercourse before the study (AOR =2.78; 95% CI=1.17-6.47; $P=.02$), having more favorable perception towards the HPV and its vaccine (AOR=3.92; 95%CI=2.23-6.9; $P<.001$) were 2.78 and 3.92 more likely willing to receive HPV vaccine than their counterparts respectively.

In other ways, female students who were in 3rd year of study were 0.45 less likely willing to be vaccinated against HPV infection than those who were in 2nd year of study (AOR=0.45; 95%CI=0.25-0.81; $P=.007$) and female students whose mothers have private work were 0.32 (AOR=0.32;95%CI;0.16-0.65; $P=.002$) less likely willing to vaccinate than those whose mothers were government employee as presented in (table 6)

Table 6 Bivariate and multivariate logistic regression of factors associated with willingness to be vaccinated against HPV among female students in Addis Ababa University, Ethiopia, 2022.

Variables		Willing to vaccinate		COR (95%CI)	AOR (95%CI)	P-value
		No	Yes			
Age	18-22	251	11	1	1	0.526
	23-26	24	7	0.66(0.28, 1.58)	0.65(0.17, 2.49)	
Year of study	2 nd	102	70	1	1	0.007
	3 rd	116	27	0.34(0.20-0.57) ***	0.45(0.25, 0.81) **	
	4 th	23	11	.70(0.32-1.52)	0.99(0.4, 2.48)	
	5 th and above	34	10	.43(0.20-0.92) **	1.04(0.29, 3.68)	
Residence	Addis Ababa	139	49	1	1	0.064
	Other town	136	69	1.44(0.93, 2.23)	1.71(0.97, 3.00)	
Mother's occupation	Gov't employee	67	46	1	1	0.002
	Private	103	24	0.34(0.19, 0.61)	0.32(0.16, 0.65) **	
	Unemployed	105	48	*** 0.67(0.4, 1.11) *	0.62(0.32, 1.17)	
Father's level of education	No formal education	36	12	1	1	0.942
	Primary school	32	13	0.55(0.16, 1.87)	0.95(0.24, 3.79)	
	Secondary school	76	30	0.58(0.24, 1.41) *	0.66(0.23, 1.88)	
	College and above	131	63	0.79(0.37, 1.69)	0.75(0.28, 1.99)	
Father's occupation	Gov't employee	103	53	1	1	0.584
	Self employed	132	50	0.74(0.46, 1.17) *	0.84(0.44, 1.59)	
	Unemployed	40	15	0.73(0.37, 1.44)	0.71(0.31, 1.61)	
Sexual history	No	257	102	1	1	0.002
	Yes	18	16	2.24(1.10-4.56) **	2.78(1.17, 6.47) **	
Heard about HPV Vaccine?	No	204	66	1	1	0.197
	Yes	71	52	2.26(1.44-3.56) ***	1.43(0.83, 2.46)	
Family history of vaccination	No	269	96	1	1	.001
	Yes	6	22	10.27(4.05-26.1) **	10.05(3.48, 9.28) ***	
Perception towards HPV and its vaccine	Less favorable	144	23	1	1	.001
	More favorable	131	95	4.54(2.72-7.59) ***	3.92(2.23, 6.9) ***	

Keys: * candidate for multivariate at P <.25, ** P<.05, ***P<.001 1 – reference category

5.2. Result of qualitative Study

5.2.1. Participants characteristics

A total of 12 female students were recruited for the qualitative research. The mean age of the students was 20.83 (± 1.51 SD) ranging from 19-23 years. Regarding to their department 2 students were from department of economics, 2 from journalism and the others were from departments of accounting, Biology, English, Information system, Management, Mechanical engineering, public administration and development management and social work. The socio-demographic characteristics has shown in (table7)

Table 7 Socio-demographic characteristics of the study participants (Qualitative)

Participants code	Age	Marital Status	Department	Residence	Year of study
Participant 1	21	Single	PADM	Other town	3 rd
Participant 2	22	Single	Accounting	Addis Ababa	3 rd
Participant 3	22	Single	English	Addis Ababa	2 nd
Participant 4	23	Single	Economics	Addis Ababa	3 rd
Participant 5	20	Single	Economics	Addis Ababa	2 nd
Participant 6	20	Single	Management	Other town	3 rd
Participant 7	20	Single	Social work	Other town	2 nd
Participant 8	21	Single	Journalism	Other town	3 rd
Participant 9	19	Single	Journalism	Other town	2 nd
Participant 10	19	Single	Information System	Other town	2 nd
Participant 11	23	Single	Biology	Other town	2 nd
Participant 12	20	Single	Mechanical Engineering	Other town	4 th

5.2.2. Themes

From analysis and coding of in-depth interview data, students' knowledge, perception and willingness to receive HPV vaccination have categorized in to four main themes and sub-categories under each main themes, as shown in table (8)

Table 8 Identified themes and categories from in-depth interview data

Themes	Categories
HPV vaccination and related diseases: perceptions and knowledge	HPV vaccination: Raising Awareness
	Misconception about HPV vaccine
	Unaware of the health risks associated with HPV
	Source of information: HPV Vaccination
Knowledge and awareness: HPV transmission methods	HPV transmission ways are well-known and understood.
	A lack of understanding of HPV transmission methods
HPV infection and cervical cancer prevention	Regular Screening [Pap smear tests]
	Getting vaccinated against HPV
	HPV is prevented by using condoms
Willingness to receive HPV vaccination	Being outside of the target/eligible group
	Getting screened before the HPV vaccine
	Information is required for decision

Theme I: HPV vaccination and related diseases: perceptions and knowledge

Knowledge and perception towards HPV vaccination and related diseases were the first theme that have identified by analysis of in-depth interview data. Within this main theme, four categories have identified.

HPV vaccination: Raising Awareness

According to study participants view, previously the information about HPV and its vaccine was scarce. As they have mentioned awareness creation campaigns is one major way to increase community's awareness about severity and prevalence of HPV infection and cancer prevention benefits of the vaccine.

“In the past, little was known about HPV vaccine.... It is currently being discussed in the community widely...and I'm aware of the possibility of HPV vaccination” [Participant 2, 22 years old]

Participants also believe that HPV is the severe disease that can causes a variety of health consequences like uterine cancer among sexually active women. They added that HPV vaccine can help to reduces risks of HPV infection and improve women's reproductive health.

“If HPV is not prevented as soon as feasible, it can cause a variety of health concerns. One issue could be uterine cancer, but there could be others. ... So, the young woman should be vaccinated against HPV to reduce the risk of HPV-related illnesses. ... She is at risk of HPV infection as long as she is sexually active...” [Participant 1, 21 years old]

Misconception about HPV vaccine

Rumors and misconceptions spread out in the community regarding the HPV vaccine was noticed as one reason that hinder females from receiving the vaccine. The rumors that the participants reported to spread out in the community include, HPV vaccination could cause infertility in women, it is coming to reduce population growth and causes heavy menstrual bleeding. The participants stated that increasing community awareness before delivery the vaccine for girls can help to decrease the rumors and misconception regarding to HPV vaccine. The sample response included:

“Before delivering a vaccine, you need to raise community awareness as there are various rumors that hinder females from taking the vaccine... For example, some people believe that HPV vaccine might make a woman infertile...” [Participant 11, age 23 years old]

Some of the participants also reported as they have changed their decision to receive the vaccine after hearing the rumors related to HPV vaccination when they were in high school student.

“As we had heard that the HPV vaccine causes infertility in the future, my friends and I opted not to get it while we were in high school...” [Participant 4, age 23 years old]

Unaware of the health risks associated with HPV

Most participants had reported that they have inadequate knowledge about HPV and associated health risks. Participants stated that the only information they obtained from broadcast media was about cervical cancer. Therefore, they believe as HPV is a severe disease by itself. The sample quotes included: -

“I am unaware of the health risks associated with HPV.... I'm not sure, but it's a disease by itself”
[Participant 2, 22 years old]

I'd only heard about cervical cancer from television... that it affects women... but I'd never heard of HPV... I'm not familiar with the health consequences of HPV... [Participant 3, 22 years old]

In addition, participants stated the need to provide necessary health information and health education as they play important role in increasing community awareness about the health risks associated with HPV.

“It is important that all members of the community receive correct information about the disease...” [Participant 1, 21 years old]

Among the participants, one participant complains as she has no information about HPV and heard for the first time at the time of interview. This is evidenced by the following quote:

“I'm not aware of the health hazards linked to HPV... I'm learning about the HPV infection for the first time through you. ...” [Participant 6, 20 years old]

Source of information: HPV Vaccination

Participants who have heard about HPV vaccine has reported to receive the information from broadcast medias like TV and radio. In addition, they mentioned as the information was disseminated during HPV vaccination campaign in Addis Ababa. The following sample responses support these findings:

“I recently learned about HPV vaccination from the broadcast media (TV, radio, etc.). I heard "vaccinate female children under the age of 14 years" on TV, radio, and on the bus several times in Addis Ababa...” [Participant 2, 22 years old]

In addition, some participants who reported to have heard about HPV vaccination indicated the possibility of getting information from sick individuals. They mentioned that, sick individuals who was told by the health professionals as cervical cancer is fatal disease and has a vaccine that prevent it from occurring has shared the information to them.

“I learnt about HPV from sick individuals, and I'm aware that it's a fatal disease” [Participant 1, 21 years old]

Theme II: knowledge and awareness: HPV transmission methods

The second theme that were identified from analysis of in-depth interview data was Knowledge and awareness towards ways of HPV transmission. Within the theme two categories were identified. These are HPV transmission ways are well-known and understood and lack of understanding of HPV transmission methods.

HPV transmission ways are well-known and understood.

Majority of the participants had identified major ways of HPV transmission. They mentioned that, sexual intercourse is the means that HPV transmits and those females who have multiple sexual partners are at greater risk of developing it. The participants also added that, both men and women are at risk of being infected by HPV. These finding was evident with the following responses: -

“I've heard that if a woman has multiple male sexual partners, she may be at risk of developing HPV. This is the only information I have..... There might be other means of transmission which I don't know...” [Participant 2, 22 years old]

Some participants also believe that HPV can be transmitted by lack of hygiene in addition to sexual contact. One participant stated the probability of infecting by HPV if personal hygiene is not well practiced

“I believe it is transmitted sexually...and having multiple sexual contacts, in my opinion, are one ways of transmission... even though I am not sure, HPV can affect people if they lack personal hygiene...” [Participant 1, 21 years old]

A lack of understanding of HPV transmission methods

Some respondents had reported to have no understanding about the transmission modes of HPV and what disease it cause. The following sample quotes support these: -

“I had no understanding what HPV is, what it causes, how it spreads, etc.” [Participant 7, 20 years old]

Some participants also reported as they lack information about availability of HPV vaccine, health benefits of the vaccine, how HPV transmit from infected person to healthier one

“There is no information on the HPV vaccine's availability or what diseases it prevents.... how it spreads, etc.” [Participant 8, 21 years old]

Theme III: HPV infection and cervical cancer prevention

The third theme that emerged from analysis of in-depth interview data was HPV infection and cervical cancer prevention. Within this main theme, three categories emerged.

Regular Screening [Pap smear tests]

The findings revealed that some of the participants identified the importance of regular health exams as HPV infection and cervical cancer prevention method. In these cases, regular health exams help to detect and treat pre-cancerous condition. This finding was manifested by the following sample responses: -

Regular screening [health exams] can help prevent cervical cancer by detecting and treating pre-cancers.... [Participant 2, 22 years old]

... Frequent health screenings for sexually active girls could help to reduce the risk of HPV infection... [Participant 5, 20 years old]

Getting vaccinated against HPV

Participants have stated that getting vaccinated against HPV is the feasible method of HPV prevention. Some of the participants indicated that getting HPV vaccine helps to protect the young, sexually active ladies from infecting by HPV. This finding was noticeable in the following sample responses: -

.... So, the young woman should be vaccinated against HPV to reduce the risk of HPV-related illnesses. ... She is at risk of HPV infection as long as she is sexually active... [Participant 1, 21 years old]

HPV vaccine, like any other vaccine, prevents disease, in my opinion. If a young lady has several sexual partners, she should get vaccinated for HPV.... condoms can also protect her from contracting HPV.... [Participant 2, 22 years old]

I've been hearing a lot about HPV infection, and I believe it's critical to get vaccinated against it... [Participant 11, 23 years old]

HPV is prevented by using condoms

Some of the respondents indicated the use of condom as one part of HPV prevention method. As mentioned by the participants condom helps to protect young, sexually active women from HPV and other sexually transmitted infections. Sample responses encompass: -

Young ladies can prevent themselves from HPV by ensuring that their sexual partner is in good health and willing to use condom before engaging in sexual activity with him [Participant 1, 21 years old]

Condoms can also protect her from contracting HPV [Participant 2, 22 years old]

Condoms can help a young sexually active woman protect herself from sexually transmitted illnesses... [Participant 5, 20 years old]

Theme IV: Willingness to receive HPV vaccination

The fourth theme that were identified from analysis of in-depth interview data was willingness to receive HPV vaccination. Within this main theme, three categories namely being outside of target /eligible group, getting screened before HPV vaccination and information is required for decision.

Being outside of the target/eligible group

Respondents have mentioned that, their desire to receive the HPV vaccine was hindered by the ineligibility to the target group and expressed their interest to receive if accessible in the future. The following sample responses support these finding: -

When the awareness campaign began, I was in grade 11 or 12. However, the vaccine is only given to females at the age of 14, and I was around 17 or 18 at the time. My younger sister was given two times at her 13 and 14 years. I really wanted it, but I think my age kept me from getting it... Otherwise, I am willing to be vaccinated in the future if it is permissible... Uterine carcinoma is something I'm frightened of... [Participant 2, 22 years old]

In addition, some study participants show willingness to encourage their little sisters and others to receive the vaccine.

If the HPV vaccine is available for all age groups, I will get it for myself and encourage my friends to get it... [Participant 4, 23 years old]

If HPV vaccination becomes accessible for older women above the age of 14 in the future, I am quite interested.....[Participant 9, 19-years old]

Getting screened before the HPV vaccine

The importance of getting screened before receiving the HPV vaccine was indicated by one study participant. The quote of the participant was presented as follows: -

I'm excited if I get the vaccine, but I'm more confident in myself if I get screened first... [1st participant, 21 years old]

Information is required for decision

The findings of the study revealed that female students prefer to get aware before receiving the vaccine. Many participants mentioned as too many vaccines brought to school and confused with its choice. The findings were evident with the following quotes: -

As too many vaccines had been brought to school while we were in elementary and high schools, I'm not sure if I got vaccinated against HPV. So, I need more information to check it [3rd participant, 22 years old]

Participants reported that information about HPV infection, how it transmits and health benefits of the HPV vaccine and its side effects are important to decide whether to receive the vaccine or not. This finding is supported by the following quotes.

I didn't get the HPV vaccine because I didn't know it existed...or that it was necessary... then I had probably got it [an HPV infection]. HPV vaccine, in my opinion, prevents disease before it occurs... [Participant 4, 23-year-old]

I'd like to learn more about HPV vaccination, including its side effects, why it's given, and how the virus spreads... [Participant 9, 19-year-old]

6. DISCUSSION

This study assessed Human papillomavirus knowledge, perception, and vaccine uptake among female students in Addis Ababa university, Ethiopia. It aimed to provide an insight on the level of knowledge about HPV, and its vaccine, perception towards HPV infection, HPV vaccine uptake among students, as well as to understand their willingness to accept HPV vaccination if available.

According to the findings in the present study, less than half 183(46.6%) the students were aware about HPV being the main cause of cervical cancer. Two Studies conducted in Nigeria showed a similar trend in which the level of awareness was found to be 35.4% and 37.2% respectively among their study population (4,38). Awareness about HPV and its vaccine has been majorly obtained from social media, broadcast media and health care providers. The results of this study were also supported by the study that was conducted in South Africa 30.3%(28) and Gondar, Ethiopia 40.4%(29).

The result of current study is lower compared to studies conducted among medical students in Malaysia 93.7%(45) and India 82.47%(46) and among female college students in China,78.5%(37), Oakland university, USA 73%(26) and in Ethiopia 80.5%(14). The difference between current study and that of Malaysia and India may be due to medical students might have learnt about HPV in their regular classes. The other reason for the difference between current study and studies done in USA, China and Minjar-Shenkora District, Amhara region, Ethiopia may be there is scarcity of information in the present study setting as stated by students who were participated in qualitative part.

The findings also revealed that more than half 204(51.9%) of the students didn't know as HPV is sexually transmitted infection. This finding is similar with findings of previous study among female undergraduates in Lagos State, Nigeria, where 58% of the participants did not know that HPV can be transmitted through sexual contact. In other ways the current result is lower than other similar study done in Oakland University, USA where less than half 48% reported that they did not know that HPV can be transmitted through sexual contact.

The findings also indicated that, majority of the students,286(72.8%) reported that HPV cannot infect both men and women, 229(58.3%) of them didn't knew as early sexual debut increases the probability of getting HPV infection and 251(63.9) of them had no information about availability

of HPV vaccine in Ethiopia. The overall knowledge score in this study was poor which was 161(41%). This may be due to scarcity of information, and some of the participants passed secondary school when the vaccine was introduced at school level. This shows the importance of developing ways of disseminating health education about HPV and its vaccine and organizing awareness creation programs at university and school levels. In other ways, including HPV infection and cervical cancer prevention methods in academic curriculum helps to increase students' knowledge. As suggested by participants social media is the effective way of providing health education to students at all levels.

The findings of the study revealed that less than half of the participants 143 (36.4%) agreed that they would want to take the HPV vaccine because they feel at risk of getting HPV infection. Participants in qualitative study also agreed that they are at risk of HPV and want to be vaccinated. The finding is in line with study conducted in USA(6), where 25% of the participants reports they were at risk of HPV.

This finding revealed that, the uptake of HPV vaccines among students was 1.5% which is in line with a study conducted among female undergraduate students in Lagos State, Nigeria where about ten (2.6%) students have vaccinated with HPV vaccine(38). This finding was lower than the previous study conducted in USA 49.1%(24), Canada 49%(39), China 11%(37) and Indonesia 12.2%(7) respectively.

In other ways the result in the current study is higher than study done in Nigeria, in which only one (0.4%) of the respondent had received HPV vaccination(4). The reasons for low uptake found in the current study as mentioned by the participants were, scarcity of information about HPV vaccine, the HPV vaccine is not included in the national immunization program, ineligibility of participants to the target group and misconception regarding to HPV vaccine. The misconceptions that found to prevent students from receiving HPV include, HPV vaccination could cause infertility in women, it comes to reduce population growth and causes heavy menstrual bleeding. The other factor that may influence uptake of HPV vaccine may be availability of the vaccine in the country.

Another significant finding of the study was that 118(28.5%) female students were willing to receive HPV vaccination if available. However the current finding is lower than similar study

conducted in Indonesia in which 95.8%(7),USA 75.9% (6), China 54%(37), Malaysia 89.7%(45) and Nigeria 70%(4) of the students were willing to get vaccinated respectively.

In Ethiopia the HPV vaccine was introduced recently and it could be one reason for lower acceptance rate observed in the current study. In other ways, this study revealed lower knowledge score which may be one factor that strongly influence students' willingness to get vaccinated. The lower knowledge gap shows that increasing students' awareness is an important indicator in raising willingness of HPV vaccination. This was supported by other similar study done in China(37) and Nigeria(41). It was suggested by participants that raising awareness of HPV vaccine by using broadcast media like Tv, radio and social media to increase students' willingness to receive the vaccine.

Although students have more favorable perception towards HPV vaccine, their willingness to be vaccinated was low. In this study only 28.5% of participants were willing to obtain the HPV vaccine. This finding is lower than other previous studies conducted in China(47) and Indonesia(7) in which 66% and 95.8% of the students, respectively, were willing to receive the HPV vaccine.

The main reason for low willingness to obtain HPV vaccine could be poor knowledge of students about HPV, scarcity of information, late introduction of HPV vaccine in Ethiopia and perceiving of being out of target group. In contrast students who were willing to receive HPV vaccination regarded vaccination as an effective way to prevent disease so that they were willing to take the vaccine.

In this study, female students who were in 3rd year of study were 0.45 times less likely willing to be vaccinated against HPV infection than those who were in 2nd year (AOR=0.45; 95%CI=0.25-0.81; P=.007). This finding was different from study conducted among female undergraduates in Lagos State, Nigeria in which students in higher level of education were more likely willing to vaccinated against HPV infection(38). The disparities may be due to introduction of the vaccine at school level in recent years in Ethiopia.

The current study indicated that students who have history of sexual intercourse before the study (AOR =2.78; 95% CI=1.17-6.47; P=.002) were 2.78 more likely willing to receive HPV vaccine than their counterparts. This is in line with similar study conducted in China in which students who had history of sexual intercourse were more likely to express a willingness to receive the HPV

vaccination(27). Students who had less favorable perception towards HPV vaccine were less likely willing to get vaccinated than their counter parts which is in accordance with other studies conducted in China(27).

Furthermore, having family history of vaccination, student's mother level of education and student's mother occupation were factors that found to significantly associated with willingness of students to receive the vaccine if available. Similarly, students who participated in qualitative part of this study stated that unaware of health risks of HPV infection, interest in learning more about HPV vaccination before making decision about whether to vaccinate or not, necessity of health exams before getting the vaccine were factors that determine their willingness to HPV vaccination. Taking this in to consideration, it very important to make further efforts to improve the intention of HPV vaccination among female university students that also play important role in increasing uptake of the vaccine.

The findings of the study indicated that HPV vaccination was widely understood to prevent HPV-related illness. The participants stated that HPV vaccine is the feasible method of HPV prevention. Similar findings were reported in previous studies(35) in which participants indicated that vaccination against HPV has long term economic benefits for the vaccinated individuals, their families and society in addition to preventing HPV infection.

Social media, broadcast media (Tv, radio) and health care providers were a major source of information about the HPV vaccine. Participants who reported social media and broadcast media being a source of information had more favorable perceptions while those who reported social media and health care providers as source of information had good knowledge about HPV vaccines. Similar findings were reported in previous studies(7,38). In study conducted in Indonesia, students described as broadcast media (radio, television) and internet were their major sources of information about HPV, cervical cancer, and HPV vaccine. The same study reported that healthcare professionals and teachers were also provide information about the HPV vaccine(7)

Qualitative finding of this study showed that HPV vaccination was understood as it has benefit to prevent cervical cancer and this perception contributed to students' willingness to receive HPV vaccination. Participants indicated that HPV vaccine helps to prevent disease before it occurs like any other vaccine. Similar finding has reported in study conducted in Uganda(23)

7. LIMITATIONS AND STRENGTH

7.1. Strength

- The study employed a convergent mixed method in which quantitative and qualitative data were collected and analyzed, then the analyzed data were compared to see if the data confirmed or disproved each other. Applying mixed methods design has a lot of benefits and strengths than using a single strategy alone in terms of finding reach data. Therefore, this research generated strong evidence from a varied perspective.
- Using self-administered questionnaire was also one strength of the study in a fact that it enabled the students to complete the questions themselves freely without hesitancy.

7.2. Limitations

- The sample size of current study was 398 which maybe too small to represent all-university students in the country so that the findings cannot be generalized for entire female university students.
- As the participants filled the questionnaire themselves, there may be misunderstanding of the questions so that there may be recall bias.

8. CONCLUSION AND RECOMMENDATION

8.1. Conclusion

The findings of this study revealed that knowledge of HPV infection, cervical cancer, and HPV vaccination among female students were poor. In this study, students had less favorable perception towards vulnerability of the disease, severity of the disease, and benefits of vaccination. Year of study, student's mother level of education, student's mother occupation, having history of sexual intercourse before the study and having family history of vaccination were factors associated with students' willingness to receive the HPV vaccine. Misconception about HPV vaccine and lack of awareness about health risk associated with HPV were identified as factors that hinder students from receiving the vaccine.

8.2. Recommendation

Based upon the findings of the study, the following recommendations have forwarded to different concerned bodies: -

To universities

- As major sources of information indicated in this study were social media, broadcast media and health care providers, universities had better use all their social media platforms and community radios they have to disseminate health education programs regarding to HPV and its vaccines.
- Health professionals working in student clinic of the universities should work in collaboration with community radios of the universities to provide health education about HPV and its vaccine for the students and community.

To ministry of Health

- Cooperate with media organizations to arrange airtime on television and radio to provide health education for the community about HPV and its vaccine.
- Facilitate ways of health professionals deliver health education messages to the community
- Regular public health campaigns that alleviate the misconceptions and enhance the community awareness regarding to HPV and its vaccine.

To policy makers

- Necessary consideration should be followed to include HPV vaccine in national immunization program which is in line with the WHO recommendation (provision of HPV vaccine for those whose age is between 9-26 years).
- Topics that teach about HPV should be included in primary and secondary school modules

To health facilities

- Health facilities should focus on ways of increasing community awareness regarding to HPV and its vaccine in addition to campaign-based delivery of the vaccine, special emphasis should be given to rural community where scarcity of information is immense.

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10. ANNEXES

Annex- I Study information sheet and verbal consent (English version)

Addis Ababa University

College of Health Sciences

School of Nursing and Midwifery

1.1 Information sheet

Title: - Human papillomavirus knowledge, perception, and vaccine uptake among female university students in Addis Ababa university, Ethiopia, 2022, a mixed method

My name is I am here on behalf of Teferi Regasa student of Addis Ababa University, school of Nursing and Midwifery. Currently, he is conducting research on “Human papillomavirus knowledge, perception, and vaccine uptake among female university students in Addis Ababa university, Ethiopia, 2022”, for the partial fulfillment of master’s degree in Maternity and reproductive health Nursing. He had received permission from Addis Ababa university school of Nursing and Midwifery.

The aim of this study is to assess human papillomavirus knowledge, perception and vaccine uptake among female university students in Addis Ababa University. I kindly ask you to participate in this study and give me genuine answers.

Study Procedure: Your estimated time commitment for this study is 15-20 minutes.

Risks: There is no risk by participating in this study but some of the questions are very personal questions that some people find it difficult to answer. Your responses are completely confidential. You are not required to write your name on this questioner. You are not obligated to answer any question that you are not willing to respond. If you feel any discomfort with the question, it is your right to drop it at any time you want. You may even decide not to engage in this study from the very beginning.

Benefits: There will be no direct benefit to you for your participation in this study. However, your participation in this study is greatly helpful in identifying University student’s knowledge, perception towards human papillomavirus and their vaccine uptake status for further investigation and intervention in youth and adolescent reproductive health.

1.2 Confidentiality

All information given by you will be kept confidential and no one except the research team members will have access to the information. Your honest and genuine response to each question will play a major role in the attainment of the objective of the study. Therefore, we thank you in advance and greatly appreciate your help. If you have, questions regarding this study please contact the principal investigator.

1.3 Contact person

Name of principal investigator: **Teferi Regasa**

Cell phone No: **+251906692918**

E-mail: **teferiregasa@gmail.com**

1.4 Informed Consent

I the selected participant heard the information in the study information sheet & understood the purpose, benefit and what is required from me if I take part in the study. I understood that not all the information regarding me like name and all answers given by me transferred to a third party. I also understand that I can decide whether to take part in the study or even withdraw from the study at any time. Therefore, I am willing to participate in the study.

Participant signature_____

Date_____

Annex-II Questionnaire for quantitative study (English version)

Addis Ababa university
College of Health Sciences
School of Nursing & Midwifery

Questionnaire No_____

Date: _____

College: _____

Interviewer: _____ sign_____

Supervisor _____ sign _____

The questionnaire has four parts and for each question; there is column for the response.

Thank you for your participation!

PART ONE: SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE PARTICIPANTS,

Socio-demographic characteristic of Participants.			
S. No	Variables	Categories	Skip
101	What is your current age?	_____years	
102	What is your department?	_____department	
103	What is your field of study?	_____discipline	
104	What is your current year of study?	1. 1st year 2. 2nd year 3. 3rd year 4. 4th year 5. 5th year and above	
105	What is your current religion?	1. Orthodox 2. Muslim 3. Protestant 4. Catholic 5. others (specify)_____	

106	Where is your type of usual residence before you join the university?	1. Addis Ababa 2. Town/city other than Addis Ababa	
107	What is your mother's level of education?	1. Can't read and write 2. Only read and write 3. Primary school 4. Secondary school 5. College and above	
108	What is the occupation of your mother?	1. Government employee 2. NGO 3. Self employed 4. Unemployed/ House wife 5. 99. Other(specify) -----	
109	What is your father's level of education	1. Can't read and write 2. Only read and write 3. Primary school 4. Secondary school 5. College and above	
110	What is the occupation of your father?	1. Government employee 2. Self employed 3. Unemployed 4. 99. Other(specify) -----	
111	What is your current marital status?	1. Single 2. Married/Cohabiting 3. Others (Specify)	

PART TWO: SEXUAL HISTORY OF THE PARTICIPANTS, AND SOURCE OF INFORMATION ABOUT HPV VACCINE AND UPTAKE

201	Have you ever had sexual intercourse? [If yes]	1. Yes 2. No 	205
202	Age at first sexual intercourse (years) [If yes] to Q 201		
203	Number of life time sexual partners		
204	How often do you use condoms during sexual activity?	1. Always 2. Sometimes 3. Never 4. Not currently sexually active	
205	Before taking this survey, have you ever heard of human papillomavirus [HPV] Vaccine? [If yes] go to Q 206	1. Yes 2. No 	206
206	From where did you hear it?	1. Healthcare providers 2. Formal class 3. Social media/Internet 4. Television/Radio 5. Others(specify)_____	
207	In your family is there any one with history of cervical cancer?	1. Yes 2. No	
208	In your family is there anyone who have been vaccinated against HPV?	1. Yes 2. No	
209	Prevention of HPV infection	1. Practicing abstinence [no sex] 2. HPV vaccine 3. Regular condom use 4. Don't know	
210	Have you ever received the HPV vaccine/shot?	1. Yes	

		2. No 3. Don't know	
211	Your willingness to receive the HPV vaccination if available	1. Yes 2. No 3. I am not sure	

PART THREE: KNOWLEDGE ABOUT THE HUMAN PAPILLOMA VIRUS [HPV], RISK FACTORS AND CERVICAL CANCER.

301. Please tick (✓) “**Yes**” or “**No**” as it applies to the following statements. If you are unsure with the answer, please (✓) tick **unsure**.

S.No.	Questions	Responses		
		Yes	No	Unsure
1.	HPV is a viral infection	☐	☐	☐
2.	HPV can cause anal cancer	☐	☐	☐
3.	HPV is a sexually transmitted infection	☐	☐	☐
4.	Multiple sexual partners predispose to HPV infection	☐	☐	☐
5.	HPV can cause cervical cancer	☐	☐	☐
6.	HPV can cause genital warts	☐	☐	☐
7.	HPV infection can be prevented by vaccination	☐	☐	☐
8.	HPV infection can be prevented by use of condom	☐	☐	☐
9.	HPV infection can be prevented by regular HPV screening	☐	☐	☐
10.	Early sexual debut increases the risk for HPV infection	☐	☐	☐
11.	The best time for HPV vaccine is age 11 to 12 yrs. Old	☐	☐	☐
12.	Being sexually active (having sex) puts a woman greater risk of cervical cancer.	☐	☐	☐
13.	HPV can cause penile cancer	☐	☐	☐
14.	HPV Can infect both men and women	☐	☐	☐
15.	There is a vaccine available to prevent HPV infection in Ethiopia	☐	☐	☐

PART FOUR: WOMEN'S PERCEPTION ABOUT THE HPV, RISK FACTORS, and CERVICAL CANCER

401. To what extent do you agree or disagree with the following statements? Please, put a tick (✓) in a box where it applies.

S.No.	Statements	Responses					
		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	
1.	I will take the vaccine because I feel at risk of getting HPV infection	☐	☐	☐	☐	☐	
2.	HPV infection increases the likelihood of getting cervical cancer	☐	☐	☐	☐	☐	
3.	I feel I know enough information about cervical cancer	☐	☐	☐	☐	☐	
4.	I would tell my sexual partner if I had HPV	☐	☐	☐	☐	☐	
5.	If I had HPV, I would be at risk for transmitting it to others	☐	☐	☐	☐	☐	
6.	I would need the HPV vaccine if I had multiple sexual partners	☐	☐	☐	☐	☐	
7.	Women should do pap smear once a year	☐	☐	☐	☐	☐	
8.	I would need the regular condom use when engaging in sexual activity	☐	☐	☐	☐	☐	
9.	If a woman receives HPV vaccine, she doesn't need to do pap smear any more	☐	☐	☐	☐	☐	
10.	The HPV vaccine is an effective way to prevent HPV infection	☐	☐	☐	☐	☐	

End! Thank you for your time and participation!!

Do u have any question that I can address for you?

Annex III: Interview guide for qualitative study (English version)

In-depth Interview questions

Participant Information and Informed Consent Form

Thank you for taking time to participate in this interview. My name is Teferi Regasa and I am a MSc student in the college of Health Sciences, school of Nursing and Midwifery. Currently I am working on my thesis. My research is titled, “HPV Knowledge, Perception, and vaccine uptake among female university students in Addis Ababa University. This research will attempt to identify female university students’ perceptions of perceived risk of HPV, knowledge of HPV and HPV vaccine uptake status **or intention to receive the HPV vaccination.**

Please remember that you have no obligation to participate in this interview. You can withdraw from the study at this point or end the interview at any point during the interview without explanation or consequences. You do not have to answer any question that makes you uncomfortable. Should we come to any question that you do not want to answer, just let me know and we will go to the next question.

I promise to treat all information collected from this interview as highly confidential and it shall not be reported in a manner that identifies or links you with the results of the study. The interview should take about fifty 50 minutes. I will do the interview and take some notes; me research assistant will record this interview because I do not want to miss any of your important responses.

Do you have any questions regarding what I have just explained to you?

Informed consent

I, the under signed, acknowledge that Teferi Regasa, the researcher has explained the research study purpose and activities. I understand the nature of the study and the means by which my identity will be protected and that the information I give will be kept confidential. I have had the opportunity to ask questions and they were answered to my satisfaction. My signature on this form also indicates that I am 18 years old or older and that I give permission to voluntarily participate in this study. My signature here also grants permission for the interview to be recorded.

Signature of the participant_____

Date _____

Interview Guide

1. What have you heard about HPV infection? Where did you hear it?
 - Tell us Health Problems associated with HPV [Cervical cancer, genital warts, penile cancer]
 - Route of transmission [most commonly spread during vaginal or anal sex]
 - What should a young woman do to protect themselves against HPV?
 - Ways of Prevention [avoiding sex, Condom use, HPV vaccine, regular Pap Smear etc]
2. Have you received the HPV vaccine? What made you want to get the vaccine?
 - Tell us benefits of the HPV vaccine [protects against HPV, Cervical cancer etc.]
3. If there is vaccination against HPV, would you be willing to be vaccinated?
 - Probe why yes or why no
 - Who they think the vaccine is recommended for [women and men between the ages of 9 and 26 years]?
 - Would you advise your friends/ families to get the vaccine?
 - What do you think some girls not willing to be vaccinated?
4. Is there anything you want to tell us, please?
5. Socio-demographic data
 - a. Age in years _____
 - b. Marital status _____
 - c. Department _____
 - d. Field of study _____

Thank you for your time.

Annex-IV Study information sheet and verbal consent (Amharic version)

የጥናቱ ርዕስ ጉዳይ፡ በአድስ አበባ ዩኒቨርሲቲ የሚገኙ ሴት ተማሪዎች ስለ ሂደቱን ፓሊሎማ ቫይረስ ያላቸውን እዉቀት፣ ግንዛቤ እና ክትባት መዉሳዳቸውን ይዳስሳል፡፡

የጥናቱ መግለጫ

የመጠይቅ ቁጥር _____

ጤና ይስጥሌኝ ስሜ _____ ይባላል ተፈሪ ረጋሳ በምስራው ጥናት ውስጥ በመረጃ መሰብሰብ ሂደት ላይ አስተባባሪ ሆኜ ነው የምሠራው፡፡ ጥናቱን የምስራው የአድስ አበባ ዩኒቨርሲቲ ሴት ተማሪዎች ስለ ሂደቱን ፓሊሎማ ቫይረስ ያላቸውን እዉቀት፣ ግንዛቤ እና ክትባት መዉሰድ ሊይ ሲሆን ጥናቱም በአድስ አበባ ዩኒቨርሲቲ የነርቢንግና ሚድዊፊሪ ትምህርት ክፍል የድህረ ምረቃ(የሁለተኛ ደረጃ) ኘሮግራም ማሟያ የሚሆን ነው፡፡ ጥናቱንም ለማካሄድ ከአድስ አበባ ዩኒቨርሲቲ ፈቃድ አግኝታለሁ፡፡

በዚህ መጠይቅ ውስጥ የተለያዩ ንዑስ ክፍልች ያሉት ጥያቄዎች የተካተቱ ሲሆን የጥናቱ ዓላማ የአድስ አበባ ዩኒቨርሲቲ ሴት ተማሪዎች ስለ ሂደቱን ፓሊሎማ ቫይረስ ያላቸውን እዉቀት፣ ግንዛቤና ክትባት መዉሰድ ይዳስሳል፡፡

ተሳትፎአችሁ በፈቃዳችን ሊይ የተመሠረተ ነው፡፡ ያላችሁን ተሞክሮ ብታካፍሉን የዚህ ጥናት ዉጤት ስለ ሂደቱን ፓሊሎማ ቫይረስ በሽታና ክትባት እዉቀት እና ግንዛቤ በመፍጠር በሀገሪቱ ያለውን የሂደቱን ፓሊሎማ ቫይረስ ክትባት አጠቃቀም ለማሻሻል ያግዛል፡፡

የጥናቱ ሂደት፡ ጥያቄውን ለመሙላት ከ 15 እስከ 20 ደቂቃ ያህል ሊወስድ ይችላል፡፡

የማይመች ነገር፡፡ በዚህ ጥናት ውስጥ በመሳተፊዎ ምንም አይነት ጉዳት አይኖረዉም፡፡ ጥናቱ ዉስጥ ያለመሳተፍ ሙሉ ሙብት አለዎት፡፡ በዚህ ጠያቂ ላይ ስምሽን መጻፍ አይጠበቅብሽም፡፡

ጥቅማጥቅም፡ በዚህ ጥናት በመሳተፍዎ ማበረታቻ ወይም ክፍያ አይኖረዉም ሆኖም ግን የናንተ ተሳትፎ የዩኒቨርሲቲ ተማሪዎች ስለ ሂደቱን ፓሊሎማ ቫይረስ ያላቸውን እዉቀት፣ ግንዛቤ እና የክትባት አወሳሰድ ሁኔታን በመዳሰስ ለበለጠ ምርመራ እና በወጣቶች እና በጉርምስና ዕድሜ ላይ ባሉ የስነ ተዋልዶ ጤና ችግር ለመፍታት ትልቅ እገዛ ያደርጋል፡፡

ሚስጥራዊነት፡ ጥናቱን አስመሌክቶ እርስዎ የሚሰጡት ማንኛውም መረጃ በሚስጢር የሚጠበቅ በመሆኑ በማንኛውም መንገድ ለሶስተኛ አካሌ አሳሌፎ አይሰጥም ወይም አይጋለጥም፡፡ ማንነትዎ እንዲይታወቅም ስምዎ በጥያቄው ወረቀት ሊይ አይመዘገብም፡፡

በመጨረሻም ለሚሰጡት ለየትኛውም አይነት ምላሽ አመሰግናለሁ፡፡

ማናቸዉም ጥያቄ ሲኖረዎት በማንኛዉም ጊዜ ማነጋገር ይችላሉ፡፡

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የጥናቱ ተሳታፊዎች ፍቃደኝነት ቅፅ

እኔ የጥናቱ ተሳታፊ የሆንኩ ከላይ የተገለጹትን በሙሉ ስምጽአለሁ፤ አላማውንና ጥቅሙንም ተረድቻለሁ፡፡ የምሰጠው ግላዊ መረጃዬ በሚስጥራዊነት እንደሚጠበቅ እና ለዚህ ጥናት አላማ ብቻ እንደሚውል ተነግሮኛል ፡ ፡ ጥናቱ ውስጥ ያለፍላጎት ተሳታፊ ሆኜ መቀጠል

እንደሌሎች እና መቀጠል ባልፈለግሁ ጊዜ ማቆም እንደምችል ተረድቻለሁ። በአጠቃላይ ከላይ የተዘረዘሩትን መብቶቼን በማወቅና የእኔ በዚህ ጥናት ላይ መሳተፍ ጥቅም አለው ብዬ በማመን በሙሉ ፍቃደኝነት ለመሳተፍ ተስማምቻለሁ፡፡

ፊርማ _____

ቀን _____

Annex-V Questionnaire for quantitative study (Amharic version)

መጠይቁ አምስት ክፍሎች አሉት፡ ከተጠያቂው መልስ ጋር የሚመሳሰለውን መልስ መርጣችሁ አክብቡ።

ለተሳትፎዎ እናመሰግናለን!

ክፍል 1፡ ማህበራዊና ስነ-ህዝባዊ መግለጫዎች			
ተ.ቁ	መጠይቆች	አማራጭ/መልስ	ይታለፍ
101	እዴሜሽ ስንት ነው?	_____ እዴሜ (በሙሉ ዓመት)	
102	ምን ዲፓርትመንት ነሽ?	_____ ዲፓርትመንት	
103	የትምህርት ክፍልሽ?	-----ዲግሪ ፕላን?	
104	ያሁኑ የትምህርት አመትሽ ስንት ነው?	1. 1ኛ አመት 2. 2ኛ አመት 3. 3ኛ አመት 4. 4ኛ አመት 5. 5ኛ አመት እና በላይ	
105	የየትኛው ሀይማኖት ተከታይ ነሽ ?	1. ኦርቶዶክስ 2. ሙስሊም 3. ፕሮቴስታንት 4. ካቶሊክ 5. ሌላ ካለ ይግለጽ _____	
106	የንብርሱቲ ከመግባትሽ በፊት የምትኖረው የት ነበር?	1. አዲስ አበባ 2. ከተማ/ ከአዲስ አበባ ሌላ	
107	የእናትሽ የትምህርት ደረጃ ነው?	1. ማንበብ እና መጻፍ የምትችል 2. ማንበብ እና መጻፍ ብቻ 3. የመጀመሪያ ደረጃ ትምህርት 4. የሁለተኛ ደረጃ ትምህርት 5. ኮሌጅ እና ከዚያ በላይ	
108	የእናትሽ የስራ ድርሻ ምንድን ነው?	1. የመንግስት ሰራተኛ	

		2. የግል/መንግስታዊ ያልሆነ ድርጅት ተቀጣሪ 3. የግል ስራ 4. የቤት እማቤት 5. 99. ሌላ ካለ ይግለጽ_____	
109	የአባትሽ የትምህርት ደረጃ ምንድን ነው?	1. ማንበብና መጻፍ 2. ማንበብና መጻፍ ብቻ 3. የመጀመሪያ ደረጃ ትምህርት ቤት 4. ሁለተኛ ደረጃ ትምህርት ቤት 5. ኮሌጅ እና ከዚያ በላይ	
110	የአባትሽ የሥራ ድርሻ ምንድን ነው?	1. የመንግስት ሰራተኛ 2. የግል ስራ 3. ስራ የሌለው 4. 99. ሌላ ካለ ይግለጽ_____	
111	የጋብቻ ሁኔታሽ ምንድን ነው?	1. ያላገባች 2. ያገባች 3. ሌሎች (ይግለጹ)	
ክፍል ሁለት፡ የተሳታፊዎች የግብረ ሥጋ ታሪክ፣ እና ስለ የሂደቱ ፓፒሎማ ቫይረስ ክትባት እና ስለ መውሰድ የመረጃ ምንጭ			
201	የግብረ ሥጋ ግንኙነት ፈጽመሽ ታውቃለሽ?	1. አዎ 2. አይደለም	205
202	ለጥያቄ 201 አዎ ከሆነ ለመጀመሪያ ጊዜ የግብረ ሥጋ ግንኙነት ስትፈጽሟ ዕድሜሽ ስንት ነበር?	_____	
203	በህይወትሽ ስንት የወሲብ አጋሮች ነበሩሽ?	_____	
204	በግብረ ሥጋ ግንኙነት ወቅት ኮንዶም ምን ያህል ጊዜ ይጠቀማሉ?	1. አብዛኛውን ጊዜ 2. አልፎ አልፎ 3. በፍፁም 4. በአሁኑ ጊዜ የግብረ-ሥጋ ግንኙነት የማይሰራ	

205	ይህን ዳሰሳ ከመውሰዳችሁ በፊት፣ ስለ ሂደቱ ፓሊሲ ማሻሻያ ማረጋገጫ ክትባት ሰምተሽ ታውቃለሽ?	1. አዎ 2. አይደለም 	207
206	ለጥያቄ 205 አዎ ከሆነ፣ ስለ ሂደቱ ፓሊሲ ማሻሻያ ክትባት ከየት ወይም ከማን ሰማሽ?	1. ከጤና ባለሙያዎች 2. ከመደበኛ ትምህርት 3. ከማህበራዊ ሚዲያ/ኢንተርኔት 4. ከቴሌቪዥን/ራዲዮ 5. ሌሎች (ይግለጹ) _____	
207	የሂደቱ ፓሊሲ ማሻሻያ ኢንፎርሜሽን እንዴት መከላከል ይቻላል?	1. መታቀብ መለማመድ ((ወሲብ አለመፈጸም) 2. የሂደቱ ፓሊሲ ማሻሻያ ክትባትን በምወሰድ 3. ኮንዶምን በመጠቀም 4. አላውቅም	
208	የሂደቱ ፓሊሲ ማሻሻያ ክትባት ወስደሽ ታውቃለሽ?	1. አዎ 2. አይደለም 3. አላውቅም	
209	የሂደቱ ፓሊሲ ማሻሻያ ክትባት ካለ ለመከተብ ፈቃደኛ ይሆናሉ?	1. አዎ 2. አይደለም 3. እርግጠኛ አይደለሁም	

ክፍል ሶስት፡ ስለ ሂደቱን ፓረሎማ ቫይረስ እውቀት ፣ ለአደጋ መንስኤዎች እና የማህፀን በር ካንሰር እውቀት።

301. በሚከተሉት መግለጫዎች ላይ ስለሚተገበር እባክዎ “አዎ” ወይም “አይ” የሚለውን “(✓)” ምልክት ያድርጉ።

ምላሾች

ተ.ቁ	ጥያቄዎች	አዎ	አይደለም	
1	ሂደቱን ፓረሎማ ቫይረስ የቫይረስ ኢንፌክሽን ነው።	☐	☐	☐
2	ሂደቱን ፓረሎማ ቫይረስ የፊንጢጣ ካንሰር ሊያስከትል ይችላል።	☐	☐	☐
3	ሂደቱን ፓረሎማ ቫይረስ በግብረ ሥጋ ግንኙነት የሚተላለፍ ኢንፌክሽን ነው።	☐	☐	☐
4	ብዙ የወሲብ አጋሮች ለሂደቱን ፓረሎማ ቫይረስ ኢንፌክሽን ያጋልጣሉ	☐	☐	☐
5	ሂደቱን ፓረሎማ ቫይረስ የማህፀን በር ካንሰር ሊያስከትል ይችላል	☐	☐	☐
6	ሂደቱን ፓረሎማ ቫይረስ የብልት ኪንታሮትን ሊያስከትል ይችላል።	☐	☐	☐
7	የሂደቱን ፓረሎማ ቫይረስ ኢንፌክሽን በክትባት መከላከል ይቻላል	☐	☐	☐
8	የሂደቱን ፓረሎማ ቫይረስ ኢንፌክሽን ኮንዶም በመጠቀም መከላከል ይቻላል	☐	☐	☐
9	የሂደቱን ፓረሎማ ቫይረስ ኢንፌክሽንን በመደበኛ የሂደቱን ፓረሎማ ቫይረስ መርመራ መከላከል ይቻላል	☐	☐	☐
10	ቀደምት የግብረ-ሥጋ ግንኙነት መጀመር ለሂደቱን ፓረሎማ ቫይረስ ኢንፌክሽን ተጋላጭነትን ይጨምራል	☐	☐	☐
11	ለሂደቱን ፓረሎማ ቫይረስ ክትባት በጣም ጥሩው ጊዜ ከ11 እስከ 12 ዓመት ነው።	☐	☐	☐
12	የግብረ ሥጋ ግንኙነት ማድረግ (ወሲብ መፈጸም) አንዲት ሴት ለማህፀን በር ካንሰር የበለጠ ተጋላጭ ያደርገዋል።	☐	☐	☐
13	ሂደቱን ፓረሎማ ቫይረስ የወንድ ብልት ካንሰርን ሊያስከትል ይችላል።	☐	☐	☐
14	ሂደቱን ፓረሎማ ቫይረስ ወንዶችንም ሴቶችንም ሊያጠቃ ይችላል።	☐	☐	☐
15	በኢትዮጵያ የሂደቱን ፓረሎማ ቫይረስ በሽታን ለመከላከል የሚያስችል ክትባት አለ።	☐	☐	☐

ክፍል አራት፡ ስለ ሂደቱ ምርመራ ማድረግ፣ ስለ አደጋ መንስኤዎች እና ስለ የማህፀን በር ካንሰር የሴቶች ግንዛቤ

401. በሚከተሉት መግለጫዎች ምን ያህል ይስማማሉ ወይም አይስማሙም? እባክዎን “(✓)” ምልክት በሚተገበርበት ሳጥን ውስጥ ያስቀምጡ።

ተ.ቁ	መግለጫዎች	ምላሾች				
		በጣም	አስማማለሁ	እስማማለሁ	ገለልተኛ	አልስማማም
1	የሂደቱ ምርመራ ማድረግ ከትባቱን እወስዳለሁ ምክንያቱም በሂደቱ ምርመራ ማድረግ ኢንፌክሽን የመያዝ ስጋት እንዳለብኝ ይሰማኛል	☐	☐	☐	☐	☐
2	የሂደቱ ምርመራ ማድረግ ኢንፌክሽን በማህፀን በር ካንሰር የመያዝ እድልን ይጨምራል	☐	☐	☐	☐	☐
3	ስለ የማህፀን በር ካንሰር በቂ መረጃ እንደማውቅ ይሰማኛል	☐	☐	☐	☐	☐
4	ሂደቱ ምርመራ ማድረግ ካለብኝ ለወሲብ ጓደኛዬ እነግራለሁ	☐	☐	☐	☐	☐
5	ሂደቱ ምርመራ ማድረግ በሽታ ካለብኝ፣ ለሌሎች ሊተላለፍ ይችላል።	☐	☐	☐	☐	☐
6	ብዙ የወሲብ አጋሮች ካሉኝ የሂደቱ ምርመራ ማድረግ ከትባት ያስፈልገኛል።	☐	☐	☐	☐	☐
7	ሴቶች በዓመት አንድ ጊዜ የፓፕ ስሚር ማድረግ አለባቸው	☐	☐	☐	☐	☐
8	የግብረ ሥጋ ግንኙነት ውስጥ በምሳተፍበት ጊዜ መደበኛ ኮንዶም መጠቀም ያስፈልገኛል።	☐	☐	☐	☐	☐
9	አንዲት ሴት የሂደቱ ምርመራ ማድረግ ከትባት ከወሰደች፣ ከዚህ በኋላ የፓፕ ስሚር ማድረግ አያስፈልጋትም።	☐	☐	☐	☐	☐
10	የሂደቱ ምርመራ ማድረግ ከትባት የሂደቱ ምርመራ ማድረግ ኢንፌክሽንን ለመከላከል ውጤታማ ዘዴ ነው	☐	☐	☐	☐	☐

መጨረሻ! ስለ ጊዜሽ እና ስለተሳትፎሽ አመሰግናለሁ!!

ልመልስልሽ የምትለው ጥያቄ አለሽ?

Annex VI: Interview guide for qualitative study (Amharic version)

ወደ የጥናቱ ተሳታፊዎች! ጤና ይስጥልኝ፤ ስሜ ተፈሪ ረጋሳ ይባላል ፡ ፡ በአሁኑ ወቅት በአዲስ አበባ ዩኒቨርሲቲ በነርቪንግና ሚድዊፈሪ ትምህርት ክፍል የሁለተኛ ዲግሪ ትምህርቴን እየተከታተልኩ እገኛለሁ፡ ፡ የሁለተኛ ዲግሪዬን ለመጨረስ ይረዳኝ ዘንድ በአዲስ አበባ ዩኒቨርሲቲ ሴት ተማሪዎች መካከል የሂደጣን ፓፒሎማ ቫይረስ እውቀት፣ ግንዛቤ እና የከትባት መወሰድ በሚለው ርዕሰ ጉዳይ ላይ ጥናት እያደረኩ እገኛለሁ፡ ፡

በዚህ ጥናት ላይ የሚኖሩትን ተሳትፎ በማንኛውም ጊዜ ለእርስዎ ምቹት የማይሰጥ ሆኖ ሲያገኙት ማቋረጥ ይችላሉ፡፡ እኔም የግል ሚስጢርዎን ለመጠበቅ ቃል እገባለሁ፡፡ ውይይቱ በግምት 50 ደቂቃ ይወስዳል፡፡ ምንም እንኳን ማስታወሻ ብይዝም ድምጽዎን ግን በመቅረጫ እቀርጻለሁ፡፡ ምክንያቱም የሚሰጡኝን የትኛውንም መረጃ ማጣት ስለማልፈልግ ነው፡፡ ከላይ በተደረገው ገለጻ ላይ ጥያቄ አለዎት? እኔ ከታች ፊርማዬ የሰፈረው የጥናቱ አይነት፣ ጥቅም፣ መብቶቼን መረዳቴን እና በፈቃደኝነት ለመሳተፍ እንዲሁም ሚስጢራዊነቴን በመገንዘብ እና ያለምንም አሉታዊ ውጤት ከጥናቱ መውጣት እንደምችል መረዳቴን እገልጻለሁ፡፡ ጥያቄዎችን ለመጠየቅ እድል ተሰጥቶኝ የነበረ ከመሆኑም ባሻገር በበቂ ሁኔታ ምላሽ ተሰጥቶኛል፡፡

በዚህ ጥናት ላይ ለመሳተፍ ስምምነቴን እገልጻለሁ፡፡

የተሳታፊ ፊርማ: _____

ቀን: _____

የመጠይቅ ጥያቄዎች(Interview Guide)

1. ስለ ሂደቱ ምን ግንዛቤ አለዎት? ከየት ነው የሰማሽው?
 - ከሂደቱ ምን ግንዛቤ አለዎት? ተያይዞ የሚመጡ የጤና ችግሮችን ይገነዘብ [የማሳጸን በር ካንሰር, የብልት ኪንታሮት, የወንድ ብልት ካንሰር]
 - የመተላለፊያ መንገድ [በአብዛኛው በሴት ብልት ወይም በፊንጢጣ ወሲብ ወቅት ይተላለፋል]
 - እንዴት ወጣት ሴት ከ ሂደቱ ምን ግንዛቤ አለዎት? እራሷን ለመከላከል ምን ማድረግ አለባት? -የመከላከያ መንገዶች [ከወሲብ መራቅ፣ኮንዶም መጠቀም፣የሂደቱ ምን ግንዛቤ አለዎት? ከትባት፣የተለመደው የፓፕ ስሚር ወዘተ]
2. የሂደቱ ምን ግንዛቤ አለዎት? ከትባት ወስደሻል? ከትባቱ እንዴት ወስደሻል? ያነሳሽ ምንድን ነው?
 - የሂደቱ ምን ግንዛቤ አለዎት? ከትባት ጥቅሞችን ይገነዘብ [ከሂደቱ ምን ግንዛቤ አለዎት? ከማህፀን በር ካንሰር ወዘተ ይከላከላል]
3. በሂደቱ ምን ግንዛቤ አለዎት? ላይ ከትባት ካለ፣ ለመከተብ ፈቃደኛ ትሆኛለሽ?
 - ለምን አዎ ወይም ለምን አይደለም የሚለውን መርምር?
 - ከትባቱ ከ9 እስከ 26 ዓመት ላሉ ሴቶች እና ወንዶች ይመከራል ብለው ያስባሉ።
 - ጓደኞችሽ/ቤተሰቦችሽ ከትባቱ እንዲወስዱ ትመከራለሽ?
 - እንዳንድ ልጃገረዶች ለመከተብ ፈቃደኛ ያልሆኑት ለምን ይመስልሽ?
4. እባክሽን ሊትግሪን የሚትፈልገው ነገር አለሽ?
5. ማህበራዊና ስነ-ህዝባዊ መረጃ
 - ዕድሜ በዓመታት _____
 - የጋብቻ ሁኔታ _____
 - ዲፓርትመንት _____
 - የትምህርት መስክ _____

ለተሳትፎሽ እጅግ አመሰግናለሁ!