

HUMAN PAPILOMAVIRUS VACCINATION BEHAVIOR AMONG
PRIMARY SCHOOL STUDENTS IN HADIYA ZONE, SOUTHERN
ETHIOPIA, 2021



BY:

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Abstract

Background: Human papillomavirus (HPV) is the most common cause of sexually transmitted diseases (STDs) in men and women. It is also the established causative agent of cervical cancer, penile cancers as well as genital warts in both men and women which prevent with vaccination.

Objective: To explore the HPV vaccination behavior and associated factors among primary school female students in Hadiya zone selected districts, in 2021

Method and materials: A mixed-method approach was employed using a survey among 621 female adolescents, qualitative study as supportive and quantitative dominate in this study, in the Hadiya zone from March 10 to June 10, 2021. A total of 633 samples was randomly selected from twelve (seven public and five private) primary schools. The practice was defined as receiving at least one dose of the HPV vaccine recommended schedule. The quantitative data were collected using a self-administered questionnaire and analyzed by SPSS version 25.0. multiple logistics regression analysis with a P-value of <0.05 was used to establish the level of association between the dependent variable (i.e., HPV vaccination practice). We interview conducted five key informants and three in-depth interviews. The qualitative data were transcribed verbatim, translated, and followed a content analysis approach. Finally, the findings were presented in tables, and descriptions triangulated with qualitative findings.

Result: A total of 621 participants were enrolled in this study. The mean age was 13.83 years ($SD = \pm 1.447$), two hundred seven (33.3%) girls got vaccinated. The factors; knowledge towards CC, HPV, and HPV vaccine (AOR 1.53 95% CI 0.356-0.756), being rural residence of students (AOR 1.657 95% CI 1.107-2.481), accessibility of the HPV vaccine at school (AOR 7.545 (95% CI 4.694-12.29) and being low grade level of the female students AOR 0.520 95% CI 0.351-0.770) were significantly associated with HPV vaccination practice.

Conclusion: HPV vaccination practices for school girls age 11-18 were relatively low in selected schools in the Hadiya zone, efforts to improve at increasing knowledge on HPV vaccination, perceived benefits towards HPV vaccination, being rural residence, accessibility of the HPV vaccine and being low grade level were factors associate with HPV vaccination practice. Families, health sector and schools should work together to improve HPV vaccination practice and reduce its negative influencing factors.

Keywords: Ethiopia, Hosanna, human papillomavirus, vaccination practice, cervical cancer.

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Acronyms

2vHPV:	bivalent HPV vaccine
4vHPV:	quadrivalent HPV vaccine
9vHPV:	nonavalent HPV vaccine
BCC:	Behavior Change Communication
CDC:	Center for disease control
CHW:	Community health workers
CMYP:	Comprehensive Multi Year Plan
EDHS:	Ethiopian Demographic health survey
EMDHS:	Ethiopian Mini Demographic health survey
EPI:	Expanded Program on Immunization
EPSA	Ethiopian pharmacy supply agency
FDA:	Food and drug administration
FMOH:	Federal ministry of health
HPV:	Human papilloma virus
HEW:	Health Extension Workers
HW:	Health Workers
IEC:	Information, Education, and Communication
LR:	Low risk
HR:	high-risk
MCH:	Maternal and Child Health
WHO:	World Health Organization

1. Introduction

1.1 Background

The human papillomavirus (HPV) vaccine is a vaccine used to prevent genital warts, anal cancer, cervical cancer, vulvar cancer, and vaginal cancer caused by certain types of human papillomavirus [54]. Human papillomavirus (HPV) is the most common cause of sexually transmitted diseases (STDs) in men and women. It is also the established causative agent of cervical cancer, anal and penile cancers as well as genital warts in both men and women. Protection against strains of HPV that lead to cervical cancer and genital warts can be achieved through immunization with the HPV vaccine. Additionally, is prevented through vaccination, early detection and treatment, proper condom use, and limited sexual partners. To maximize effectiveness, the vaccine needs to be given to girls before they are sexually active. Several HPV vaccines have been developed, including Gardasil and Cervarix [4]. Infection with human papillomavirus (HPV) is the main cause of cervical cancer. Globally cervical cancer is one of the major public health problems and the most common sexually transmitted infection among the female population. [1].

The vaccines are quadrivalent (Gardasil) and bivalent (Cervarix) prophylactic vaccines have been approved by the food and drug administration (FDA) in June 2006 and October 2009 respectively for use in humans [5]. Globally about 70% of invasive cervical cancer in women prevented by HPV vaccination has the potential to eliminate high-risk HPV types [6]. HPV vaccination is highly protective against HPV infection as supported by who demonstrated 56 percent of HPV infection cases are reduced after HPV vaccination of 14 to 19 years old females [4]. HPV vaccines have been formally recommended, although not uniformly adopted, for large-scale use in the public healthcare systems and national immunization programs of the better-off countries of Europe, North America, and Australia [14, 15]. Different delivery strategies were tested in demonstration projects in Peru, Uganda, India, and Vietnam, and their coverage and acceptability were analyzed. Ethiopia launched the HPV vaccine for the first time with the support of the Global Alliance for Vaccine and Immunization (GAVI) in 2018. The vaccine is currently being delivered primarily through a school-based approach to reach eligible girls [41].

Schedule of HPV vaccine as WHO recommends HPV vaccines to females and males aged 9-14 years, the vaccine is offered in two doses for persons initiating vaccination at ages 9 through 14 years, except immunocompromised persons and three-dose series for those persons initiating vaccination at ages 15 through 26 years, and immunocompromised persons initiating vaccination at ages 9 through 26 years; three-dose schedule also applies to adults initiating vaccination at ages 27 through 45 years, and with HIV as reported [41]. CDC recommends routine vaccination of preteens at ages 11 or 12 years. The vaccination series can be started at age 9 years. HPV vaccine may be given at the same time as other vaccines [52].

Currently, Ethiopia administered HPV vaccination to a single cohort of 14-year-old girls in 2018–19 with ~95% coverage. However; there are no additional plans to implement routine HPV vaccination, due to restrictions from the current global vaccine shortage [56]. Ethiopia's HPV vaccination program uses the quadrivalent HPV vaccine delivered through schools with two doses administered six months apart. The Ethiopia cervical cancer prevention and control 2015 guideline indicated three components of cervical cancer prevention and control. The first is primary prevention which focuses on decreasing HPV infection through behavioral changes or vaccination. The secondary prevention targets screening and treating precancerous lesions and tertiary care is the third which contains management of invasive cervical cancer [44]. Several studies have shown the likelihood of unvaccinated HPV-negative women developing cervical cancer in the next 5–10 years is less, suggesting primary HPV testing is an essential preventive approach, particularly among unvaccinated women [45].

In Ethiopia, vaccination of girls before sexual debut using bivalent HPV vaccine that protects against HPV genotypes 16 and 18 was started among school girls as a pilot in 2019. However, the vaccines target certain genotypes and leave some proportion of the population infected by other genotypes unprotected. Although, screening and treating cervical lesions using VIA remain crucial for successful cervical cancer prevention and control programs [46.47].

As a part of the decision-making process for HPV vaccines, the existence and implementation status of the following policy issues should be reviewed: Existence of school health and or

adolescent health program, services and interventions available, effectiveness and reach of the program, and links to the national immunization program, Policies and legislation concerning vaccination at school, Informed consent process for routine immunization services and vaccines delivered during campaigns, and the applicability of these policies for HPV vaccines delivered to girls aged 9 to 14 years, Policies and strategic plans related to the prevention of cervical cancer, and the potential role of HPV vaccination in these policies and plans. For the process of such policies, key stakeholders should be included: Successful introduction of HPV vaccine as part of a comprehensive cervical cancer control strategy will require the collaboration of the immunization program with a variety of stakeholders within and across programs and sectors at different levels of government. Close associations with cancer, adolescent health, women's health, and/or sexual and reproductive health programs can foster supportive partnerships for HPV vaccine introduction [12].

School-based strategies are an opportunity to collaborate with school health programs where they exist, and more broadly, with the Ministry of Education to integrate public health messages within schools. Ongoing communication among stakeholders before, during, and after vaccine introduction is essential for successful implementation [12]. Similarly, with WHO, Ethiopia recommends primary target population mostly school-based; girls aged 9–14 years, for HPV vaccination before becoming sexually active.

1.2 Statement of the problem

Worldwide, cervical cancer is the second most common form of cancer universal among females aged 15 to 44 years [16]. Cervical cancer is one of the major public health problems and the most common sexually transmitted infection among the female population [14]. It is estimated that 75 percent of sexually active persons are infected with HPV during their lifetime [15]. It accounts for 5.2 percent of the cancer burden, leading to 530 000 new cases and 270 000 deaths every year globally [3]. Apart from cervical cancer, HPV can cause precancerous lesions, urogenital warts, and other cancers of the vulva, vagina, penis, anus, and pharynx [4]. Types 16 and 18 are the most important causes of cervical cancer [17]. And the non-oncogenic types of HPV 6 and 11 are identified as the causes for 90 percent of genital warts [18]. It is prevented through vaccination, early detection and treatment, proper condom use, and limited sexual partners [19].

Sexual intercourse is the primary route of transmission of genital HPV infection. Information about sexual and reproductive health behaviors is essential to the design of effective preventive strategies against anogenital cancers. In this section, describe sexual and reproductive health indicators that may be used as proxy measures of risk for HPV infection and anogenital cancers. As said in the report several studies have reported that earlier sexual debut is a risk factor for HPV infection, although the reason for this relationship is still unclear [13].

Various factors affect the uptake of vaccinations; including awareness and knowledge [5]. Knowledge can be a prerequisite for informed decision-making. The acceptability of a vaccine, or willingness of an individual to be vaccinated, is another factor that plays to its uptake of vaccination [10]. The vaccine uptake rate essentially determines the success of the coverage of HPV vaccination, when increasing the attention of vaccination which decreases the burden of diseases associated with HPV. So high coverage was documented across the different strategies tested; school-based vaccination strategies gave consistently high coverage whilst integration with existing outreach services gave the lowest coverage. Also, a review of the acceptability of HPV vaccine in 13 sub-Saharan African countries found consistently high willingness to vaccinate and hypothetical acceptance of the vaccine [38].

Cervical cancer is one of the most common adverse events in the health care delivery system and has a significant impact on the quality of life. It presents an economic burden at the societal, national, and international levels. However, a large proportion of cervical cancer is preventable with vaccination. Globally about 311,365 worldwide, 37,017 from east Africa cervical cancer deaths occur annually (estimates for 2018). Over 80 percent of deaths were reported at a late stage, primarily due to lack of awareness on cervical cancer and inadequate preventive services, because of this, it has a poor prognosis [20]. In Sub-Saharan Africa, cervical cancer accounts for 22.5 percent of all cancer cases in women. In Ethiopia, it is the leading cause of cancer mortality among women next to breast cancer. Around 4887 women are found to have cervical cancer each year while 3235 women die of this disease [21].

Schools and schoolteachers have been observed to play an extraordinary role in modeling student health perceptions and behavior [22]. Therefore, increasing the awareness of schools and schoolteachers is crucial to motivating adolescents to receive vaccination, thus reducing the

prevalence and disease burden of cervical cancer and HPV-associated diseases in Ethiopia. So, lack of proper education on health information dissemination and knowledge on the risks of HPV, the benefits of HPV vaccinations, perceived HPV vaccination, and the effects of not becoming vaccinated could lead to lifelong health complications from HPV infection [23].

Ethiopia has a report of human papillomavirus and related cancer 2018 a population of 29.43 million women ages 15 years and older who are at risk of developing cervical cancer. Current estimates indicate that every year 6294 women are diagnosed with cervical cancer and 4884 die from the disease. Cervical cancer ranks as the 2nd most frequent cancer among women in Ethiopia and the 2nd most frequent cancer among women between 15 and 44 years of age. However, in Eastern Africa, the region Ethiopia belongs to, about 4.7% of women in the general population are estimated to harbor cervical HPV-16/18 infection at a given time, and 67.9% of invasive cervical cancers are attributed to HPVs 16 or 18 [48]. In Ethiopia, misconceptions about the cause and prevention of cervical cancer are common due to a lack of awareness and health-seeking behavior. Therefore, before the nationwide scale-up of cervical cancer prevention programs, assessment of barriers to acceptance and use of the service through appropriate community-level studies are essential [42].

However, schoolgirls and community perception of the HPV vaccine are not well assessed in many low and middle-income countries including Ethiopia. For the effective scale-up of cervical cancer prevention programs, barriers to the acceptance of vaccination need to be assessed and addressed, so this study to assess the current level of knowledge, perception, and intention of HPV vaccination behavior and explore in school youths' vaccination process, barriers and facilitators of an ongoing vaccination program in the study area.

1.3 Significance of the study.

HPV vaccination is relevant for controlling and preventing cervical cancer incidence, prevalence, morbidity, and mortality in all health systems. HPV vaccination is a new program in Ethiopia, so this study contributes to assessing vaccination behavior and facilitators of an ongoing vaccination program in the study area. Also, this study serves as an important document for the further investigator and health stakeholders and those who are interested in future research undertaking this area. Also, this study aims to develop realistic future educational interventions

and health promotion as behavioral aspects perceived that would increase vaccination rates and decrease the incidence of HPV infection and cervical cancer. This study result will be investigated how schoolteachers, parents, and health workers in school students, students in Ethiopia perceive HPV and HPV vaccines, their experiences regarding implementation of HPV vaccination programs in schools, their thoughts regarding students' need for receiving the vaccination, and the incentives and barriers for them to implement HPV vaccination programs in their schools and as well as health policy to contribute further health outcome.

2. Literature review

2.1 Magnitude of HPV and prevalence of HPV vaccination practices

A woman's lifetime risk of acquiring HPV infection is higher than 80%, and most infections occur within 3-4 years of sexual debut and the principal burden of HPV infections globally has been cervical cancer. HPV infections are observed in over 99% of patients with cervical cancer [39]. Though more than 140 HPV types are identified, strong evidence has been observed for two high risks types-16 and 18 (70-80 percent of all cases) [24]. Center for disease control reported, from 38,793 annual diagnoses of HPV-related cancers, 7.4 percent were cervical cancer [25]. HPV infection invades every sexually active person, at least once in their lifetime and young adults are especially at higher risk (50 percent) for cervical cancer in the Asia Pacific region [23].

Among the Malaysian women aged above 15 years, 2145 are diagnosed and 621 die due to cervical cancer every year [26]. Similar to other developing countries, cervical cancer accounts for a large proportion of cancer-related morbidity and mortality including Ethiopia. The most prevalent cancer among adults is cervical cancer second to breast cancer. (Over 80 percent of cervical cancer cases are detected at a late stage due to lack of information and weak prevention services. [28]

The preventive method of cervical cancer is HPV vaccination early age before being sexually active. Some prevalence of HPV vaccination in a different country is there. In a study done in Uganda uptake of vaccination was at 17% but in this study, the definition of vaccination practice was complete three-dose.[10]. Another study in Malaysia's population-level survey conducted showed that the HPV vaccination uptake was at 50.1%, [27]. A study done in China HPV Vaccination among female college Students reported that only 11.0% had been vaccinated against HPV [55]. Since HPV vaccination is a new program in Ethiopia, there is only a few studies conducted on HPV vaccination practices, a study conducted in Shikora words (Northern Ethiopia), was at 66.5% practiced to HPV vaccine [3].

2.2 Factors affecting HPV vaccination behavior

.2.2.1 Predisposing, enabling, and reinforcing factors that affect HPV vaccination behavior

Identified predisposing, enabling, and reinforcing factors that affect the uptake of HPV vaccination, as described in the PRECEDE framework. Predisposing factors that were identified as barriers to HPV vaccination included parental and provider understanding of the HPV vaccine, concern about vaccine safety, beliefs surrounding the link between the vaccine and sexuality, and vaccine hesitancy. Predisposing factors that are facilitators for HPV vaccination uptake include a strong parental and provider desire to prevent cancer and willingness of providers and parents to learn more about the vaccine. Enabling factors that are barriers include the lack of vaccine providers in some areas of the state, the amount of time it takes providers to counsel patients on the vaccine, the lack of a vaccine required for school entry, lack of a fully streamlined vaccine reporting system (Mm PRINT), and vaccine cost [29].

A study that shows as the berries of the vaccination parents -level barriers endorsed by 6 percent of the participants in one or more groups included: link to sexual activity, misinformation received from the internet or peers, lack of knowledge about the vaccine, concern about vaccine safety, skeptical parents, and the infrequency of adolescent medical visits. many participants referenced parents' belief that their child will not engage in risky sexual behavior, referring to Christian faith or belief in abstinence before marriage [29].

2.2.2 Knowledge and attitude of HPV Vaccination

The major challenge for public health is to develop accurate forms of communication and information about HPV, knowledge about HPV and its relationship with cervical cancer are critical for making appropriate and evidence-based health care choices. The knowledge of students about cervical cancer and its vaccination is important for both, the students and the society [30]. Research done in China's junior middle school students who participated in the survey Shows that only 15 percent of them had heard of HPV and 18.9 percent of them had heard of the HPV vaccine. Students who were willing to take the HPV vaccine in the future accounted for 66.9 percent. In the study, students who believed that vaccination is important for preventing diseases and the first vaccination should be in infancy showed a higher willingness to

be vaccinated than those who did not, indicating that a better understanding of vaccines is associated with higher vaccination willingness [31]. A study done in China show that identified the barriers to implementing HPV vaccination programs in Schools are Perceptual, cultural, institutional, parental, and collaborator barriers are the identified obstacles, the result shows significantly influenced participants' knowledge, attitude awareness, and motivation in the HPV vaccination program in schools [32].

A study shows that, there is a need to address vaccine safety concerns and educate the community that HPV is a sexually transmitted infection that affects both men and women. As the country prepares to launch a nationwide HPV vaccination for adolescent girls, one of the key investments should be in the dissemination of information on HPV, HPV vaccine, and cervical cancer. Effective ways of educating teachers, parents, and girls are therefore needed. Because schools are likely to be the chosen vehicles/venues for delivering the first step should be recruitment and training of teachers to act as vaccine champions to their colleagues, parents, and targeted girls [28]. In one study that Lack of knowledge regarding HPV vaccination most participants lacked knowledge about HPV vaccine and were uninformed of the efficacy of the vaccine and who should receive it. This prevented them from implementing HPV vaccination programs at the school level [33]. The study done in the Gamogofa zone in southern Ethiopia shows that the finding from the baseline study highlights the great lack of knowledge and attitude from this less than half (42.2 percent) of the study participants had ever heard of cervical cancer [28].

Some study shows that School-based programs for HPV vaccination have shown broad coverage among adolescent populations compared with other approaches. However, negative beliefs about HPV vaccination may present barriers to uptake. Parents of adolescent girls have expressed concern that HPV vaccination at a young age would encourage risky sexual behaviors such as early sexual debut, more sexual partners, or unprotected intercourse, and that by consenting to have their child receive the HPV vaccine that they would be condoning sexual activity at younger ages The study Shaw for Intention and belief in one's ability to be vaccinated within the next year, factors that are expected to predict actual vaccination, Only two-thirds of participants intended to be vaccinated, half were confident they could get all three vaccine doses, and fewer

than half were confident they could afford vaccination [35]. In Ethiopia, one study conducted in Arbaminch southern Ethiopia a school-based HPV vaccination knowledge 71% of HPV vaccination, in both study that knowledge and attitude are identified factors the HPV vaccination in schools, in this study 78.3% of them knew HPV vaccines to be given for prevention of cervical cancer. [53].

2.2. 3 Sexual and reproductive health behavior associated factors that affect HPV vaccination behavior

Sexual intercourse is the primary route of transmission of genital HPV infection. Information about sexual and reproductive health behavior is essential to the design of effective preventive strategies against anogenital cancers. Describe sexual and reproductive health indicators that may be used as proxy measures of risk for HPV infection and anogenital cancers. Several studies have reported that earlier sexual debut is a risk factor for HPV infection, although the reason for this relationship is still unclear. Currently, information on sexual and reproductive health behavior in Ethiopia is presented [43]. The utilization of HPV vaccines is affected by child age, perceived access to the vaccine, societal norms, religious background, and perceptions about disease severity and susceptibility [3]. Other factors are vaccine acceptability, accessibility, and affordability which is associated with vaccine acceptance and practice. Poor parent-child communication, higher parent stress on the safety of vaccines (perceived effectiveness) is all factors that can impact adolescent willingness for vaccination. Many parents incorrectly assume their children are at low risk for acquiring HPV infection (Perceived susceptibility). Flawed assumptions about adolescent sexual behavior may confuse decision-making, and prevent a child from accepting and adhering to a vaccination schedule [40].

2.3 Conceptual framework

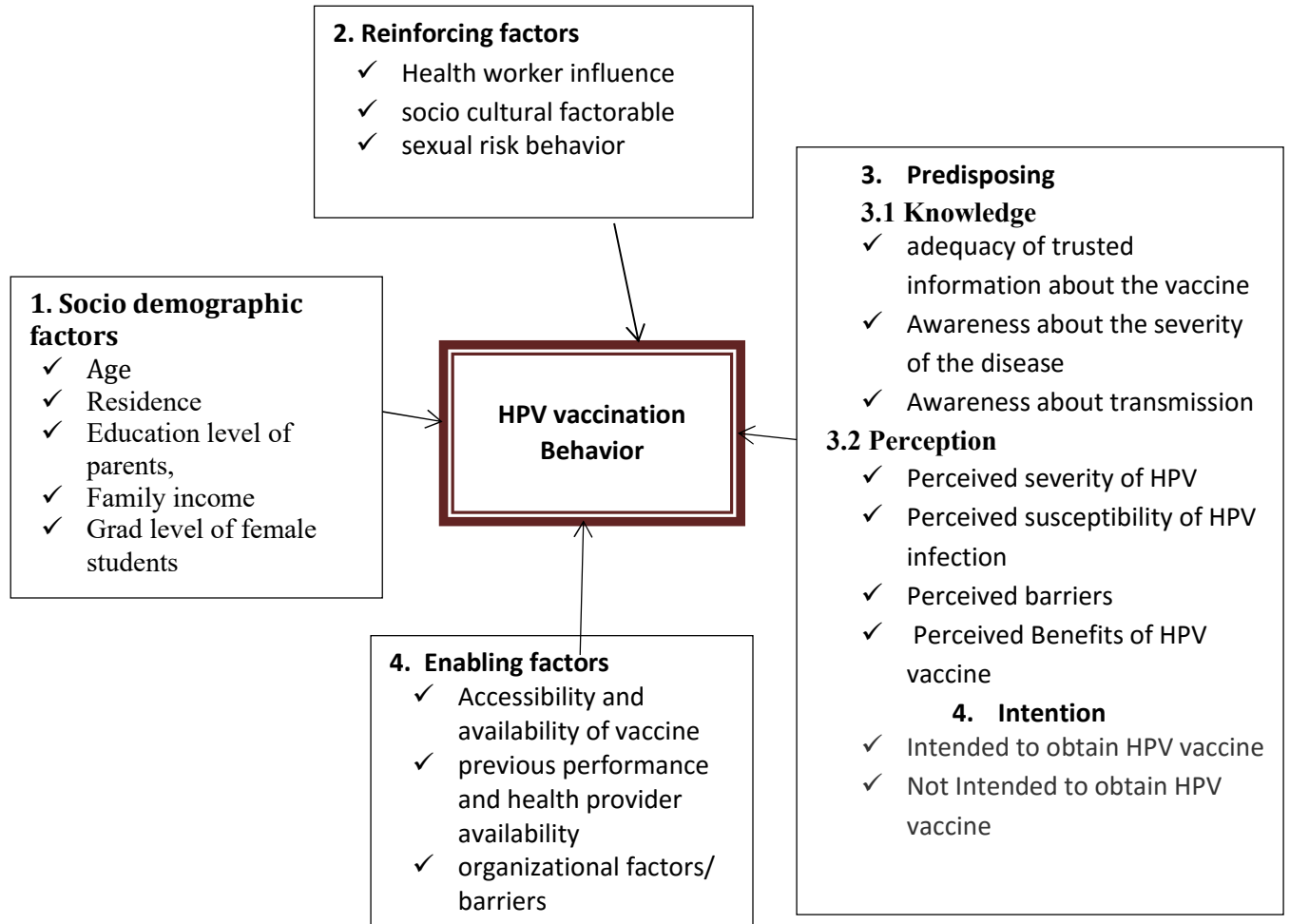


Figure1. Conceptual framework of HPV vaccination of primary school female students in Hadiya zone Hosanna town Ethiopia, 2021.

3. Objective

3.1 General objective

To explore human papillomavirus vaccination behavior and its associated factors among primary school female students in Hadiya zone selected districts, Ethiopia, 2021

3.2 Specific objectives

- To assess the prevalence of HPV vaccination practice in primary school female students in selected districts in the Hadiya zone, 2021
- To assess knowledge, perceptions, attitude, and intention of the HPV vaccination behavior of primary school female students selected districts in Hadiya zone, 2021
- To explore the barriers and facilitators affecting the HPV vaccination practice among primary school females in select districts in the study area, 2021

4. Methods and Materials

4.1 Study area and period

This study was conducted in primary schools in Hadiya zone selected districts, zone town which far 194 km and 232 km away from the capital city of Addis Ababa. According to the population and housing census of Ethiopia in 2007, the selected districts in 2021 estimated a population of 384,592 of which 186,492 are males and 198,100 are females. The total 78 primary schools are in selected districts, Hosanna town has 33 private and 11 public primary schools and 34 primary public schools from two other selected districts (lemo and gibe woreda). The total number of students is 37,577 from those (n=18,234) of them are females, enrolled in 78 primary schools for the 2014 academic year registered students.

4. 2. Study design

A mixed-methods approach was employed in which quantitative and qualitative data were collected using a nested concurrent triangulation design. By combining quantitative and qualitative data, we sought convergence and corroboration among the different data sources. So, the quantitative study is dominant and qualitative as supportive of this study. The multiple perspectives provided an opportunity to develop a complete understanding of the factors associated with HPV vaccination practices. This study was conducted in the Hadiya zone, selected districts, Southern Ethiopia May10 to June 10, 2021.

4. 3 Source of Population:

The study participants have consisted of all primary school female adolescents from selected districts, in the Hadiya zone from March 10 to June 10, 2021.

4.4 Study population:

This study enrolled female adolescents aged 11-18 years because they were expected to complete the HPV vaccination schedule.

4.5 Inclusion criteria and exclusion criteria

4.5.1 Inclusion criteria

Female adolescents' students with age group 11-18 registered and enrolled in government and private schools.

4.5.2 Exclusion criteria

- ✓ Students who are out of the age group 11-18 years
- ✓ Unable to communicate

4.6 Sample size and sampling technique

4.6.1 Sample size determination:

The sample size for the study was estimated by using a single population proportion formula at 95% confidence level (CI), $Z (1-\alpha/2) = 1.96$, taking prevalence of 50% and, 5% margin of error. There is no study that previously determined the proportion of the behavior regarding HPV vaccination nearby the study area, and the variation of the study population would be expected to be high which we need a maximum sample size to detect the difference. Therefore, the proportion of 50% was considered to determine the maximum sample size required and adding a 5% non-response rate and adding 1.5 design effect for effective sampling for the study. As a result, was using the above assumptions, the sample size was calculated as follows.

$$n = \frac{Z_{\frac{\alpha}{2}}^2 P(1 - P)}{d^2}$$
$$n = \frac{(1.96)^2 0.5(1 - 0.5)}{(0.05)^2} = 384$$

N= minimum sample size required

Z= the standardized normal distribution curve value for the 95% confidence interval (1.96)

P= Proportion of the students. The final sample size was **633**.

4.6.2 Sampling procedures:

From the Hadiya zone we, selected three districts for this study. A total of 37,577 (i.e., study population) female students would be enrolled in those primary schools in the 2020/21 academic

calendar. To select study participants from the study population (n=18,234 total students) by employing the following multi-stage sampling methods and procedures.

Step 1: Schools in hosanna, lemo, and gibe districts were selected randomly by using a proportional sampling technique to have representative sample distribution among the three district schools.

Step 2: 12 public primary schools were randomly selected using a lottery method from selected districts.

Step 3: Using the number 48% ($N_i = 18,234$) of female students enrolled in primary schools, the estimated sample size (n=633), proportionally allocated by using a population proportion sampling (PPS) technique to each of the 7 public 5 private primary schools (N_i).

Step 4: Using the total number of female students per section (i.e., sampling unit), the required number of study participants (N_i) for each school was distributed to each section of the 12 primary schools by employing the population proportion sampling (PPS) technique.

Step 5: Final respondents were selected by a simple random sampling method.

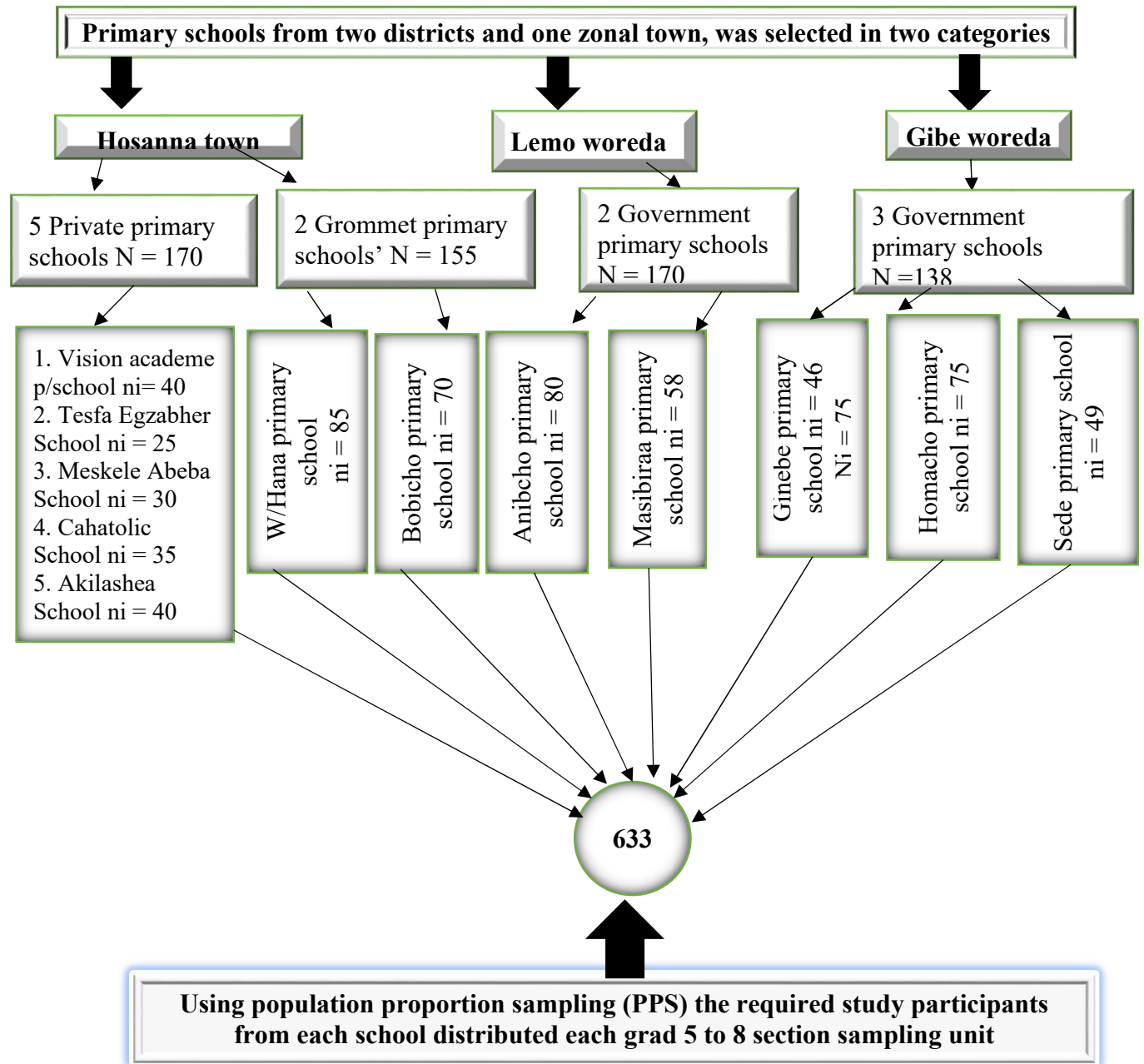


Figure 2: Diagrammatic presentation of multi-stage sampling methods and procedures employed to select study participants for the assessment of the behavior of HPV vaccination on primary school female students.

4. 7. Data collection procedures and measurements

4.7.1 Quantitative data collection instruments and technique

The data collection instrument self-administered questionnaire adapted, which adapted from different sources [7, 34, 49, 50]. The questionnaire consists of questions on socio-demographic, income, knowledge, perception, and intentions as well as related factors on the behavior of the vaccination were adapted. The questionnaire was initially prepared in English and translated into Amharic (national language) and again back to English by different individuals to ensure validity and keep its conceptual equivalence.

4.7.2: Qualitative data collection technique

For the qualitative approach, we used purposive sampling. The data collection instrument guide was adopted based on the objectives of the qualitative study, that barriers, social and structural factors affecting HPV vaccination practice, these employed three in-depth interviews from school staff and community, including; school teachers that health club leader, parents' representative of the schools, student representative and director of the school, and five key informants with the district health team members who had an expert opinion about the health service-related about HPV vaccination in the selected district were conducted, The districts team members included the following, the zone office staff, health extension worker, and EPI focal person from selected districts, and school nurse The data was audio-recorded, transcribed verbatim, translated, and analyzed using content analysis was done. In-charges qualitative data were transcribed from audio recordings for content analysis. We read the transcripts several times and then code them to identify recurring themes. We then identified key quotations that represented the central themes on factors influencing the practices of the HPV vaccine and presented them in the results as text. The purpose of concurrent triangulation designs is to use both qualitative and quantitative data to more accurately define relationships among variables of interest.

4.8 Description of variables

4.8.1. Dependent variables

- 1) HPV vaccination behavior

4.8.2. In Dependent variables/possible factors

- 1) Age, Residence, Religion, Family income, Parents' educational status.

4.8.2.1 Knowledge indicators factors

- ✓ Previous exposure of information
- ✓ Awareness about the HPV vaccine and its vaccine
- ✓ Awareness about transmission
- ✓ Having a peer-to-peer Communication
- ✓ Parent to student communication

4.8.2.2 Perception

- ✓ Perceived severity of HPV infection
- ✓ Perceived susceptibility of HPV infection
- ✓ Perceived barriers of the HPV vaccination
- ✓ Perceived benefits of the HPV vaccination

4.8.2.4 Intention

- ✓ Intention to obtain HPV vaccine
- ✓ Intention not to obtain HPV vaccine

4.8.2.5 Exploratory variables

- ✓ Accessibility and availability of vaccine
- ✓ previous performance and health
- ✓ organizational factors/ barriers

4.9 Operational definition

HPV Vaccine; human papillomavirus vaccine is the vaccine that protects against human papillomavirus, which is known to prevent cervical cancer and other HPV infections in women.

HPV Vaccination behavior: a student who received the HPV vaccination at least one of HPV vaccination practice and measured as a binary outcome (vaccinated and unvaccinated)

Knowledge: was assessed by (20) knowledge-based adapted questionnaire, then knowledge score was done in two categories based on the mean score. It was adapted from a prior study [3, 42].

Knowledgeable: Refers to those who scored mean and above the mean were knowledgeable and below the mean was not knowledgeable.

Not knowledgeable: Refer to those who scored mean and above the mean from the 20-knowledge question.

Perception: How something is regarded, understood, or interpreted, that an intellectual process of transforming sensory stimuli to meaningful information. It was measured by (36) adapted perception-based questionnaires. Which score 5 Likert scale (1= strongly disagree; 2= Disagree; 3= Neutral; 4= Agree; 5= Strongly Agree) then mean score was calculated [34, 49, 50]. Under the perception refer to those who scored mean and above the mean from the perception question, refer to those who scored mean and above the mean from the perception question to be high perception, and refer to those who scored below the mean score to be a low perception from the perception questionnaire for that perceived susceptibility, perceived severity, perceived barriers and perceived benefits of the HPV vaccine.

Perceived susceptibility: Females believe they can get HPV or cervical cancer. It was measured in 11 questionnaires; the mean score was calculated (3.0552 ± 0.97847) of this study.

High susceptibility: the mean and above the mean score of the measured questionnaire.

Low susceptibility: below mean score of the measured question.

Perceived severity: Females believe that the consequences of getting cervical cancer are significant enough to try to avoid. It was measured in 15 questionnaires; the mean score was calculated and (3.37 ± 0.906) of this study.

High severity: the mean and above the mean score of the measured questionnaire.

Low severity: below mean score of the measured questionnaire.

Perceived benefits: Females believe that the recommended action of immunization would protect them from getting cervical cancer. It was assessed 4 questionnaires; the mean score was calculated (3.78 ± 1.023) of this study.

High benefit: the mean and above the mean scored to be a high benefit.

Low benefit: below mean scored to below benefit.

Perceived barriers: Females have personal barriers to immunization. It was assessed 6 questionnaires; the mean score was calculated (3.3575 ± 0.80107) of this study.

Low barriers: mean score that means and above the mean scored to be a high benefit.

High barriers: the below mean scored to below benefit from those barriers measured questions

Intentions: is a mental state that represents a commitment to carrying out an action or actions in the future. Was assessed 7 adapted intention-based questionnaires, it was categorized based on mean score. The mean of intention is (1.39 ± 0.338).

Intended to vaccination: It refers to those who scored mean and above the mean from the intention questionnaire.

Not intended for HPV vaccination: refer to those who scored below the mean score to be not obtained to HPV vaccination. (1.39 ± 0.338) mean of the intention.

4. 10. Data quality control

The training was provided to six nurses to data collectors and two supervisors and a pretest was done on 5 % of the study population out of study conduct schools. During data collection, supervisors did close field supervision to overcome any mistakes. On each data collection day, 5 percent of the collected data were reviewed by the principal investigator. After data collection was completed, the data were critically checked for its completeness, entered, coded, edited, cleaned, properly organized, and analyzed using the above-mentioned software according to the standard.

4.11. Data analysis procedures

4. 11.1 Quantitative data analysis:

Before data analysis, the data were cleaned, coded, and entered into the Epi- data version 4.6.02 statistical software application. Then cleaned data was exported to SPSS version25 for further data management and analysis. Descriptive analysis using frequency, mean, standard deviation, and percentages were done. Association between dependent and independent variables tested in Binary and multiple logistic regression and variables p-value ≤ 0.25 were entered into the multiple logistic regressions was done. The summary result was presented using frequency table cross-tabulation. And significant association declared when P-value ≤ 0.05 . The strength for the significant association was determined by an odds ratio of 95% CI.

4.11.2 Qualitative data analysis:

Qualitative data were transcribed from audio recordings for content analysis using Atlis ti7. We read the transcripts several times and then coded them to identify recurring themes. We then identified key quotations that represented the central themes on factors influencing practices of HPV vaccine and presented them in the results as text.

4. 12. Ethical consideration:

Research permission was taken from Jimma University and ethical clearance was obtained from the ethical review committee. The letter was submitted to higher officials of the schools to permit data collection. Information was provided to all of the objectives of the study. Privacy was kept from separating the rooms for respondents while filling questionnaires. The respondents assured that information will not be used for other purposes and names were not stated to confirm confidentiality. The participants were assured that they have full right to participate or not in the study, with special precautions of COVID 19 prevention protocol. The assent was signed by school parent representatives and school directors before data collection started.

4. 13. Dissemination plan

The finalized paper will be submitted to Jimma University in three copies. A copy of this material will be given to the schools and zone health office, as well as efforts to publish the findings in a scientific journal.

5. Result

5.1 Socio-Demographic and sexual health characteristics respondents of quantitative study.

A total of 621 participants were enrolled in this study. The response rate of this study was 98.1 %, the mean age of the respondents was 13.83 years old and SD= ±0.058, (71.8%) of the religion were Protestants, and (66.3%) of the participants were from urban, most participants' ethnicity was Hadiya (76.3%), regarding of grade level, the majority were from grade 7&8, 341(54.9%) and interims of school category the majority 451(72.6%) of participants from public schools. Participants` mother's education level 230(37.0%) of them able to read and write and 174(28.0%) of them father occupation is a merchant.

Regarding sexual health, behavioral factors findings that smoking cigarette habits that only 32(5.2%), of them, had currently smoked, 52(8.4%) of them ever had sexual intercourse, from those 35(5.6%) of them have been pregnancy happened. Early first intercourse before age 15 years was 46(7.4%). All results were displayed in the table below table 1.

Table 1 Socio-Demographic and participants sexual health Characteristics of primary school female students in Hadiya zone selected Woreda, southern Ethiopia, 2021 (n=621)

Characteristics	Category	N (%)
Age	11-14	443(71.3%)
	15-18	178(28.7%)
Religion	Protestant	446(71.8%)
	Orthodoxies	108(17.4%)
	Muslim	20(3.2%)
	Others (catholic, apostolic)	47(7.6%)
Residence	Rural	209(33.7%)
	Urbane	412(66.3%)
Ethnicity	Hadiya	474(76.3%)
	Kanbata	57(9.2%)
	Garage	42(6.8%)
	Others (Amara, Oromo)	48(7.7%)
Grade level	Grade 5 and 6	280(45.1%)
	Grade 7 and 8	341(54.9%)
School type	Public	451(72.6%)
	Private	170(27.4%)
Monthly Family income	<2000	151(24.3%)
	2000-40000	252(40.6%)

	>4000	218(35.1%)
Mother Education level	No formal education	131(21.1%)
	Able to read and write	230(37.0%)
	Elementary	81(13.0%)
	Secondary	65(10.5%)
	College and above	114(18.4%)
Father education	No formal education	119(19.2%)
	Able to read and write	207(33.3%)
	elementary	64(10.3%)
	secondary	79(12.7%)
	college and above	152(24.5%)
Mother occupation.	House wife	335(53.9%)
	Private work	138(22.2%)
	Government	104(16.7%)
	farmer	30(4.8%)
	other	14(2.3%)
Father occupation.	Civil servant	151(24.3%)
	Merchant	174(28.0%)
	Private employer	162(26.1%)
	Farmer	94(15.1%)
	Others	40(6.4%)
Risk behavioral or sexual health characteristics		
Characteristics	Category	N (%)
Smoking segregate.	Yes	32(5.2%)
	No	589(94.8%)
Ever had sexual intercourse	Yes	52(8.4%)
	No	569(91.6%)
Early first intercourse (before age 15 years).	Yes	46(7.4%)
	No	575(92.6%)
Have you had three or more sexual partners within the past year?	Yes	42(6.8%)
	No	579(93.2%)
Ever been pregnant?	Yes	35(5.6%)
	No	586(94.4%)
Have you used a condom before your last intercourse?	Yes	32(5.2%)
	No	589(94.8%)

5.2 Socio-Demographic characteristics of qualitative participants in Hadiya zone selected Woreda, Southern Ethiopia, 2021 (n= 8)

For qualitative study 5 key informant and 3 in-depth interview participants selected purposively. from those total eight participants 3(37.5%) of them age group 11- 30, 5(62.5%) of them age group 31-40, internes of residency 3(37.5%) of them rural and 5(62.5%) of them urban, the participants' ethnicity majority of 7(87.5%) Hadiya and 1(12.5%) of them kanbata, marital status of the participants were 5(62.5%) of them male and 3(37.5%) female, internes of marital statues 4(50%) of them married and 4(50%) single, internes of religion the majority of 4(50%) protestant and 2(25%) of them are orthodox displayed below table 2 .

Table 2 socio-demographic characteristics of qualitative participants in Hadiya zone selected Woreda, southern Ethiopia, 2021 (n=8)

Characteristics	Category	Frequency (%)
age	11-30	3(37.5%)
	31-40	5(62.5%)
Sex	Male	5(62.5%)
	Female	3(37.5%)
Residence	Rural	3(37.5%)
	Urbane	5(62.5%)
Ethnicity?	Hadiya	7(87.5%)
	Kanbata	1(12.5%)
Marital statues	Single	4(50%)
	Marinade	4(50%)
Religion	Protestants	4(50%)
	Orthodox	2(25%)
	Muslim	1(12.5%)
	Catholic	1(12.5%)

5.3 Prevalence level of HPV vaccination practice among primary school females in Hadiya zone selected Woreda, southern Ethiopia, 2021 (n=621).

The overall prevalence of this study was two hundred seven (33.3%) have ever received HPV vaccine. From the total vaccinated participants 147(23.7%) of them were received one dose and only 60(9.7%) of them received two doses, and from the total participants, 414(66.7%) of them were not got any does of the HPV vaccine. In this study full dose vaccinated were as recommended by the Ethiopian federal ministry of health is only 9.7 % this study.

Prevalence of Knowledge about cervical cancer, HPV infection and HPV vaccine was 113(54.6%), with a P _ value = 0.002 from the only vaccinated participants perceived susceptibility and perceived severity of the cervical cancer and HPV infection were 118(57.0%) OR = 0.855 (95% CI =0 .611-1.197) with P_ value = 0.362 and 106(51.2%) OR= 0.953(95% CI= .682-1.330) with P_ value =0.777 respectively. Also, prevalence of Perceived benefits and perceived barriers of the HPV vaccine, 142(68.6%) OR = 0.485 (95% CI =0.341-.689) with P _ value = 0.00, and 109(52.7%) OR = 0.917 (95% CI= .656-1.280) with P_ value = 0.609 respectively. This show that knowledge, and perceived benefits increasing with HPV vaccination behavior increasing, also the association was statistically significant on demonstrated of crud odd ratio of logistic regression. thus, Vaccinated and unvaccinated girls did not significantly differ on levels of perceived susceptibility to cervical cancer, perceived severity to cervical cancer and perceived barriers of HPV vaccine of this study.

Table 3: Prevalence Level of HPV Vaccination practice of the study area of primary school female students in Hadiya zone selected Woreda, southern Ethiopia, 2021 (n=621).

Characteristics	Category	N (%)
HPV vaccination.	Vaccinated	207(33.3%)
	Unvaccinated	414(66.7%)
Number of vaccinated doses.	One dose	147(23.7%)
	Two doses	60(9.7%)

5.4 Knowledge about Human Papilloma Virus, CC & HPV vaccine

The knowledge level of respondents was evaluated using the required basic knowledge with organized adapted questionnaires. Thus, the majority (50.4%) of female primary schools have had exposure with source of information education (i.e. have heard about HPV); majority of

them were for the risk factors of HPV infection 427(68.8%) of them were I don't know and 443(71.3%) of them were said I don't know, that to identified the consequence of the HPV infection , only 91(14.7%) knew that risk factors of HPV infection by multiple sexual partner, only 102(16.4%) of knew HPV can cause cervical cancer; and 279(44.9%) of them knew HPV can cause genital wart; majority 419(67.5%) of female primary schools have had exposure with source of information education (i.e. have heard about cervical cancer); and majority 483(77.9%) of female primary schools have had exposed with source of information education (i.e. have heard about HPV vaccine); 263(42.4%) of them were not that HPV vaccine is most effective on someone who is not sexually active and 413 (66.5%) of them were not identified the common risk factors of HPV vaccine, 370(59.6%) and 242(39.0%) of them not communicate about HPV vaccine with their parent and friends respectively; from those exposed information source majority 239(38.5%) of were from Radio/television, 92(14.8%) of them were from Health workers and regarding to HPV vaccine 263(42.4%) of knew that HPV vaccine is most effective on someone who is not sexually active; 338(54.4%) of them were 16 and 18 HPV types are the most types of HPV infectious, 251(40.4%) of them were ever talk family about HPV vaccine

In this study knowledge of the participants is strongly predicted of the effect the HPV vaccination behavior. As key informant information in the study area has a great lack of information and awareness of the HPV vaccine, the majority of students have not informed, even if the vaccinated students they have no information the health outcomes and what are the consequences if they do not get HPV vaccine, just health workers forwarded to vaccinate only, due to that the students and parents were not aware that the vaccine is important for their girls and was not identified of the vaccine how to delivered in their community and school setting, so there is a great health information provision and awareness gape in the study area.

... I think that parents don't know why this vaccine is given, and they have a lot of fears. We explain, explain, and explain, but still, people don't understand. [41 years old, female, key informant, nurse].

Table 4: Knowledge level about HPV, CC and HPV vaccine among Primary school female students in Hadiya zone selected Woreda, Southern Ethiopia, 2020 (n=621)

Knowledge statement	Category	Frequency (%)
Ever heard of Human Papilloma virus?	Yes	313(50.4%)
	No	308(49.6%)
People can live with HPV infection for a long time without knowing it.	Yes	337(54.3%)
	No	284(45.7%)
HPV can cause genital warts	Yes	279(44.9%)
	No	342(55.1%)
Men also have the potential to develop cancer due to HPV infection	Yes	292(47.0%)
	No	329(53%)
Ever heard about cervical cancer?	Yes	419(67.5%)
	No	202(32.5%)
Cervical cancer can occur on both sex and all age level.	Yes	363(58.5%)
	No	258(41.5%)
16 and 18 HPV types are the most types of HPV infectious	Yes	339(54.6) %
	No	282(45.4%)
Ever heard HPV vaccine?	Yes	484(77.9%)
	No	137(21.1%)
HPV vaccination is recommended for you?	Yes	401(58.5%)
	No	220(41.5%)
The HPV vaccine is most effective on someone who is not sexually active	Yes	264(42.5%)
	No	357(57.5%)
Ever talk about the HPV vaccine with your family?	Yes	251(40.4%)
	No	370(59.6%)
Ever talk about the HPV vaccine with your friends?	Yes	242(39%)
	No	379(61%)
Multiple choose question for knowledge		Frequency (%)
Form the following, which are the risk factors of HPV infection? (Multi response possible)	Many new male partners	64(10.3%)
	Multiple sexual partners	91(14.7%)
	Lifetime	
	Having non-monogamous male partners	78(12.6%)
	Weakened immune systems	85(13.7%)
	One of the transition ways is damaged skin.	100(16.1%)
	I don't know	427(68.8%)

Consequences of HPV infection? (Multi response possible)	Genital wart	102(16.4%)
	cervical cancer	102(16.4%)
	Oral and upper respiratory lesions	87(14.0%)
	I don't know	443(71.3%)
Common side effects of HPV vaccine are: (Multi response possible)	Pain, redness, or swelling in the site of given of HPV vaccine	84(13.5%)
	Fever is one of the side effects of the HPV vaccine	85(13.7%)
	Headache or feeling tired	85(13.7%)
	Nausea	77(12.4%)
	Muscle or joint pain	80(12.9%)
	I don't know	413(66.5%)
Primary source of information		Frequency (%)
Primary Source of information about HPV (n=315)	Radio/television	131 (21.1%)
	Printed material	44(7.1%)
	Health professional	169(27.2%)
	Peers	14(2.3%)
	School	69(11.1%)
	Others (family, relatives)	16(2.6%)
Primary Source of information for HPV vaccine (n=484(77.9%))	Printed material	88 (14.1%)
	Health workers	192 (30.9%)
	Family, friends and neighbors	87 (14%)
	Community Leaders	8 (1.3%)
	Teachers/school system	70 (11.3%)
	Other (churches, relatives)	11 (1.8%)
Primary Source of information for cervical cancer (n=420 (67.6%))	Radio/television	239(38.5%)
	Printed material	28(4.5%)
	Health workers	92(14.8%)
	Family, friends and neighbors	19(3.1%)
	Community leaders	22(3.5%)
	Teachers/school system Other (churches, relatives)	11(1.8%)
	Other	11(1.8%)
Reasoned out to unexposed of information about HPV and its vaccine (N= 306 (49.3%))	Lack of information	241(38.8%)
	Religion influence	25(4.0%)
	Cultural influence	19(3.1%)
	Others (life style, rural address)	40(6.4%)

5.5 Intentions towards HPV vaccination processes among Hadiya zone secondary school females' students (n=414).

from the total unvaccinated 414 individuals revealed that their intention to take HPV vaccine at future 217(52.4%) of them intent to obtain HPV vaccine at the future. The mean intention score was 1.39, SD \pm 0.338, which reflects the slight positive trend towards to favorable intention to get HPV vaccine. Thus, from the item responses, 239(57.7%) of them were intended to take vaccine with the next three months, 241(58.2%) would take HPV vaccine, 265(64.0%) of them were wont to take HPV vaccine in the next three months, 269(65.0%) of like to take HPV vaccine in next three months, 257(62.1%) of needs support from their friends to get HPV vaccination and 255(61.6%) of them were agreed that HPV vaccination is angst my religions of culture, 228(55.1%) of agreed the HPV vaccination is encouraged by my religions. Therefore, they may not have perceived the benefit of vaccination as important enough to intend to receive the vaccine. Also supporting that key informant said, it indicates that the vaccine was not introduced broodily to the community, school setting, and young girls the vaccine contracted that cervical. All respondents' results were displayed below in table 5.

Table 5: Intention of HPV vaccination towards Primary school female students 'in Hadiya zone selected Woreda, southern Ethiopia, 2021

Intention statement	Category	N (%)
I am intended to take HPV vaccine within the next 3 months.	Yes	239(57.7%)
	No	175(42.3%)
I am need to take the HPV vaccine within the next 3 months.	Yes	241(58.2%)
	No	173(41.8%)
I will take the HPV vaccine in the next 3 months	Yes	265(64.0%)
	No	149(36.0%)
I want to take the HPV vaccine in the next 3 months.	Yes	269(65.0%)
	No	145(35.0%)
I like to take the HPV vaccine for the next 3 months	Yes	258(62.3%)
	No	156(37.7%)
If I got support from my friends to be encourage getting vaccination	Yes	255(61.6%)
	No	159(38.4%)
HPV vaccination is angst my religions of culture	Yes	228(55.1%)
	No	186(44.9%)

5.6 Perception towards HPV Vaccination, Human Papilloma Virus & HPV Vaccination behavior.

The respondents' perception revealed that 199(32.0%) of them perceive the opinion that strongly agreed that HPV vaccines can prevent cervical cancer, 221(35.6%) of them perceive strongly agreed that cervical cancer is a severe disease. 171(27.5%) of them believed that they were not vaccinated to be infected with HPV in the future. 168(27.1%) of were believe that agreed, feel exposed to cervical cancer, 192(30.9%) of were agreed that being infected with HPV would have major consequences on their life, the majority 181(29.1%) of them perceiving that agreed being infected with HPV would cause genital warts. The majority of participants 264(42.5%) of them perceive the opinion strongly agreed that had HPV vaccine-preventable for cervical cancer, 243(39.1%) of the participants agree believed that, HPV vaccination is important to getting better health, 215(34.6%) of participants also agreed that, HPV vaccine help to reduce the morbidity of women from cervical cancer, 211(34.0%) of them were strongly agreed that they believe cervical cancer is extremely harmful, majority 174(28.0%) of the believe agree that they feel under social pressure to receive the HPV vaccine. Perceived the severity and perceived the susceptibility as important enough to prevent cervical cancer to receive the HPV vaccine. All respondents' results are displayed table below 7.

Supporting that, from qualitative findings in the study area side of perception, there are some challenges identified, that due to health promotion information gap, misconception (it causes to infertility) of HPV vaccine as mentioned the key informant the parents mentioned that why the vaccine given to only girls why not boys, that currently the vaccine is given for only adolescents in the study area, also some of them were mentioned, the adolescents have anxiety, due to (fear of side effect, fear of injection site pain, arm swollen, after this they absent class and routing activity.

.....according to challenges related to lack of awareness, when I have got two chances during TAT vaccination in our school, then I understand there is no awareness on our community, even if the parents informed me for their children not allowed to get the vaccine because of they have no any awareness, they say that just the fear of pain and may got complication, so if there are informed and aware they may encourage their child.

[28 years old, male, key informant, health club coordinator.

Table 6: Hadiya zone Primary school female students' perception level about HPV vaccination behavior selected Woreda, northern, Ethiopia, 2020 (n=621)

Statements of perceptions towards HPV vaccination	Strongly agree N (%)	agree N (%)	Neutral N (%)	Disagree N (%)	Strongly disagree N (%)
Perceived susceptibility (1= Strongly disagree; 2= Disagree; 3= Neutral; 4= Agree; 5= Strongly Agree)					
I will likely get HPV infection	86(13.8%)	105(16.9%)	83(13.4%)	116(18.7%)	231(37.2%)
HPV vaccines can prevent cervical cancer.	199(32.0%)	169(27.2%)	87(14.0%)	66(10.6%)	100(16.1%)
No matter what I do, I am likely to get be infected with HPV	108(17.4%)	139(22.4%)	17.1(106%)	105(16.9%)	163(26.2%)
I believe that cervical cancer is a severe disease.	221(35.6%)	184(29.6%)	65(10.5%)	65(10.5%)	86(13.8%)
If I don't get vaccinated for HPV, I will be infected with HPV.	140(22.5%)	171(27.5%)	94(15.1%)	84(13.5%)	132(21.3%)
If I don't get vaccinated for HPV, I will be getting cervical cancer.	153(24.6%)	164(26.4%)	98(15.8%)	74(11.9%)	132(21.3%)
If I don't get vaccinated for HPV, I will be getting genital warts.	137(22.1%)	164(26.4%)	95(15.3%)	80(12.9%)	145(23.3%)
It is likely that I am at risk of getting HPV infection	116(18.7%)	127(20.5%)	99(15.9%)	91(14.7%)	188(30.3%)
In my aspects, I am less likely to acquire HPV infection.	118(19.0%)	157(25.3%)	109(17.6%)	100(16.1%)	137(22.1%)
It is possible that I will get HPV infection.	156(25.1%)	142(22.9%)	85(13.7%)	101(16.3%)	137(22.1%)
If I never have the HPV vaccine, I would feel very vulnerable to cervical can	155(25.0%)	168(27.1%)	85(13.7%)	74(11.9%)	139(22.4%)
Perceived severity (1= Strongly disagree; 2= Disagree; 3= Neutral; 4= Agree; 5= Strongly Agree)					
Being infected with HPV would have major damage on physical health	183(29.5%)	163(26.2%)	98(15.80%)	75(12.1%)	102(16.4%)
Being infected with HPV would have major consequences on my life	182(29.3%)	192(30.9%)	96(15.5%)	71(11.4%)	80(12.9%)
Being infected with HPV would cause cervical cancer.	175(28.2%)	191(30.8%)	114(18.4%)	58(9.3%)	83(13.4%)
Being infected with HPV would cause genital warts.	174(28.0%)	181(29.1%)	109(17.6%)	71(11.4%)	86(13.8%)
I believe that cervical cancer is extremely harmful.	211(34.0%)	184(29.6%)	78(12.6%)	53(8.5%)	95(15.3%)
The thought of genital warts or cervical cancer scares me.	190(30.6%)	162(26.1%)	76(12.2%)	79(12.7%)	112(18.0%)
When I think about genital warts or cervical cancer, I feel nauseous.	171(27.5%)	160(25.8%)	101(16.3)	75(12.1%)	114(18.4)
When I think about genital warts or cervical cancer my heart beats faster.	186(30.0%)	170(27.4%)	83(13.4%)	62(10.0%)	120(19.3%)

Genital warts/cervical cancer would endanger my love relationships.	166(26.7%)	138(22.2%)	89(14.3%)	99(15.9%)	128(20.6%)
Cervical cancer is a hopeless disease.	168(27.1%)	143(23.0%)	105(16.9%)	90(14.5%)	114(18.4%)
My feelings about myself would change if I got cervical cancer.	180(29.0%)	131(21.1%)	97(15.6%)	97(15.6%)	116(18.7%)
I am afraid to even think about cervical cancer.	173(27.9%)	136(21.9%)	90(14.5%)	101(16.3%)	121(19.5%)
Problems I would experience from cervical cancer would last a long time.	173(27.9%)	138(22.2%)	91(14.7%)	96(15.5%)	123(19.8%)
If I had cervical cancer my academics and career would be in danger.	162(26.1%)	153(24.6%)	105(16.9%)	89(14.3%)	112(18.0%)
If I got cervical cancer, it would be more serious than other diseases	206(33.2%)	132(21.3%)	88(14.2%)	86(13.8%)	109(17.6%)
Perceived benefits of the HPV vaccine of the participants					
HPV vaccine is helpful to prevent cervical cancer	264(42.5%)	155(25.0%)	47(7.6%)	48(7.7%)	108(17.4%)
HPV Vaccination important for to get better health.	216(34.8%)	243(39.1%)	61(9.8%)	42(6.8%)	59(9.5%)
HPV vaccine helps to reduce morbidity of women from cervical cancer	204(32.9%)	215(34.6%)	67(10.8%)	43(6.9%)	92(14.8%)
Vaccination for HPV helps women to conduct their job freely	182(29.3%)	200(32.2%)	84(13.5%)	72(11.6%)	83(13.4%)
Perceived barriers of HPV vaccination among female students					
I am afraid of the side effects of HPV vaccination	132(21.3%)	166(26.7%)	93(15.0%)	106(17.1%)	124(20.0%)
Health professional counseling is good to receive HPV vaccination	197(31.7%)	166(26.7%)	71(11.4%)	75(12.1%)	112(18.0%)
Do you think your family allow to vaccinate you	222(35.7%)	149(24.0%)	77(12.4%)	66(10.6%)	107(17.2%)
The decision to receive the HPV vaccine is/was beyond my control	169(27.2%)	156(25.1%)	95(15.3%)	99(15.9%)	102(16.4%)
To take HPV Vaccine, I fear the side effects.	176(28.3%)	164(26.4%)	78(12.6%)	93(15.0%)	110(17.7%)
I feel under social pressure to receive the HPV vaccine	133(21.4%)	174(28.0%)	100(16.1%)	117(18.8%)	97(15.6%)

5.7 Availability, barriers, and accessibility of affecting vaccination practices among female students in Hadiya zone selected districts primary schools in southern Ethiopia, 2021

From the total participants above half 345(55.6%) AOR=7.545, 95% 4.694-12.29) of accessibility to the HPV vaccine in their school. From those vaccinated participants they got their vaccine 312(50.2%) were in school and 75(12%) of them were in a health facility, 27(4.4%)

were community-based outreach, and the remains only 5(0.8%) home to home for their access vaccination place, and during vaccination, their vaccination processes facilitated 298(48%) of by health professions and 58(9.3%) of them were facilitated by teachers in their school. Revealed that from key informants at the study area, there is the availability of the HPV vaccine which is seasonal to given to females in 6 months interval 2 times in a year, then the only two sectors are the deliver site to the HPV vaccine, broodily school, and community outreach, but not in the health sector because of this seasonal work which is two times only in a year, so I said that no health profession or responsible body in the health center for giving the vaccine to females because two times only in a year.

Barriers identified that from qualitative findings in the study area have: a shortage of HPV vaccine for eligible participants, lack of awareness, health promotion information gap, lack of transportation vaccine was mentioned as a barrier of the HPV vaccine in the study area and the process of vaccination was school campaign and home to home, then the facilitators were overall process from zone to Keble have their chain to facilitate in the health sector, during vaccination camping community leader and school staff involved in the vaccination ongoing process, but they not remember that shortage of facilitator and health professions in health facility responsible to his vaccination program that to cover eligible girls those out of schools and to address those not get the chance during outreach to vaccinate.

Generally, the study area the vaccination process from the chain that zonal to every district equal distribution of the eligible population base and vaccination is currently two times a year as two-dose schedule, some challenges are there, so that in this study area the only age14 years old females including in vaccination program, that as zonal maternal and child health coordinator, the most challenges for this shortage of HPV vaccine, which only EPSA supply the vaccine to us that not enough, so the vaccine and eligible population is unbalanced.

In this study availability of the HPV vaccine was identified as one of the major factors that affect HPV vaccination behavior in the study area. Supporting that qualitative funding as mentioned by key informants, the shortage of HPV vaccine is one of the major factors for this low HPV vaccination behavior in this study area.

..... shortage of vaccine for target age those 9 to 14 years old females, by this cause, we address only target age 14 years old females from the funded organization Ethiopian pharmacy supply agency (EPSA)

[31 years old, male, key informant, health officer]

Table 7: Accessibility of vaccination behavior of HPV in the Hadiya zone selected districts primary schools in southern. Ethiopia, 2021(n=621)

Characteristics	Category	N (%)
Accessibility of HPV vaccine in their school	Yes	345(55.6%)
	No	276(44.4%)
Place or institution of HPV vaccinated	School	312(50.2%)
	Health facility	75(12%)
	Community outreach	22(4.4%)
	Home to home	5(0.8%)
Facilitate of the vaccination process in the school	Health professions	298(48%)
	Teachers	58(9.3%)
	Family	39(6.9%)
	Community leader	19(3%)

5.8 Association factor of HPV vaccination behavior affects in primary school female students in Hadiya zone in selected districts, 2021

Bi-variate and multi-variable factors associated with HPV vaccination behavior in univariate analysis, demographic factors including age, grade level, residence, school category, monthly family income, maternal occupation, father occupation, mother education, father educational, sexual experience before and 15 years, sexual partners, using a condom during sexual intercourse and access of HPV vaccine in their school status had a significant association with HPV vaccination behavior in binary logistic regression at p-value <0.25 from this residence, knowledge, perceived benefits, availability of HPV vaccine and grade level had a significant association with HPV vaccination behavior on multiple logistic regression analysis at p-value < 0.05. But school category, family monthly income, perception, intention, maternal education,

father educational status, and risk and for HPV vaccination behavior-related variables had not a significant association in multiple logistic regression analysis.

Knowledgeable Students were vaccinated HPV vaccination behavior 1.53 (times) than not knowledgeable students (AOR = 1.531, 95% CI 1.053, 2.227), Students being low perceived benefits of the HPV where vaccinated HPV vaccination 48% less likely participate vaccination practice than students who have high perceived benefits of HPV vaccine with AOR=0.518, 95% CI (0.356-0.756). Students who live in urban areas were 1.85 times more likely to be vaccinated than students who live in rural areas AOR= 1.831, 95% CI (1.206, 2.782). Students who get access to the HPV vaccine in their school are 5.686 times more likely than not to get access to the HPV vaccine in their school AOR= 7.545, 95% CI (4.694-12.29). The Hosmer Lemeshow goodness-of-fit model was fitted (SIG, value 0.285).

From key informants, findings result in this study area have: the shortage of HPV vaccine for eligible audiences, lack of awareness, health promotion information gap, transportation problem, misconception (infertility) of HPV vaccine, anxiety, due to fear of side effects, fear of injection site pain, arm swollen those as a barrier of the HPV vaccine in the study area and the process of vaccination was school campaign and home to home, then the facilitators were overall process from zone to Keble have their chain to facilitate in the health sector, during vaccination campaign community leader and school staff involved in the vaccination, this all about at different levels of the study area.

Table 8: Multivariate of Factors associated with primary school female students' HPV vaccination behavior in Hadiya zone selected Woreda, south region, Ethiopia, 2021.

Variables		HPV vaccination		COR	AOR95%CI
		Vaccinated	unvaccinated		
Knowledge	Knowledgeable	113(18.2%)	172(27.7%)	1.691	1.531(1.053-2.227) **
	Not knowledgeable	94(14.8%)	242(38.9%)	1	
Benefits	Low benefits	65(10.4%)	201(32.4%)	0.485	0.518(0.356-0.756) **
	High benefits	142(22.9%)	213(34.3%)	1	
Age	11-14	129(20.8%)	314(50.6%)	0.527	0.672 (0.450 ,1.003)
	15-18	78(12.6%)	100(16%)	1	
Residence	Urban	84(13.5%)	125(20.1%)	1.579	1.657 (1.107-2.481) **
	Rural	123(19.8%)	289(45.5%)	1	
School category	Public	167(26.9%)	284(45.7%)	1.911	1.194 (0.749,1.902)
	Private	40(4.4%)	130(20.9%)	1	
Grade level	Grade 5&6	74(11.9%)	206(33.2%)	0.562	0.520 (0.351-0.770) **
	Grade 7&8	133(21.5%)	208(33.5%)	1	
Vaccine Accessibility in their school	Yes	168(27%)	177(28.5%)	5.686	7.545(4.694-12.29) **
	No	39(6.3%)	237(38.2%)	1	

=0.0- significant p-value <0.05**

Furthermore, findings from the qualitative results in the study area have: a shortage of HPV vaccine for eligible audiences, lack of awareness, health promotion information gap, misconception (it causes to infertility) of HPV vaccine, anxiety, due to (fear of side effect, fear of injection site pain, arm swollen) was identified as a barrier of the HPV vaccine in the study area and the process of vaccination was school campaign and home to home, then the facilitators were overall process from zone to Keble have chained to facilitate in the health sector.

I think the HPV vaccine is new, the majority of students have not informed it, even if the vaccinated students have no information to new health outcomes and what are the consequences if they do not get HPV vaccine, just health workers forwarded to vaccinate only.

[16 years old, female, key informant, student]

I said that if we had enough vaccines and give at once to all targeted ages and covered more, but we can't address all age groups, so that we can address the only targeted 14 years old females, initially they are supplied to only 14 years, old females, after we reported the population age group other things are as problem seasonal country instability and shortage of money to pay professions.

[35 years old, male, key informant, MPH in RH]

the challenges are, first largely lack of awareness, that they say way only girls to vaccinate, and they say this vaccine is disabling of our future reproduction and fear of pain during vaccinate, also others are given the reason to as, until now we are not got any needles vaccination in our lifetime, duo to others some of them are, show the side effects during vaccination, even if some of them are gone to shock, so we have adrenaline to mage the shock if there, by this cause many students refuse the vaccine, but currently better before the previous year.

[38 years old, female, key informant, health extension worker]

6 Discussion

This study explored that, generally being knowledge towards CC, HPV infection, and HPV vaccine, perceived low benefits of the HPV vaccine, the residence of students, availability of HPV vaccine in their school, and grad level of the female students were significant associated factors for HPV vaccination behavior by female students' predictors those revealed from quantitative data founding was associated with students HPV vaccination behavior. Qualitative findings as mentioned that affects HPV vaccination behavior; that lack of awareness, anxiety due to (fear of side effects, pain and injection sit swollen), and shortage of HPV vaccine for the target age were identified.

The prevalence of HPV vaccination practices was low 207(33.3%) in this study, which is below the targeted coverage of HPV vaccination to a single cohort of 14-year-old girls in 2018–19 with ~95% coverage [56]. This finding compared with other studies, higher than this study which was done in northern Ethiopia HPV vaccination practices was 66.5%. [3]. The vaccination practice was lower than this study that conducted in female adolescents HPV practices in Lira district, Uganda (17.61%). [10]. In China hong kong the study showed that uptake of HPV vaccination higher than this study was 80% [51] In another population-level survey conducted among Malaysian women, HPV vaccination uptake was 50.1%, which is higher than this study and higher from the Uganda studies. In a Malaysian study, where the recommended 3 dose course costs 360 USD in a private facility, monthly family income was found to significantly influence the service uptake [27]. These might be due to the definition for the vaccination of the recommended dose. However, those who received the HPV vaccine in Uganda's study were still found to be lower. In the Uganda study, the practice of HPV vaccination was defined as completing three doses of the vaccine as per the recommended schedule, whereas in this study those who ever received HPV vaccine at least one schedule considered as an uptake. In addition, study done in Uganda, adolescent girls aged 12-17 years regardless of being enrolled in school were the study participants; and attaining the ordinary level of education was found to be determinant for HPV vaccination practice. However, in this study, monthly family income & HPV uptake were not significantly associated. Since HPV vaccination is for free in Ethiopia, family income is not expected to have a direct influence on the service uptake. It may be due to the difference's countries' information and vaccine access, differences in education institutions'

structure, sampling procedures, and tools, it also could be because of good communication between parents and their daughters, school teachers, and health workers.

In this study, being knowledgeable female students were 1.531 times more likely than not knowledgeable female students in the study area. A study done in Arbaminch southern Ethiopia was 71.7% of knowledge HPV vaccination [52]. The study in Malaysia is lower than this study where 50.8% of respondents reported having heard information about the HPV vaccine [38]. In the Malaysia study, 83.6% of students who had exposure for the information knew HPV infection has a vaccine, 80.5% of them knew HPV infection can cause cervical cancer, in our study knowledge about cervical cancer, the majority the participants were (67.5%) ever heard school girls have had exposure with the source of information education (i.e., have heard about cervical cancer). In Pakistan, one study showed that students had borderline or poor knowledge regarding HPV, except for a few questions. Nevertheless, despite being multidisciplinary students, nearly 57% had already heard about HPV, nearly 55% knew HPV causes cervical cancer and infects both genders equally, and nearly 71% knew that HPV is not a rare disease [36]. This might be due to the difference in the assessment approach and method of message delivery and availability of HPV vaccine in between countries.

Regarding to source of information in the present study, we found that the main source of information on HPV was from health workers, schools, television, and radio as compared to other media. These findings should be supporting that the main easily accessible media among students were television and radio. To increase the knowledge on HPV, its information should also be emphasized in other media such as magazines and newspapers It is also emphasized on the qualitative side as participants mentioned that identified information indicate that lack of awareness and health promotion information gap was mentioned, as the participant of student representative said even if vaccinated students haven't any information about HPV and its vaccine, just gotten the vaccine that ordered by health professions without any informed health benefit and health outcome.

Regarding to perception in this study was being perceived low benefits of the HPV vaccination were 48% less likely participated in HPV vaccination behavior than perceived high benefits of the HPV vaccination behavior with statistically significant and associated, the possible

justification might be poor message delivery system of the responsible body and lack of awareness by the students, also may be due to less vaccine availability of the study area. But others perception reviled constricts those perceived susceptibility, perceived severity and perceived barriers were not difference between vaccinated and unvaccinated individuals and not statistically significances in this study. It is also emphasized in the qualitative study as it was explained that anxiety due to that fear of side effects, fear of injection site pain, the arm was swollen and misconception (it causes infertility) were majorly mentioned.

In this study, being urban residents were 1.657 times more likely to participate in HPV vaccination behavior than rural residents. The possible justification might be poor message delivery system of the responsible body and lack of awareness by the students, also may be due to less vaccine availability to the rural area. A study conducted in Malaysia showed that the intention of rural secondary school students to receive the HPV Vaccine was 86.6% [27]. Similarly in Uganda, there is a higher prevalence of uptake of HPV vaccine among adolescents who reported that HPV vaccine community outreaches were conducted in their residences compared to those who reported that the outreaches were not conducted in their residences [10]. This may be due to Malaysia having improved the national HPV immunization program so the vaccine is easily accessible to the rural areas, and they have improved the message delivery system.

In this study being grade five and six students were 47.3% less likely to participate in HPV vaccination practices than grade seven and eight students, Previous studies show that utilization of HPV vaccines is affected by child age, perceived access to the vaccine, and perceptions about disease severity and susceptibility [3]. The possible justification might be available and delivery systems related to age to vaccinate only 14 years old girls according to Ethiopian reports 2018 [12]. The association might be due to the increased level of education that may pave the way to increased information access, and the level of understanding. Also due to a global HPV vaccine shortage, the country is introducing the vaccine in a single age cohort (14 years old girls) in the first year of introduction and hopes to expand introduction to additional age cohorts in the second year and beyond based on the global availability of the vaccine. If the vaccine shortage persists, the country will continue vaccinating 14 years old girls every year [12].

Regarding to access of HPV vaccine in their school as a vaccination campaign like, students who get access to the HPV vaccine in their school 5.69 times more likely practices than not get access to the HPV vaccine in their school AR= 7.545, 95% CI (4.694-12.29). In this study access to the HPV vaccine was identified as one of the major factors that HPV vaccination behavior affects in the study area. Some study shows that utilization of HPV vaccines is affected by child age, perceived access to the vaccine, and perceptions about disease severity and susceptibility [3]. Due to that low supplement of HPV vaccine for eligible school girls and shortage of HPV vaccine for this population. Supporting that funding as mentioned by key informants the shortage of HPV vaccine is one of the major factors for this low HPV vaccination behavior in this study area. This may be due to the FDRE ministry of health Ethiopia not having enough supply of HPV vaccine EPSA and no other source of HPV vaccine to cover the HPV vaccine supply to adolescents in Ethiopia.

In this study, the barriers identified that affect HPV vaccination behavior at different levels from intrapersonal to macro level, then intrapersonal level, interpersonal level, organization barrier community level and system level. This study generally showed that from both qualitative and quantitative findings there is low vaccination behavior due to that rather than quantitative finding factors, grate lack of awareness, misconception, and information education gap in different level, so that this problem should be resolved by integrated collaboration needed in different sectors, that health sector with school, social media, and other community-level have recommended to health information provision for cervical cancer prevention. School-based programs also assist in addressing the inequity of access to HPV vaccination for marginalized adolescents and there is continued focus on identifying implementation strategies to further reduce these gaps.

7. Strength and limitation of the study

7.1 Strength of the study

This study was done both qualitative and quantitative at different levels to depth information including key informants and in-depth interview. Study participant selection was done using random sampling to avoid selection bias. To keep the validity and reliability; a pre-testing was done and appropriate analysis was employed. Using a large sample size is more representative of

the population. Rural and urban, and private and government also were included for comparison purposes.

7.2 limitation of the study

In current study the sample is not representative of the general population, a larger nationwide survey might offer more significant results. This study also focused only on female students and currently the vaccination is recommended for males as well. In brief, a more inclusive survey would offer more impactful information on the barriers to vaccination.

8. Conclusion and recommendation

8.1 Conclusions

We found out that the practices of HPV vaccination behavior was low. Factors found to associated with HPV vaccine behavior included: Being knowledgeable, the residence of students being in rural residence, accessibility to the HPV vaccine in their school, being have a perception of low perceived benefits of HPV vaccination and being low-grade level of the respondents were associated factors affect HPV vaccination behavior in this study.

8.2 Recommendations

- We recommend that, families should allow and support female students for the uptake of the recommended dose of HPV vaccination as per the schedule.
- At the community level, health office program on health education and health promotion should be included, that social support, trusted sources of information shall consider to the doubting community members that vaccination is not harmful. Future programs should include sensitization messages that clearly articulate the non-serious nature of the vaccine's known adverse effects, their remedies, and their transient nature.
- We recommend both health and education sectors, integration should be needed, in our study schools and health professionals were the primary sources of information; they should strengthen message delivery strategy use behavioral change communication strategies and activities for HPV vaccination especially build up on increasing knowledge level towards HPV vaccine and benefits towards of HPV vaccination through rural schools

- We recommend the ministry of health, Ethiopia to; ensure regular availability of vaccines at the vaccination sites and fare distribution of HPV vaccine population based for eligible adolescents. and further studies should also be conducted about the timeliness of HPV vaccinations among female adolescents to see the factors associated with untimely practices of HPV vaccine doses and further implications of not receiving the doses in the correct interval Health facilities and school

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Annex 1: English version questioner

Jimma University

College of Public Health and Medical Science

Department of health promotion and behavior

Questionnaire

My name is..... I am here on behalf of Mathewos Mesore student of Jimma University School of public health. He is conducting research on ‘vaccination behavior for Human Papilloma Virus vaccination. For the partial fulfillment of master’s in health, behavior and promotion in Jimma University School of public health. The aim of this study is to assess HPV vaccination practices.

You are selected by random sampling technique to participate in this study because you are currently attending in one of the selected schools for the study purpose. Your participation is purely based on your willingness. You have the right to choose not to take part in this study. If you choose to take part, you have the right to stop at any time. Participating in this study will not have any risk or harm. Whether you are willing to participate, refuse or decide to withdraw later, you will not be subjected to any harm.

If you decide to participate in the study, you will be requested to answer different questions about yourself, knowledge regarding cervical cancer and other related questions. Trained individuals are going to guide you to fill the questionnaires.

Any information that you provide will be kept confidential, names will not be written or specified and all the questionnaires will be coded. The data will not be used for purposes other than the study. Your willingness and active participation are very important for the success of this study. If you have any question, you can contact principal investigator by Phone No. Mathewos Mesore: 0916276064/0964548680 or by E- mail: bamye80@gmail.com

If you are willing to participate, please confirm by your signature

Signature of participant _____

Date _____

Part one Scio demographic characteristics questioner for participants.			
S.N	Questioner	Response option	Remark
1.01	Respondent age	_____	
1.02	Religion	A. Protestant B. Orthodox C. Muslim D. Other-----	
1.03	Residence	A. Rural B. Urban	
1.04	What is your ethnicity?	A. Hadiya B. Kanbata C. Gurage D. Other -----	
1.05	Grade	A. 5the B. 6the C. 7the D. 8the	
1.06	School category	A. Public B. Private	
1.07	Monthly Family income	A. < 20000 B. 2000-4000 C. > 4000	
1.08	Mother Education level	A. No formal education B. Able to read and write C. Elementary D. Secondary E. College and above	
1.09	Father education level	A. No formal education B. Able to read and write C. Elementary D. Secondary E. College and above	
1.10	Mother occupation	A. House wife B. Private work C. Government D. Farmer E. Other-----	

1.11	Father occupation	A. Civil servant B. Merchant C. Private employer D. Farmer E. Other-----	
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Part three: Questioner About knowledge related			
S. N	About human papilloma virus (HPV)	Response	Remark
2.01	Have you ever heard of Human Papilloma virus? If no go to question number 2.03	1. Yes 2. No	
2.02	If yes for question number 2.01 from, where have you heard about HPV?	A. Printed material B. Health professional C. Peers D. School E. Others.....	
2.03	If no for question number 2.01 what are the reason would not for your information to get?	A. Lack of information B. Religion influence C. Cultural influence D. Others ...	
2.04	Form the following, which are the risk factors of HPV infection? (More than one response is possible)	A. Acquisition of new male partners B. Multiple sexual partners Lifetime C. Having non-monogamous male partners D. Weakened immune systems E. Damaged skin. F. I do not know	

2.05	Form the following, which are the consequences of HPV infection? (More than one response is possible)	A. Genital warts B. cervical cancer C. Oral and upper respiratory lesions D. I do not know	
2.06	People can get HPV infection for a long time without knowing it	1. Yes 2. No	
2.07	HPV can cause of genital warts	1. Yes 2. No	
2.08	Men also have a potential to develop cancer due to HPV infection	1. Yes 2. No	
About cervical cancer			
2.09	Do you know about cervical cancer? If no go to the question number 2.11	1. Yes 2. No	
2.10	If yes for your Q number 2.09 Form the following, which are your source of information? (More than one response is possible)	A. Radio/television B. Printed material C. Health workers D. Family, friends and neighbors E. Leaders F. Teachers/school system G. Other	
2.11	Cervical cancer can occur on both sex and all age level	1. Yes 2. No	
2.12	From HPV types of 16 and 18 are the most types of HPV infectious	1. Yes 2. No	
2.13	Pap smear is for testing of cervical cancer	1. Yes 2. No	
About HPV vaccine			

2.14	Do you know about the HPV vaccine/ ever heard? If no go to the question number .16	1. Yes 2. No	
2.15	Form the following, which are your source of information? (More than one response is possible)	A. Radio/television B. Printed material C. Health workers D. Family, friends and neighbors E. Leaders F. Teachers/school system G. Other	
2.16	Does HPV vaccination is recommended for you?	1. Yes 2. No	
2.17	Which of the following are the most common side effects of HPV vaccine? (More than one response is possible).	A. Pain, redness, or swelling in the site of given B. Fever C. Headache or feeling tired D. Nausea E. Muscle or joint pain F. Other ----- G. I do not know	
2.18	HPV vaccine is most effective on someone who are not sexually active	1. Yes 2. No	
2.19	Have you ever talked about HPV vaccine with your family?	1. Yes 2. No	
2.20	Have you ever talked about HPV vaccine with your friends?	1. Yes 2. No	

S. N	Part two: Questioner About Intention related statement	Response	Remark
3.01	I am intended to take HPV vaccine within the next 3 months.	1.Yes 2.No	
2.02	I am intended to take the HPV vaccine within the next 3 months.	1.Yes	

		2.No	
3.03	I will take the HPV vaccine in the next 3 months	1.Yes 2.No	
3.04	I want to take the HPV vaccine in the next 3 months.	1.Yes 2.No	
3.05	I like to take the HPV vaccine for the next 3 months	1.Yes 2.No	
3.06	If I got support from my friends encourage getting to vaccination	1.Yes 2.No	
3.07	HPV vaccination is angst my religions.	1.Yes 2.No	

Part four perception related questioner of HPV vaccination behavior						
Perceived susceptibility (1= Strongly disagree; 2= Disagree; 3= Neutral; 4= Agree; 5= Strongly Agree)						
S.N	Questioner	1	2	3	4	5
4.01	I will likely get HPV infection					
4.02	No matter what I do, I'm likely to get be infected with HPV					
4.03	If I don't get vaccine for HPV, I'll become infected with HPV infection in the future					
4.04	If I don't get vaccinated for HPV, I'll get cervical cancer.					
4.05	If I don't get vaccinated for HPV, I'll; get genital warts.					
4.06	It is likely that I am at risk of getting HPV infection					
4.07	In many aspects, I am less likely to acquire HPV infection					
4.08	It is possible that I will get HPV infection					
4.09	If I never have the HPV vaccine, I would feel very vulnerable to HPV/cervical cancer in the future					
4.10	HPV vaccines can prevent cervical cancer.					
Perceived severity (1= Strongly disagree; 2= Disagree; 3= Neutral; 4= Agree; 5= Strongly Agree)						
4.11	Being infected with HPV would have major damage on physical health					
4.12	Being infected with HPV would have major consequences on my life					

4.13	Being infected with HPV would cause cervical cancer					
4.14	Being infected with HPV would cause genital warts					
4.15	I believe that cervical cancer is extremely harmful					
4.16	I believe that cervical cancer is a severe disease					
4.17	The thought of genital warts or cervical cancer scares me.					
4.18	When I think about genital warts or cervical cancer, I feel nauseous.					
4.19	If I had genital warts or cervical cancer my academics and career would be endangered.					
4.20	When I think about genital warts or cervical cancer my heart beats faster.					
4.21	Genital warts or cervical cancer would endanger my love relationships.					
4.22	Cervical cancer is a hopeless disease.					
4.23	My feelings about myself would change if I got cervical cancer.					
4.24	I am afraid to even think about cervical cancer.					
4.25	Problems I would experience from cervical cancer would last a long time.					
4.26	If I got cervical cancer, it would be more serious than other diseases.					
Perceived benefits (1= Strongly disagree; 2= Disagree; 3= Neutral; 4= Agree; 5= Strongly Agree)						
4.27	vaccination for HPV is helpful to prevent cervical cancer					
4.28	Vaccination for HPV is important to get better health.					
4.29	Vaccination for HPV helps to reduce morbidity of women from cervical cancer					
4.30	Vaccination for HPV helps women to conduct their job freely.					
Perceived barriers (1= Strongly disagree; 2= Disagree; 3= Neutral; 4= Agree; 5= Strongly Agree)						
4.31	I am afraid of the side effects of HPV vaccination					
4.32	Health professional counseling is good to receive HPV vaccination					
4.33	Do you think your family allow to vaccinate you					
4.34	The decision to receive the HPV vaccine is/was beyond my control					
4.35	To take HPV Vaccine, I fear the side effects.					
4.36	I feel under social pressure to receive the HPV vaccine					

Part five: Access related items			
5.01	Do you get the accesses of HPV vaccine in your school?	1. Yes 2. No	
5.02	Have you ever got HPV vaccination? If no go to the question number 5.04	1. Yes 2. No	
5.03	If yes how many does do you have got?	A. One B. Two C. Three	
5.04	Where you got HPV vaccine? (More than one chose is possible).	A. School B. Health facility C. Community outreach based D. Home to home	
5.05	Who is facilitating the vaccination process in your school?	A. Health professions B. Teachers C. Family D. Community leader	

Part six: behavior related items			
6.01	Do you smoke cigarette?	1. Yes 2. No	
6.02	Ever had sexual intercourse	1. Yes 2. No	
6.03	Early first intercourse (before age 15 year).	1. Yes 2. No	
6.04	Have you three or more sexual partners within the past year	1. Yes 2. No	
6.05	Have you ever been pregnant?	1. Yes 2. No	
6.06	Used a condom before last intercourse	1. Yes 2. No	

Annex 2: የአመረኛ ጥያቄዎች

**ጅማ ዩኒቨርሲቲ
የህዝብ ጤና እና ህክምና ሳይንስ ኮሌጅ የጤና
ስና-ባህሪ እና ማህበረሰብ ትምህርት ክፍል:**

ጅማ ዩኒቨርሲቲ የህዝብ የጤና ትምህርት ቤት፡ ስሜ _____ ይባላል በማቴዎስ ምሶሬ ስም በጅማ ዩኒቨርሲቲ የህዝብ የጤና ትምህርት ቤት በኩል ቀርቤአለሁ። ማቴዎስ ምሶሬ በአሁኑ ሰዓት ስለ ሂዩማን ፓርሎማ ቫይረስ ክትባት በልጃገረዶች ላይ የጥናት ምርምር ያካናዉናል። ይህ ጥናት የሚከናዉነው በጤና አገልግሎት የጤና በህርይና ማህበረሰብ የትምህርት ዘርፍ የማስተርስ ዲግሪ መረሃ ግብር ከፊል የማሟያ ጥናት በጅማ ዩኒቨርሲቲ የህዝብ የጤና ትምህርት ለመፈፀም ነው። የጥናቱ ዓላማ የ1ኛ ደረጃ ተማሪ ልጃ ገረዶችን በኤችፒቪ ክትባት አወሳሰድ ላይ ያላቸው ተሳትፎ ለመረዳት ነው። እርሶ ለጥናት ምርምር የተመረጡት የተራ ቅደም ተከተልን ባልተከተለ መልኩ እና በአሁኑ ሰዓት ለጥናት ምርምር ከተመረጡት ትምህርት ቤቶች ውስጥ አንደኛው በሆነው ትምህርት ቤት ተማሪ በመሆኖ ብቻ ነው። የእርስዎ ተሳትፎ ሙሉ ለሙሉ በመልካም ፈቃድዎ ላይ የተመሰረተና በጥናቱ ላይ ተካፋይ ላለመሆን የመወሰን መብትዎ የተጠበቀ ነው። ተካፋይ ለመሆን የወሰኑ እንደሆነ ግን በማንኛውም የጥናቱ ሰዓት ላይ ተሳትፈዎን የማቋረጥ መብት አለዎት። በጥናቱ መሳተፍዎ ጉዳት ወይም ስጋት ውስጥ የሚጥል አጋጣሚን አይፈጥርም። ለመሳተፍ ፈቃደኛዎ ሆኖ ወይም ላለመሳተፍ ወስነውም ቢሆን ወይም ከጥናቱ ምርምር በኋላ በመሃል ለማቋረጥ ቢፈልጉም በእርስዎ ላይ የሚደርስ ምንም አይነት ጉዳት አይኖርም። በጥናቱ ላይ ለመሳተፍ ከወሰኑ ስለራስዎ የተለያዩ መረጃዎችን እንዲሰጡ ይጠየቃሉ። እንዲሁም ስለ የማህፀን በር ካንሰር ያለዎትን ግንዛቤ እና ሌሎች ተጓዳኝ ጥያቄዎች ይጠየቃሉ። የሰለጠኑ ባለሙያዎች ጥያቄዎን ሙሉ ለሙሉ እንዲመልሱ እገዛ ይሰጥዎታል። ማንኛውም እርስዎ የሚሰጡት መረጃ በምስጢራዊነት የሚጠበቅ ይሆናል። የተሳታፊዎች ስም ስለማይፃፍ እና ስለማይገለጽ ሁሉም መጠይቆች በምስጢራዊ ኮድ የሚለዩ ናቸው። ከጥናቱ የተሰበሰቡ መረጃዎች ከጥናቱ ዓላማ ውጪ ለሌላ ተግባር አይውሉም። የእርስዎ መልካም ፈቃድና የነቃተሳትፎ ለዚህ ጥናት ስኬት እጅግ አስፈላጊ ነው። በጥናቱ ላይ ጥያቄ ካለዎት ዋና ጥናቱን አካናዎኝ ማቴዎስ ምሶሬን በስ.ቁ. ወይም በኢሜል 0916276064/0964548680 bamy80@gmail.com ለመሳተፍ ፈቃደኛ ከሆኑ እባክዎ በፊርማዎ ያረጋግጡ፡

የተካፋይ ፊርማ _____ ቀን _____
የመጠይቅ መለያ ቁ.ጥ _____

ክፍል አንድ የተሰተፍዎች የሰሽዮ ድምግ-ራሬክ ጥያቄዎች

ተ. ቁ	ጥያቄዎች	የምላሽ አማራጮች	ምርመራ
1.01	ምላሽ ሰጪ ዕድሜ	-----	
1.02	ሃይማኖት ምንድን ነው?	1. ፕሮቴስታንት 2. ኦርቶዶክስ 3. ሙስሊም 4. ሌላ.....	
1.03	መኖሪያ ቦታ	1. ገጠር 2. ከተማ	
1.04	ብሄሮች ምንድን ነው?	3. ሃድያ 4. ካንባታ 5. ጉራጌ 6. ሌላ --	
1.05	የትምህርት ደረጃ	1. 5ኛ 2. 6ኛ 3. 7ኛ 4. 8ኛ	
1.06	የትምህርት ቤት ምድብ	1. የማንግስት 2. የግል	
1.07	የቤተሰብ ገቢ	1. < 2000 2. 2000-4000 3. >4000	
1.08	የእናት ትምህርት ደረጃ	1. መደበኛ ትምህርት የለም 2. ማንበብ እና መጻፍ ይችላል 3. አንደኛ ደረጃ	

		4. ሁለተኛ ደረጃ 5. ኮሌጅ እና ከዚያ በላይ	
1.09	የአባት የትምህርት ደረጃ	1. መደበኛ ትምህርት የለም 2. ማንበብ እና መጻፍ ይችላል 3. አንደኛ ደረጃ 4. ሁለተኛ ደረጃ 5. ኮሌጅ እና ከዚያ በላይ	
1.10	የእናት ስራ	1. የቤትእመቤት 2. የግሉ 3. የመንግስትስራ 4. ግብርና	
1.11	የአባት ስራ	1. ሲቪል አገልጋይ 2. ነጋዴ 3. የግል አሠሪ 4. ገበሬ 5. ሌላ - -----	

ክፍል ሁለት: ስለ ዕውቀት ተዛማጅ ጥያቄዎች ስለ ፖፕሊሎሚ ሻይረስ (ኤች.ፒ.ቪ)		ምርመራ
S. N	ስለ ሁማን ፖፕሎሚ ሻይረስ (ኤች.ፒ.ቪ)	
2.01	ስለ ሁማን ፖፕሎሚ ሻይረስ ሰምተው ያውቃሉ?	1. አዎ 2. አይደለም
2.02.	ለ ጥያቄ ቁጥር 2.1 መልሱ አዎ ከሆነ ከየት ሰሙ?	1) ከታተሙ ቁሳቁሶች 2) ከጤና ባለሙያዎች 3) ከእኩዮች 4) ከትምህርት ቤት 5. ከሌላ.....

2.03	ለ ጥያቄ ቁጥር 2.1 መልሶ አይደለም ከሆነ እርስዎ እንዳያውቁ የደረጉ ችግር ነገሮች ምንድን ናቸው?	<ol style="list-style-type: none"> 1. የመረጃ ምንጭ አለመኖር 2. የሃይማኖት ተጽዕኖ 3. ባህላዊ ተጽዕኖ 4. ሌሎች (ይግለጹ)..... 	
2.04	የሁማን ፓፒሎማ ቫይረስ ኢንፌክሽን አደጋዎች የሆኑት የተኛዎቹ ናቸው (ከአንድ ምላሽ በላይ ይቻላል)	<ol style="list-style-type: none"> 1. የአዳዲስ ወንድ አጋሮች መብዛት 2. ከበርካታ የወሲብ አጋሮች ጋር መቆየት 3. ያልተለመዱ የወንዶች አጋሮች 4. የተዳከመ የበሽታ መከላከያ ስርዓቶች 5. የተበላሽ ቆዳ. 6. አላውቅም 	
2.05	የሁማን ፓፒሎማ ቫይረስ ኢንፌክሽን የሚያስከትሉ መዘዞች የተኛቹ ነቸተው? (ከአንድ በላይ ምላሽ ይቻላል)	<ol style="list-style-type: none"> 1. የብልት ኪንታሮት 2. የማህጸን በር ካንሰር 3. በአፍ ወይም በላይኛው የመተንፈሻ አካላት ቁስሎች 4. አላውቅም 	
2.06	ሰዎች ሳያውቁት ለረጅም ጊዜ የ HPV ኢንፌክሽን ልጠቁ ይችላሉ	1. አዎ 2. አይደለም	
2.07	HPV የብልት ኪንታሮት ሊያስከትል ይችላል ::	1. አዎ 2. አይደለም	
2.08	ወንዶች በሁማን ፓፒሎማ ኢንፌክሽን ምክንያት ካንሰርን የማዘጋጀት አቅም አላቸው	1. አዎ 2. አይደለም	
	➤ ስለ ማኅጸን በር ካንሰር		
2.09	ስለ ማኅጸን በር ካንሰር ሰምታዉ ያውቃሉ?	1. አዎ 2. አይደለም	
2. 10	ለ ጥያቄ ቁጥር 2.08 መልሶ አዎ ከሆነ ከየት ሰሙ ከሚከተለው የትኞቹ የመረጃ ምንጭዎ ናቸው? (ከአንድ በላይ መልስ መመለስ ይቻላል ነው) ::	<ol style="list-style-type: none"> 1. ከሬዲዮ / ቴሌቪዥን 2. ከታተሙ ጽሑፍ 3. ከጤና ሰራተኞች 	

		<ol style="list-style-type: none"> 4. ከቤተሰብ, ዳደሮች እና ጎረቤቶች 5. ከ መሪዎች 6. ከመምህራን / የት / ቤት ስርዓት 7. ሌላ..... 	
2.11	የማኅጸን በር ካንሰር በሁሉም ዕድሜ እና በሁለቱም ወሲባዊ ግንኙነት ላይ ተጽዕኖ ሊያሳድር ይችላል	1. አዎ 2. አይደለም	
2.12	የሁማን ፓፕሎማ ዓይነቶች 16 እና 18 ሊሆኑ ይችላሉ አብዛኛዎቹ የማኅጸን በር ካንሰር ሊፈጥር ይችላል	1. አዎ 2. አይደለም	
2.13	የማህጸን ህዋስ ምርመራ ምርመራ የማኅጸን በር ካንሰር ለመለየት የማጣሪያ ሙከራ ነው	1. አዎ 2. አይደለም	
	➤ ስለ ሁማን ፓፕሎማ ክትባት		
2.14	ስለ ሁማን ፓፕሎማ ክትባት ሰምተው ያውቃሉ?	1. አዎ 2. አይደለም	
2.15	የሚከተለው ቅጹ, የመረጃዎ ምንጭ የሆኑት እነማን ናቸው? (ከአንድ መልስ በላይ የሚቻል ነው)	<ol style="list-style-type: none"> 1. ከሀሬዲዮ / ቴሌቪዥን 2. ከታተሙ ጽሑፍ 3. ከጤና ሰራተኞች 4. ከቤተሰብ, ዳደሮች እና ጎረቤቶች 5. ከመሪዎች 6. ከመምህራን / የት / ቤት ስርዓት 7. ሌላ 	
2.16	የ ሁማን ፓፕሎማ ሻይረስ ክትባት ለእርስዎ ይመከራል?	1. አዎ 2. አይደለም	
2.17	ከሚከተሉት ውስጥ የሁማን ፓፕሎማ ሻይረስ ክትባት በጣም የተለመዱ የጎንዮሽ ጉዳዮች የትኛው ናቸው? (ከአንድ በላይ ምላሽ የሚቻል ነው).	<ol style="list-style-type: none"> 1. በተጠቀሰው ጣቢያ ውስጥ ህመም, መቅላት, ወይም እብጠት 2. ትኩስ ትኩሳት 3. ራስ ምታት ወይም የደክሙ 	

		4. ማቅለሽለሽ 5. ጡንቻ ወይም የጋራ ህመም 6. ሌላ ----- 7. አላውቅም	
2.18	የሁሉን ፓፕሎማ ቫይረስ ክትባት ወሲባዊ እንቅስቃሴ በልጅመሩት ሰዎች ላይ በጣም ውጤታማ ነው።	1. አዎ 2. አይደለም	
2.19	ስለ ሁሉን ፓፕሎማ ቫይረስ ክትባት ከቤተሰብዎ ጋር ይናገራሉ?	1. አዎ 2. አይደለም	
2.20	ስለ ሁሉን ፓፕሎማ ቫይረስ ክትባት ከጓደኞቻችዎ ጋር ይናገራሉ?	1. አዎ 2. አይደለም	

ክፍል ከሦስት ስለ ሁሉን ፓፕሎማ ቫይረስ እና ስለ ሁሉን ፓፕሎማ ቫይረስ ክትባት አሳብነት ጥያቄዎች				
S.N	ጥያቄዎች	1.አዎ	2.አይደለም	ምርመራ
3.1	በሚቀጥሉት 3 ወሮች ውስጥ የ ሁሉን ፓፕሎማ ቫይረስ ክትባት ለመውሰድ አስቤአለሁ ።.			
3.2	በሚቀጥሉት 3 ወሮች ውስጥ የ ሁሉን ፓፕሎማ ቫይረስ ክትባት ለመውሰድ አስቤአለሁ ።.			
3.3	በሚቀጥሉት 3 ወሮች የ ሁሉን ፓፕሎማ ቫይረስ ክትባት እወስዳለሁ ።			
3.4	በሚቀጥሉት 3 ወሮች የ ሁሉን ፓፕሎማ ቫይረስ ክትባት መውሰድ እፈልጋለሁ ።.			
3.5	ለሚቀጥሉት 3 ወራት የ ሁሉን ፓፕሎማ ቫይረስ ክትባት መውሰድ እፈልጋለሁ ።			
3.6	ከጓደኞቼ ድጋፍ ካገኘሁ የማህጸን በር ካንሰር ክትባት እንዲያገኙ ያበረታታኛል ።			
3.7	የ ሁሉን ፓፕሎማ ቫይረስ ክትባት የባህል ሃይማኖቶቼ ይቀደማሉ።			

ክፍል አራት: ስለ ሁሉን ፓፕሎማ ቫይረስ እና ስለ ሁሉን ፓፕሎማ ቫይረስ ክትባት የተገነዘቡት ተዛማጅ ጥያቄዎች						
የተጋላጭነት ግንዛቤ (1 = በጣም አልስማማም, 2 = አልስማማም 4 = ገለልተኛ; 4 = እስማማለሁ, 5 = በጣም እስማማለሁ)		1	2	3	4	5
4.01	በሁሉን ፓፕሎማ ቫይረስ ኢንፎክሽን ምደዛኝ ይመስለኛል					
4.02	የምሠራው ምንም ይሁን ምን በሁሉን ፓፕሎማ ቫይረስ በሽታ ሊጠቃኝ እችላል					
4.03	ክትባት ካልተከተብኩኝ, ለወደፊቱ በሁሉን ፓፕሎማ ቫይረስ ኢንፎክሽኖች እያዘለዉ					

4.04	የሁማን ፓፕሎማ ቫይረስ ክትትል ካላገኘ፣ ለማጎጠም በር ከንሰር እንለጠለዉ.					
4.05	የሁማን ፓፕሎማ ቫይረስ ክትትል ካላገኘሁ፣ በብልት ኪንታሮት እጠቀለዉ					
4.06	የሁማን ፓፕሎማ ቫይረስ ኢንፌክሽን የመያዝ አደጋ ላይ ነኝ					
4.07	የሁማን ፓፕሎማ ቫይረስ ኢንፌክሽን የማግኘት እድሉ ዝቅተኛ ነዉ					
4.08	የሁማን ፓፕሎማ ቫይረስ ኢንፌክሽን ልያዝ እችላለሁ					
4.09	የሁማን ፓፕሎማ ቫይረስ ክትትል ከላገኛሁ ለወደፊት በማጎጠም በር ከንሰር እንደምጋለጥ አስበለዉ					
4.10	የሁማን ፓፕሎማ ቫይረስ ክትትል የማጎጠም በር ከንሰርን መከላከል ይችላል					
የተገነዘበዉ ከባድነት (1 = በጥብቅ አልስማማም ፤ 2 = ክርክር ፤ 3 = ገለልተኛ ፤ 4 = እስማማለሁ ፤ 5 = በጥብቅ እስማማሉ) ::						
4.11	የሁማን ፓፕሎማ ቫይረስ እንፌክሽን በሰዉነቴ ላይ ከባድ መዘዝ ይኖረዋል					
4.12	የሁማን ፓፕሎማ ቫይረስ በሽታ መያዙ በሕይወቴ ላይ ከፍተኛ መዘዝ ያስከትላል :					
4.13	ለሁማን ፓፕሎማ ቫይረስ እንፌክሽን ከተገለጥኩ ማጎጠም በር ከንሰር ያጠቀኛል					
4.14	የሁማን ፓፕሎማ ቫይረስ እንፌክሽን ከተጋለጥኩ የብልት ኪንታሮት ያጠቀኛል					
4.15	የማጎጠም በር ከንሰር በጣም እንደምጎደ አምናለሁ					
4.16	የማጎጠም በር ከንሰር ከባድ በሽታ ነዉ ብዬ አምናለሁ					
4.17	የብልት ኪንታሮት ወይም የማጎጠም በር ከንሰር ሰስበዉ ያስፈራኛል.					
4.18	ስለ ብልት ኪንታሮት ወይም የማጎጠም በር ከንሰር ሳስብ ጥሩ ስሜት አይሰመማኝም.					
4.19	የብልት ኪንታሮት ወይም የማጎጠም በር ከንሰር ትምህርቴን እና ሥራዬን አደጋ ላይ ልጥል ይችላል					
4.20	ስለ ብልት ኪንታሮት ወይም የማጎጠም በር ከንሰር ሳስብ ልቤ በፍጥነት ይመታል::					
4.21	የብልት ኪንታሮት ወይም የማጎጠም በር ከንሰር ፍቅር ግንኙነቴን አደጋ ላይ ይጥላል::					
4.22	የማጎጠም በር ከንሰር ተስፋ ቢስ በሽታ ነዉ::					
4.23	በማጎጠም በር ከንሰር ከተያዝኩኝ ስለ ራሴ ያለኝ ስሜት ይለወጣሉ::					
4.24	ስለ ማጎጠም በር ከንሰር እንኳን ለማሰብ እፈራለሁ::					
4.25	ከመሀዳን በር ከንሰር ጋር በተያያዘ ችግሮች ረጅም ጊዜ ልቆይ እችላለዉ ::					
4.26	የማጎጠም በር ከንሰር ከሌላው በሽታ የበለጠ አደገኛ በሽታ ነዉ::					
የተገነዘበዉ ጥቅሞች (1 = በጥብቅ አይስማሙም ፤ 2 = ልዩነት ፤ 3 = ገለልተኛ ፤ 4 = ስምምነት ፤ 5 = በጥብቅ ይስማማሉ) ::						

4.27	የሁማን ፓፒሎማ ቫይረስ ክትባት የማጎጸን በር ካንሰርን ለመከላከል ይጠቅማል ።					
4.28	የተሻለ ጤናን ለማግኘት የሁማን ፓፒሎማ ቫይረስ ክትባት መግኝት አስፈላጊ ነው ።					
4.29	የሁማን ፓፒሎማ ቫይረስ ክትባት የሴቶችን የማጎጸን በር ካንሰር በሽታን ለመቀነስ ይረዳል ።					
4.30	የሁማን ፓፒሎማ ቫይረስ ክትባት ሴቶች ሥራቸውን በነፃነት እንዲሰሩ ይረዳል ።					
የተገነዘበው መሰናክሎች (1 = በጥብቅ አልስማማም ፤ 2 = ልዩነት ፤ 3 = ገለልተኛ ፤ 4 = ስምምነት ፤ 5 = በጥብቅ ይስማማሉ)						
4.31	የ የሁማን ፓፒሎማ ቫይረስ ክትባት የጎንዮሽ ጉዳቶችን እፈራለሁ ።					
4.32	የጤና ባለሙያ ምክር የ የሁማን ፓፒሎማ ቫይረስ ክትባት ለመቀበል ጥሩ ነው ።					
4.33	ቤተሰብዎ የሁማን ፓፒሎማ ቫይረስ ክትባት እንዲሰጥዎ የሚፈቅድ ይመስልዎታል?					
4.34	የሁማን ፓፒሎማ ቫይረስ ክትባትን ለመቀበል ውሳኔ ከእኔ አቅም በላይ ነው ።					
4.35	የሁማን ፓፒሎማ ቫይረስ ክትባትን ለመውሰድ የጎንዮሽ ጉዳቶችን እፈራለሁ ።					
4.36	የሁማን ፓፒሎማ ቫይረስ ክትባት እንዳልቀበል ማህበራዊ ግፊት እንደሌለ ይሰማኛል ።					

ክፍል አምስት- ተደራሽነትን የምያመለክቱ ጥያቄዎች			
5.01	በት / ቤትዎ ውስጥ የሁማን ፓፒሎማ ቫይረስ ክትባትን ያገኛሉ?	1. አዎ 2. አይደለም	
5.02	የሁማን ፓፒሎማ ቫይረስ ክትባት አግኝተው ያውቃሉ?	1. አይደለም 2. አዎ	
5.03	ለጥያቄ ቁ. 5.02 መልሶ አዎ ከሆነ ስንት አገኙ?	1. አንድ 2. ሁለት 3. ሶስት	
5.04	የሁማን ፓፒሎማ ቫይረስ ክትባትን ያስደዱ ከሆነ የት ወሰዱ? (ከአንድ በላይ መልስ መምረጥ ይቻላል)	1. ትምህርት ቤት 2. የጤና ተቋም 3. ማህበረሰብን መሠረት ያደረገ አገልግሎት 4. ቤት ለ ቤት	
5.05	በት / ቤትዎ ውስጥ የሁማን ፓፒሎማ ቫይረስ ክትባት ሂደቱን የሚያስተባባር ማነው?	1. የጤና ሙያዎች 2. መምህራን 3. ቤተሰብ 4. የማህበረሰብ መሪ	

ክፍል ሳባት ከባህሪ ጋር ተዛማጅ ጥያቄዎች			
6.01	ሲጋራ ታጭሽያለሽ?	1. አዎ 2. አይደለም	
6.02	የግብራ ስጋ ግንኙነት አድርገሽ ተወቅለሽ?	1. አዎ 2. አይደለም	
6.03	ከ 14 ዓመት ዕድሜ በፊት የግብራ ስጋ ግንኙነት ጀምራሽዋል?	1. አዎ 2. አይደለም	
6.04	ባለፈት ዓመት ሶስት ወይም ከዚያ በላይ ወሲባዊ ባልደረባዎች አሉሽ?	1. አዎ 2. አይደለም	
6.05	እርግዝና ተከስተውብሽ ያዉቃል?	1. አዎ 2. አይደለም	
6.06	ከመጨረሻው የግብራ ስጋ በፊት የተጠቀምሽዉ የግብራ ስጋ ግንኙነት መከለከያ አለ?	1. አዎ 2. አይደለም	

Annex 3 In depth interview guide questioner

General information

Socio-Demographic

Woreda/Town: _____ Keble/Zone: _____ Age: _____ Sex: _____ Ethnicity:

_____ Religion: _____ Educational background: _____ marital status:

_____ Occupation/Responsibility: _____ Income: _____

Date of interview: _____ interviewer: _____ Start time: _____ end time _____

GUIDE QUESTION	Administ rative	Health	Parents	Students represent	Teachers
Is there the access of vaccine in zone for all woreda, is it enough as you're thinking for all woreda of the Hadiya zone?	✓	✓			
would you explain the vaccine how, to whom and when to deliver for intended clients and the pervious statues of vaccination	✓	✓	✓	✓	✓
What are the motivation and perception of students and teacher during school vaccination program	✓	✓			
what are the basic challenges for vaccination processes	✓				✓
Is there HPV vaccine accesses in your school?				✓	✓
How to deliver and how many times and for whom gives the vaccine in your school?					✓
What are the complains during vaccination in your school/from school	✓	✓	✓		✓
Did you talk about HPV vaccine with your family?	✓	✓	✓	✓	✓
Is there any refusing to vaccinate from students and parents during vaccination camping?		✓			✓

DECLARATION

I declare that this research thesis entitled, human papilloma virus vaccination behavior among primary school female students in Hadiya zone, southern Ethiopia, A mixed method study” is my own work that it hasn’t been addressed in study area as far as my knowledge touched and all resources I used has been indicated and acknowledged as complete reference. I understand that non-adherence to the principles of academic honesty and integrity, misconceptions/fabrications of any idea/data/source will constitute sufficient ground for disciplinary action by the University and also evoke penal action from the sources which have not been properly cited or acknowledged.

Name of student Mathewos Mesore Signature _____ Date _____

APPROVAL SHEET

As thesis research advisor, I hereby certify that I have read and evaluated this thesis report prepared under my guidance by Mathewos Mesore entitled human papillomavirus vaccination behavior among primary school female students in Hadiya zone, Ethiopia: A mixed method approach”. I recommended that the thesis to be submitted requirements as fulfilling the degree of Master of Public Health in Health Promotion and Health Behavior.

Name: Name of major advisors:

Dr. Yohannes Kebede (Ph.D. Associate Professor)

Signature _____ Date _____

Nam of co. advisor: Mr. Kasahun Girma (BSc, MPH)

Signature _____ Date _____

As member of the board of examiners of the MPH thesis report open defense, we certified that we have read and evaluated the thesis report prepared by Mathewos Mesore and examined the thesis. We recommend that the thesis be accepted for completion as fulfilling the thesis requirements for the degree of Master of Public Health in Health Promotion and Health Behavior.

Examiner _____ Signature _____ Date _____