Addis Ababa University

College of Health Sciences

School of Nursing and Midwifery

Department of Midwifery

Knowledge and attitude towards human papillomavirus vaccine and associated factors among mothers who have eligible daughters in Debre Markos town, Northwest Ethiopia, 2021

By: Melkam Tesfaye (BSc, MSc student)

A thesis submitted to Addis Ababa University, School of Nursing and Midwifery, Department of Midwifery for partial fulfillment of the requirement for the Degree of Masters in Maternity and Reproductive Health Nursing

June, 2021

Addis Ababa, Ethiopia

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Advisors: Sr. Semarya Berhe (BSc, MSc, Asst. Professor, PhD fellow)

Sr. Siraye Genzeb (BSc, MSc)

June, 2021

Addis Ababa, Ethiopia

Approval Sheet

Addis Ababa University

College Health Sciences

School of Nursing and Midwifery

Department of Midwifery

I, the undersigned MSc student, declare that I have submitted my original work on a title knowledge and attitude towards human papillomavirus vaccine and associated factors among mothers who have eligible daughters in Debre Markos town, Northwest Ethiopia, 2021 for the examination.

Submitted by:

Melkam Tesfaye _____ _____

Name of student Signature Date

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

Approved by:

1. **Sr. Semarya Berhe (Asst. Professor, PhD fellow)** _____ _____
   Name of Major Advisor Signature Date
2. **Sr. Siraye Genzeb (BSc, MSc)** _____ _____
   Name of Co-Advisor Signature Date

Approval by the board of examination

This thesis by Melkam Tesfaye is accepted in its present form by the board of examiners as satisfying thesis requirement for the degree of masters in Maternity and Reproductive Health Nursing.

EXAMINER:

Dr. Endalew Gemechu (Asst. professor) _____ _____

NAME RANK SIGNITURE DATE

RESEARCH ADVISORS:

Semarya Berhe (Asst. professor, PhD fellow) _____ _____

NAME RANK SIGNATURE DATE

Siraye Genzeb (BSc, MSc) _____ _____

NAME RANK SIGNATURE DATE

DEPARTMENT HEAD

Hawani Adugna (BSc, MSc) _____ _____

NAME RANK SIGNATURE DATE

Statement of Declaration

By my signature below, I declare and affirm that this thesis is my own work. I have followed all ethical principles of scholarship in the preparation, data collection, data analysis and completion of this thesis. All scholarly matter that is included in the thesis has been given recognition through citation. I affirm that I have cited and referenced all sources used in this document. Every effort has been made to avoid plagiarism in the preparation of this thesis.

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Student:

Name: **Melkam Tesfaye** Signature: _____Date: _____

Research Advisors:

Sr. Semarya Berhe (Asst. Professor, PhD fellow) _____ _____

Name Rank Signature Date

Sr. Siraye Genzeb (BSc, MSc) _____ _____

Name Rank Signature Date

ACKNOWLEDGMENT

First, I would like to thank Addis Ababa University for giving me the chance to learn MSc in Maternity and Reproductive Health Nursing and also for allowing doing research.

Second, my deepest gratitude goes to Debre Markos University for sponsoring to learn MSc.

Third, I would like to express my special thanks to my advisors Sr. Semarya Berhe and Sr. Siraye Genzeb for their invaluable support in advising and giving unreserved guidance, comments, and constructive suggestions for this research starting from proposal development up to the final thesis writing.

Fourth, I thanks to Debre Markos town health office for giving permission to collect data.

Fifth, I would like to acknowledge mothers or guardians who participate in this study.

Sixth, my deepest thank goes to data collectors and supervisor.

Last but not the least; I would like to thank my friends and colleagues for their support and friendly advice.

LIST OF ACRONYMS AND ABBREVIATIONS

CC: Cervical Cancer

CI: Confidence Interval

CIN: Intraepithelial Neoplasia

DNA: Deoxyribonucleic Acid

GAVI: Global Alliance Vaccine and Immunization

GLOBOCAN: Global Cancer Incidence, Mortality, and Prevalence

HIC: High-income Country

HPV: Human Papillomavirus

HR: High Risk

LMICs: Low and Middle-income Countries

LR: Low Risk

PHR: Probable High Risk

SSA: Sub-Saharan Africa

US: United States

WHO: World Health Organization

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ABSTRACT

Background: Human papillomaviruses are a big group of highly ubiquitous, small viruses. It is a sexually transmitted disease. Both women and men are rapidly exposed to it after the onset of sexual intercourse. Even though, parents have an important role in the decision-making process regarding the HPV vaccination for their child. Less emphasis is given to their knowledge and attitude towards HPV vaccine; mainly to mothers.

Objective: To assess the level of knowledge and attitude towards human papillomavirus vaccine and associated factors among mothers who have eligible daughters in Debre Markos town, Northwest Ethiopia, 2021

Methods: A community-based cross-sectional study was conducted among 601 mothers who have eligible daughters and selected by consecutive sampling technique from February 16/2021 to March 16/2021. The data was collected by using face-to-face interview administration and entered into EPI data version 3.1 then, exported to SPSS version 25 for analysis. Variables with a p-value of < 0.25 in bivariate were a candidate for multivariate and those variables with a p-value of <0.05 in multivariate logistic regression were considered as a statistically significant factor for knowledge and attitude of HPV vaccine.

Result: A total of 601 study participants with a response rate of 100% were included in the study. Among participants in this study, 47.6% have good knowledge and 77.4% have positive attitude towards HPV vaccine. Knowledge of mothers about HPV vaccine was affected by having degree or higher (AOR=7.687; 95 % CI=1.837-32.168; p=0.005), not hearing about HPV vaccine (AOR=0.172; 95%CI=0.098-0.302; P=0.000), and positive attitude towards HPV vaccine (AOR=2.959; 95%CI=1.580-5.539; P=0.001). Attitude of mothers towards HPV vaccine was affected by not hearing about HPV vaccine (AOR=0.285; 95%CI=0.163-0.499; P=000), and good knowledge about HPV vaccine (AOR=2.705; 95 % CI=1.454-5.035; 0.002).

Conclusion: knowledge about HPV vaccine was low. Maternal educational level, hearing about HPV vaccine and attitude towards HPV vaccine were factors associated with knowledge towards HPV vaccine. However, attitude was high and factors associated with attitudes towards HPV vaccine were knowledge about HPV vaccine and hearing about HPV vaccine.

Key words: knowledge, attitude, HPV vaccine, mothers, Ethiopia

1. Introduction

1.1. Background of the study

The human papillomaviruses (HPVs) are a big group of highly ubiquitous, small, nonenveloped double-stranded circular deoxyribonucleic acid viruses. It is a sexually transmitted disease. Both women and men are rapidly exposed to it after the onset of sexual intercourse. It infects cutaneous and mucosal surfaces then induces squamous epithelial tumors (warts and papillomas) in many different anatomical sites including cervical, anogenital, head, and neck cancers. Above 140 HPV genotypes have been identified and they are classified into high-risk (HR), probable high-risk (PHR), and low-risk (LR) types(1, 2).

Almost 50 of these genotypes are identified to be oncogenic or HR types, which cause cervical cancer. Out of these, 15 HR-HPV genotypes: HPV-16, -18, -31, - 33, -35, -39, -45, -51, -52,-56, -58, -59, -68, - 73, and -82 cause more than 95% of all cases of cervical cancer (CC) (1). Types 16 and 18 are the most prevalent cause of CC and the non-oncogenic types of HPV 6 and 11 are identified as the major causes for 90% of genital warts(3). The enormous common of HPV infections is asymptomatic or sub-clinical, which has contributed to the fast transmission and spread of the virus. Persistent infection with HPV has been established as the primary cause of cervical cancer, accounting for upwards of 90% of all CC cases(4).

Cervical cancer is the second most commonly diagnosed cancer and the fourth leading cause of cancer-related deaths in women worldwide. Above 560,000 new cases and about 275,000 deaths are recorded each year, with more than 80% occurring in developing countries. It is the most public gynecological cancer among women in sub-Saharan Africa (SSA). Predictably, 70,722 new cases of invasive CC occur annually in SSA. It is primarily caused by the human papillomavirus (HPV); which could be prevented with safe sexual practice among others and using vaccines(5-7).

World Health Organization (WHO) recommends that all countries introduce HPV vaccination for primary prevention of CC prioritizing the primary target group of young adolescent girls, aged 9–14 years, before sexual exposure, since the vaccine has the highest efficacy if girls have not already acquired HPV infection(8, 9). Ethiopia launched the HPV vaccine for the

first time with the provision 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 all 14 years girls(6).

Human papillomavirus vaccination provides an opportunity to low-resource settings to reduce the burden of CC, thus benefits of the vaccine are restricted to the minority of women who have not been infected yet(6, 10). There are apparent limitations and public health challenges in attempting to implement HPV vaccination programs(11). Parental knowledge, attitude, intent, and acceptance of HPV vaccination for their daughters have become pertinent for the success of the preventive program(12). Mothers' knowledge and attitude about HPV vaccine have been found to a strong predictor and important facilitator for adolescent uptake of the vaccine(13).

1.2. Statement of problem

Globally, in 2018, CC was the fourth most common cancer among women with 570,000 new cases and 311,000 deaths (7.5% of all female cancer deaths). It is also one of the leading causes of cancer deaths among women in low and middle-income countries (LMICs), where 83% of new cases and 85% of related deaths occur (14). In SSA, 34.8 new cases of CC are detected and 22.5 die per 100,000 women annually. According to the Global, Cancer Incidence, Mortality, and Prevalence **(**GLOBOCAN) data of 2018 the incidence of CC is 563,847 new cases worldwide, of which 52,633 occur in Eastern Africa (15).

In Ethiopia, CC orders the second most common type of cancer among women. Every year, 7095 women are identified with CC, and 4732 die from the disease(16). Regional variations in CC are specially marked; SSA (a region where Ethiopia is located) has the highest rate of CC in the world and CC is the number one cancer-related cause of mortality in the region(17). Human papillomavirus infection is the most leading cause of CC worldwide. Contamination with HR genotypes of HPV results in CC(10).

Agreeing to the American Cancer Society Report, risk factors for CC include sexual intercourse at an early age, multiple sexual partners, tobacco smoking, long-term oral contraceptive use, low socioeconomic status, immunosuppressive therapy, and micronutrient deficiency(9, 16). Human papillomavirus vaccine has the great potential to prevent HPV-related infections for millions of women and men worldwide(18). The main goal of this vaccination is to avoid persistent infections that may progress to invasive carcinoma. The HPV vaccine is safe, well-tolerated, and has the potential to significantly reduce the incidence of HPV-associated precancerous lesions(2).

According to Global Alliance for Vaccine and Immunization and WHO, the best strategy to tackle CC is immunization combined with sufficient screening and treatment. While in many high-income countries (HICs) several primary and secondary preventive measures to anticipate the majority of fatal cancer developments are available, many LMICs lack the resources for such comprehensive CC prevention and treatment programs, which is why the provision of vaccinations is especially fundamental in these regions(19).

At present-day even if we have a comparatively clear picture of HPV infection's natural history, oncogenic properties, screening, and prevention algorithms, HPV infection rates continue to persist, particularly in developing countries, where CC occurrence and prevalence are still high. This is due to different reasons, which include low socioeconomic status, lack of population awareness, and inadequately implemented screening and vaccination programs(11).

Parents have a significant role in the decision-making process regarding the HPV vaccination for their child. Mainly, Mothers are primary decision-makers for their daughters. Human papillomavirus vaccination was initially promoted as a vaccine protecting against a female disease, CC(20). Despite the free HPV immunization, acceptance of the vaccination program is not guaranteed as some of the parents are still against it due to various reasons. It has been shown that knowledge of the consequences of HPV infection is lacking and many have misconceptions about vaccination(3).

Lack of parental awareness can result in vaccine refusal and as a result, adolescent girls have expressed their reluctance to vaccinate without parental consent. Parents of adolescent girls need to be aware of HPV, and how it is transmitted, and the efficacy of the HPV vaccine in preventing CC(21). Though knowledge and attitude about HPV vaccination is an essential factor for the success of the vaccination program to prevent CC; most of the mothers did not want HPV vaccination for their daughters as they did not have sufficient knowledge and negative attitude about HPV vaccine(22).

A study conducted in Gonder town revealed that the acceptance of HPV vaccination was significantly associated with the level of knowledge about CC, HPV vaccine, and the attitude towards HPV vaccination(6). Adequate understanding of the level of knowledge and attitude of mothers who have eligible daughters for HPV vaccine and associated factors could be considered as a prerequisite for the effective vaccination program and the implementation of sound and accepted primary prevention program of CC. If the attitude to HPV vaccine is negative they do not allow taking HPV vaccine for their daughters.

Therefore, this study aimed to find out the level of knowledge and attitude towards human papillomavirus vaccine and associated factors among mothers who have eligible daughters in Debre Markos town, Northwest Ethiopia, 2021.

1.3. Significance of the study

The result of this study will help to improve and raise mother's awareness about HPV vaccine by providing accurate information about the vaccine that helps them to have good information and attitudes about HPV vaccine as a result they allow their daughters to vaccinated.

The study will raise awareness of mothers about primary prevention of CC (i.e. HPV vaccine) to reduce mortality and morbidity of women from CC and also to reduce health-related funds of the country.

A study will suggest focusing on mothers has the potential to improve the awareness of HPV vaccine thus contributing to reducing the incidence of HPV infections and CC since mothers are directly faced with cervical cancer.

The finding will help in identifying areas that need an emphasis on preventing cervical cancer by addressing areas that need improvement.

The finding will also assist policymakers and managers to design a program that helps as input for evidence-based decision-making. Moreover, this study will benefit other researchers as a reference for further investigations.

1.4. Justification of the study

Though HPV vaccination is an effective way to reduce CC, people's knowledge and attitude are a big challenge in developing countries.

Since HPV vaccines are targeted at young adolescent girls, mothers will play an important role in decision-making regarding their daughters' vaccination. However, little is known regarding this.

In Ethiopia despite, the newly launched HPV vaccine, there have been limited studies conducted to assess mothers' knowledge, and attitude towards HPV vaccine and associated factors among mothers who have eligible daughters. So; further investigation is needed to fulfill the gap.

2. Literature Review

2.1. General situations about HPV vaccine

The lifetime risk of an incident of HPV infection is 79%; the majority of HPV infections are transient and 67% clear within one year. Around 10% of women without cervical intraepithelial neoplasia (CIN) have an HPV infection at any one time. The mechanism of progression from HPV infection to cervical cancer and its precursors is not well understood(23). There are two types of vaccines that are licensed by the food and drug association. The bivalent HPV (Cervarix) prevents the 16 and 18 HPV types, which cause 70% of CCs. The quadrivalent vaccine (Gardasil) prevents four HPV types 6, 11, 16, 18, which type 6 and 11 can cause 90% genital warts(24).

Infections with HPV 16 and 18 decreased by 83% among girls aged 15–19 years and by 66% among women aged 20–24 years at up to 8 years after vaccination began(25). Two doses with a 6-month interval are recommended for girls aged 9-14 years before become sexually active. There is no maximum interval between the 2 doses; however, an interval of not greater than 12-15 months is suggested to enable girls to complete the schedule promptly before becoming sexually active(26).

The introduction of HPV vaccines has shown important results in terms of HPV reduction rates in countries when vaccine coverage is high. The implementation of HPV vaccination program will result in a dramatic decrease in CC rate. However, owing to the low coverage (1%) in low incoming countries, in which the incidence of CC is high(27). The most commonly reported vaccine-related adverse events are injection site reactions including pain, swelling, erythema, these are usually of short duration and resolve spontaneously; systemic adverse effects, such as myalgia, fatigue, have been mild and self-limited(28).

2.2. Knowledge about human papillomavirus (HPV) vaccine

A systematic review conducted on knowledge, attitude, and barriers towards HPV vaccine in developing countries of Southeast Asia region revealed that knowledge on the availability of HPV vaccine to protect women against CC was varied from 7.8-97.5%, of this lowest knowledge percentage about HPV vaccine were female parents of girls aged 12-15 years in

Thailand followed by women in the obstetrics and gynecology outpatient clinic in Malaysia(18).

A cross-sectional study done among parents of primary school students in Kota Bharu, Kelantan, Malaysia showed that more than 62% of parents exhibited poor knowledge. Selected specific knowledge items that were shown to be low included questions on HPV can cause CC, HPV transmitted by sexual intercourse, HPV vaccine protects against CC, and male can be infected by HPV were (86.8%, 32.8%,31.8%, and 35.4%) respectively(24). A parallel study conducted among parents in Sharjah, United Arab Emirates showed that the total knowledge of the sample was only 19% for HPV vaccine. Television is the main source of information for CC and HPV vaccine, while schools, universities, and work place were other sources of knowledge about HPV infection(10).

Similarly, a study done among women in Yogyakarta Province, Indonesia showed that among mothers of girls aged 12-15 years, only 44% had good knowledge(29). Another study done on knowledge, attitudes, and practices of health professionals regarding CC and the HPV vaccine suggested that 84% of respondents knew about HPV vaccine, and barriers for the implementation of HPV vaccine were lack of parental knowledge (66%) is the most frequently reported, followed by lack of time and discomfort to initiating discussion with parents (38% and 34% respectively)(30).

A study conducted in India, on awareness and knowledge of HPV vaccine in prevention of CC among medical students, revealed that 35.05% were unaware about availability of a vaccine, 40% of students did not have adequate information, only 31.95% knew vaccine has no role in women with HPV infection, 76.28% knowledge regarding the dosage schedule as 3 doses, 84.59% know the route of administration as intramuscular (IM) and 64.94% the interval between 3 doses(31). A parallel cross-sectional study conducted on knowledge, attitudes, and practices among health care providers on CC, HPV, and its vaccine at a hospital in Parel Mumbai, India suggested that only 26.15% knew about HPV vaccine and 98.62% of nurses did not take HPV vaccine (32).

Similarly, a cross-sectional mixed study conducted on knowledge and acceptance of HPV vaccine for CC prevention among urban professional women in Bangladesh suggested that

56% of respondents have ever heard of HPV vaccine from newspaper, television, their doctor, and their family and friends (40%, 30%, 29%, and 24% respectively). Out of women who had heard of HPV vaccination, 22% knew the number of doses required and only 5 women could mention the correct recommended age(33).

A population-based survey on Beliefs and acceptance of HPV vaccine among parents in urban community conducted in Yogyakarta, Indonesia reported that more than 50% of parents did not know that vaccination is the best way to prevent HPV infection and effective to be given to girls aged less than 13 years old, heard about CC (88.79%), heard about HPV vaccine (30.17%), Most CC is caused by HPV infection (64.74%), The HPV infection is sexually transmitted and can affect both males and females (52.25%), and HPV vaccine is effective to be given to girls aged under 13 years old 36.99%. Only 24% of parents said that the vaccine works in people who have not yet been infected by HPV(34).

On the other hand, a study conducted on knowledge of HPV and attitude towards HPV vaccine among medical students of Jodhpur, Rajasthan, India reported that 46.25% of medical students did not know HPV vaccine prevent HPV infection or not;55% thought that HPV vaccine prevents CC; 38.75% did not know that HPV vaccine prevents genital wart;35% have knowledge that approved age for a vaccine is 9-26 years; 37.5% knows there are 3 doses for the HPV vaccine; 67.5% students implied HPV is a causative agent of CC, 97.5% know HPV is a sexually transmitted disease and 48.75% does not know that there is a six-month interval between a dose of the HPV vaccine(35).

A study conducted on knowledge, belief, and attitude of Somali men in Olmsted country, Minnesota, U.S., on the HPV vaccine and cervical cancer screening suggested that the majority of respondents (83-90%) lacked knowledge about HPV infection and vaccine(36). A parallel study conducted in Brazil revealed that approximately 82% of parents knew HPV is transmitted through sexual contact,71.4% knew males and females should be vaccinated against HPV, and only 47% knew women can be vaccinated up to age 26(37).

Similarly, a cross-sectional study conducted in Serbia reported that 31.6% of parents knew that both girls and boys could be vaccinated against HPV, a vaccine against HPV existence 67.7%, an association of HPV infection with development of CC (67.7%), HPV is transmitted

sexually (64.2%), Vaccination against HPV is recommended before the onset of sexual activity (43.3). The most common sources of information on the HPV vaccine were pediatrics, media, and the internet, 42.2%, 29.1%, and 25.8% respectively(38). An additional related study conducted among females attending gynecological outpatient clinics of a university teaching hospital in logos, Nigeria revealed that 36.5% of the respondents heard about HPV infection while only 18.9% knew of the existence of HPV vaccines(8).

On other hand, a cross-sectional survey conducted among Ghanaian's showed that among respondents with knowledge of the HPV vaccine, only 55.9%, knew that cervical cancer could be prevented with the vaccine, and only 21.7%, knew that HPV vaccination is needed before the first sexual intercourse(39). In Ethiopia, research done on female medical students showed that they had a low knowledge level and, therefore, a less favorable attitude toward HPV and its vaccine(40).

2.3. Attitudes towards human papillomavirus (HPV) vaccine

A systematic review conducted in developing countries of South East Asia region revealed that positive attitudes about HPV vaccine were ranged from 36.1-92.1% about 80% of the studies had high intention to get the HPV vaccination(18). A similar study conducted among immigrant parents reported that several non-vaccinating ethnic minority parents had a negative attitude thinking it would encourage unsafe sex practice and promiscuity. Similarly, non-vaccinating and partially vaccinating parents from various ethical backgrounds expressed concerns about potential side effects, religious values, and cultural norms(2).

A study done on knowledge, attitudes, and practices of Saudi physicians regarding CC and the HPV vaccine suggested that almost half supposed that it is not assurance 100% protection from cervical cancer; almost 20% believed that HPV vaccines could encourage the early initiation of sexual activity this was also a concern for parents too. More than half of the physicians are assured of the safety of the new vaccine however 29% remain neutral. Of the respondents, 80% believed that it is important for women to receive the HPV vaccine; 94.22% vaccination is an effective method of reducing the risk of CC(30).

In India, a study did on knowledge, attitude, and practice regarding HPV vaccine among parents and caregivers of the female child attend pediatric outpatient department revealed that

over 70% of the respondents were unspecified on every statement like there is a risk for young women to contract HPV and CC, HPV infection is a serious disease, HPV vaccine is effective in preventing CC (27%), and can cause adverse side effects(21). Another study conducted in India, on awareness and knowledge of HPV vaccine in prevention of CC among medical students, revealed that 69.07% of students had a positive attitude to advice or receives HPV vaccine to prevent CC(31).

A similar study done among women in Yogyakarta Province, Indonesia showed that among mothers of girls aged 12-15 years, 46% had a positive perception of CC and HPV vaccine(29). A survey conducted in Yogyakarta, Indonesia reported that most of the parents believed CC is a serious disease that kills women, vaccination is important and effective to prevent CC, 90%, 89%, and 75% respectively(34).

A study conducted in Brazil revealed that parents had an overall positive attitude regarding vaccination. Over 96% of both parent groups agreed it is important to vaccinate adolescents, as well as vaccinate against HPV infection,94% agreed HPV vaccine is beneficial for females aged 9-13, as well as for females over 13 years, The HPV vaccine is safe 90.1% and HPV vaccine is effective in preventing CC 90.7%(37). A study conducted in Serbia reported that (1.3%) parents claimed that they were afraid of the side effects of the HPV vaccine. By contrast, they expressed the highest level of disagreement with statements that only promiscuous people have genital warts(38).

A community-based study conducted among parents of daughters in Gonder town; Ethiopia showed that 59.9% had a positive attitude towards the HPV vaccine(6).

2.4. Factors associated with knowledge and attitude of HPV vaccine

2.4.1. Socio-demographic factors

A study was done on determinants of attitudes and beliefs toward HPV infection, CC, and HP vaccine among parents of adolescent girls in Mysore, India suggests that religion, age, and level of education were significantly associated with beliefs about the HPV vaccine. Interestingly, Muslims were also more likely to believe that HPV vaccination may cause girls to become more sexually active, but less likely to believe that HPV vaccination is safe and

protect against CC. Older parents and those with grade 1 to 10 education levels had a lower perception that their daughters are susceptible to HPV infection or CC(41).

Another study conducted on factors associated with parent's intent to vaccinate adolescents for HPV in 2014 national immunization survey –teen found that among parents of US adolescents aged 13-17 years, maternal education emerged as the strongest predictor of parental intent to obtain HPV vaccination for their children(42). A similar study conducted on predictors of adults' knowledge and awareness of HPV, HPV-associated cancers, and the HPV Vaccine: implications for health education showed that significant positive predictors of HPV vaccine knowledge were being female, college-educated, never married, having a child under 18 in the household and higher annual income(43).

In Brazil, a study conducted on attitudes towards HPV among parents revealed that financial and information accessibility is a major factor in parent's attitude towards HPV vaccine(37). Similarly, in Nigeria, a study conducted on knowledge and acceptability of HPV vaccination among women attending the gynecological outpatient of a university teaching hospital in logos revealed, level of education of respondents is significantly associated with their awareness existence of HPV vaccine and willingness to accept HPV vaccination for their daughters. But, having a daughter did not influence their awareness. Even if, there is a trend for age as knowledge of HPV vaccination and willingness to accept it among respondents decrease progressively with increasing age(8).

2.5. Conceptual framework

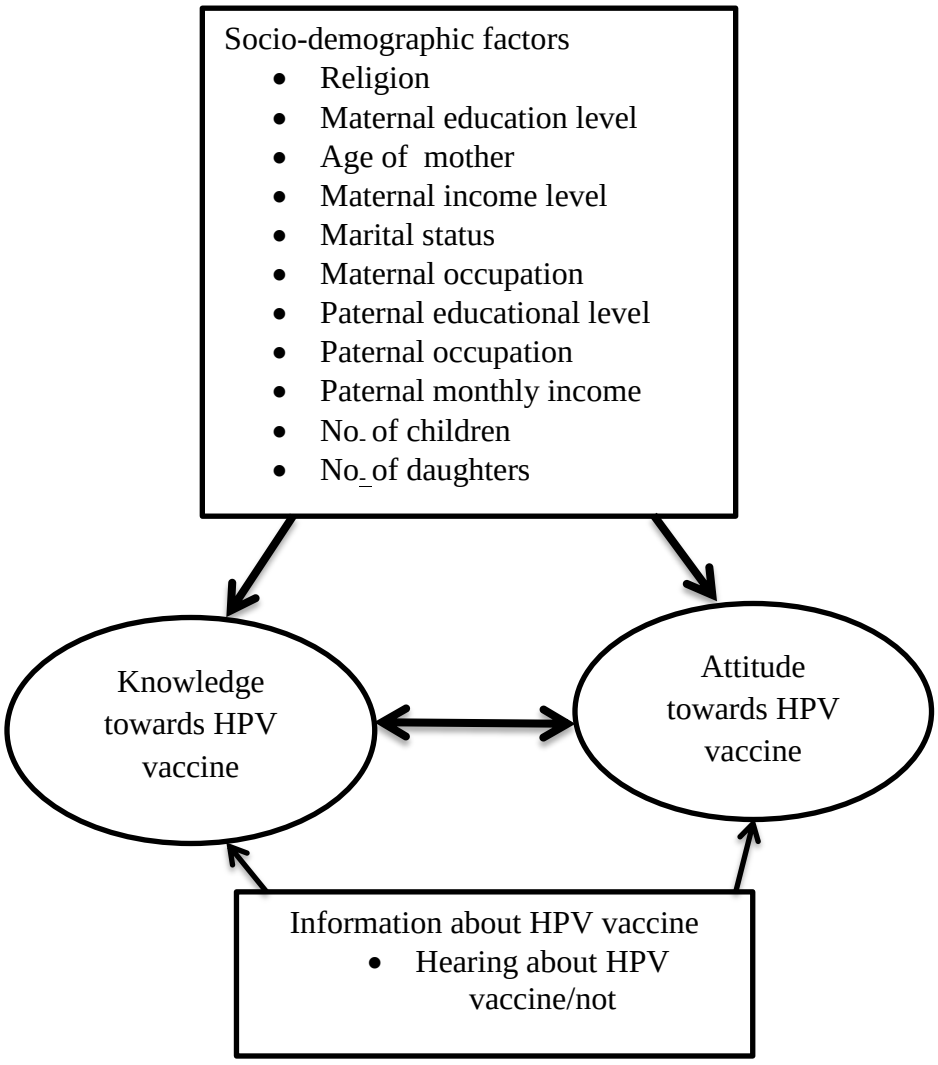

Figure 1 Conceptual framework prepared by the investigator from literature review(8, 33, 37, 43-47) for assessment of knowledge and attitude towards human papillomavirus vaccine and associated factors among mothers who have eligible daughters in Debre Markos town, Northwest Ethiopia, 2021

3. Objectives

3.1. General objective

To assess the level of knowledge and attitude towards human papillomavirus vaccine and associated factors among mothers who have eligible daughters in Debre Markos town, Northwest Ethiopia, 2021

3.2. Specific objectives

- To assess the level of knowledge towards HPV vaccine among mothers who have eligible daughters in Debre Markos town, Northwest Ethiopia during the study period.
- To assess the level of attitude towards HPV vaccine among mothers who have eligible daughters in Debre Markos town, Northwest Ethiopia during the study period.
- To identify factors associated with knowledge and attitude towards HPV vaccine among mothers who have eligible daughters in Debre Markos town, Northwest Ethiopia during the study period.

4. Methods and materials

4.1. Study design, Area and Period

A community-based cross-sectional study was conducted in Debre Markos town from February 16/2021 to March 16/2021. Debre Markos is the administrative town of East Gojjam Zone and it is found in the northwest part of the country surrounded by Gozamen woreda in the North, South, and East, and Amended woreda in the West. Debre Markos is located on the main road of Addis Ababa to Bahir-Dar. It is 300 km away from Addis Ababa which is the capital city of Ethiopia and 265 km from Bahir Dar the capital city of Amhara regional state.

The town has a comprehensive hospital, 3 governmental health centers, 7 health posts, 16 private pharmacies, and 22 private clinics. It has also both public and private schools there are 17 kindergartens, 23 primary schools (18 public and 5 private), 3 high schools, 2 preparatory schools, 15 adult education schools, 11 different colleges, and one University. Based on the 2007 national census convoyed by the central statistical agency of Ethiopia this town has a total population of 62,497 of whom 29,921 are men and 32,576 women. There are 11 kebeles in Debre Markos(48).

4.2. Population

The source population was all mothers who had eligible daughters living in Debre Markos town whereas the study population was all mothers who had eligible daughters in the selected kebeles.

4.3. Eligibility Criteria

4.3.1. Inclusion Criteria

All mothers/guardians who have eligible daughters (14 years old) in the selected kebeles and attended school/ student.

4.3.2. Exclusion Criteria

Mothers, who refuse to participate and absent from more than three days of home visit during the data collection period.

4.4. Sample size determination

The sample size was calculated by using single population proportion formula, assuming 59.9 % had positive attitude towards HPV vaccination from a study conducted in Gonder town(6). With 95% confidence interval (CI), 5% marginal error (d) and 1.5 design effect. This gives the sample size of 554. Adding 10% non-response the final sample size was 601.

$n= ((z\alpha_{/2})^2 p (1-p))$ design $effect_{/d}^2$

$n= ((1.96)^2 (0.599) (0.401)) (1.5)_{/} (0.05)^2=554$

n= 601

4.5. Sampling procedures

A multi-stage sampling technique was applied to select the study participants from Debre Markos town total kebeles. In the study area, there are eleven kebeles. Among 11 kebeles, 5 kebeles were selected by using a simple random sampling method (lottery method), and then proportional allocation was done to each selected kebeles. Assuming the study was involving 45 % of total kebeles in the town.

Finally, the household was selected with mothers who have eligible daughters by a consecutive sampling method. The first mother was selected randomly. The total population in the selected kebeles is 981 and the total sample size taken from the selected kebeles is 601. The list of mothers who have eligible daughters was taken indirectly by their daughter's list of registration book for HPV vaccine from Debre Markos health protection center administrator. Then home to home visit was used to get mothers who fulfill the inclusion criteria. The data collectors were visiting three times each home if the mother is absent from her home to minimize the non-response rate.

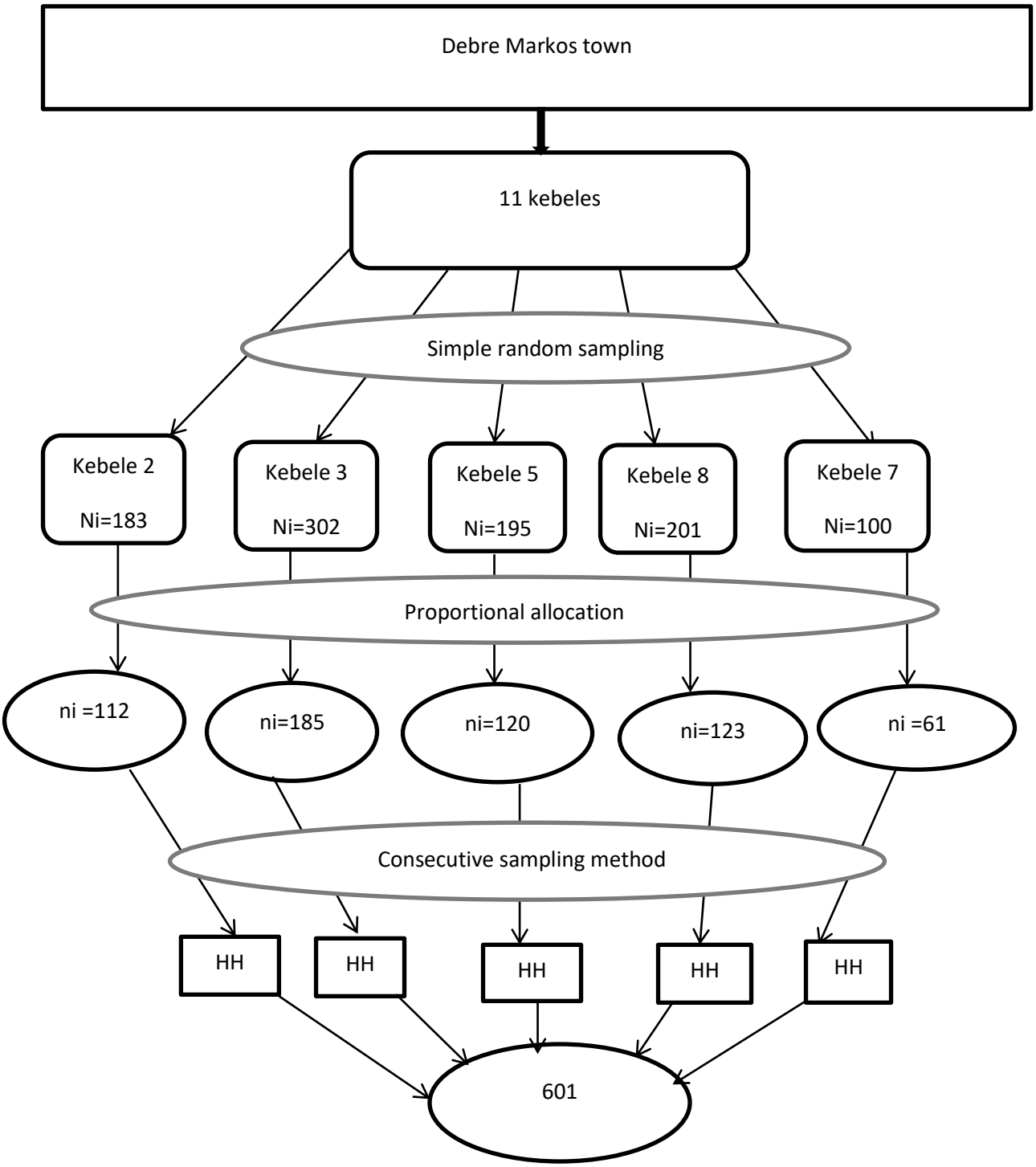

Figure 2.Schematic presentation of the sampling procedure for assessment of knowledge and attitude towards human papillomavirus vaccine and associated factors among mothers who have eligible daughters in Debre Markos town, Northwest Ethiopia, 2021

ni = Ni x no/N

Where:

ni = Number of mothers who have eligible daughters that are needed from specific kebele

Ni = Total number of mothers who have eligible daughters in each kebele

no= Calculated sample size =601

N = Total number of mothers who have eligible daughters

HH=Household

4.6. Study variables

Dependent variable: knowledge, attitude towards HPV vaccine

Independent variables: Sociodemographic factors (age of mother, religion of mother, maternal education level, marital status, maternal occupation, paternal educational level, paternal occupation, paternal monthly income, number of children in the household, number of daughters aged 9-14 years old, maternal monthly income).

Information about HPV vaccine (hearing or not)

4.7. Operational Definition

Mothers who have eligible daughters: mothers/guardians who have young daughters aged 14 years.

Knowledge: knowledge questions have three responses. 1. Yes, 2.no, and 3. I do not know. These three responses were used for descriptive analysis. But for categorization of knowledge responses were recoded 1. as a correct answer; 2 and 3. as incorrect. Knowledge score was computed by giving 1 for participants who correctly answered the questions and 0 for those who didn't. It was measured using 13 item knowledge questions and categorized as "Poor knowledge" (0–7 out of 13 items), and "good Knowledge" (8-13 out of 13 items)(6).

Attitude: attitude score was computed by giving 1 for participants who correctly answered the questions and 0 for those who didn't. It was measured using 12 item attitude questions and

categorized as “negative attitude” (0–6 out of 12 items), and “positive attitude” (7-12 out of 12 items)(6).

4.8. Data collection tool and procedure

A face-to-face interview-administered questionnaire was used to collect the data. Five health extension workers were the data collectors and one supervisor with BSc Degree who live in Debre Markos town. The questionnaire consists of part one: socio-demographic, part two: source of information, part three: knowledge on HPV, and part four: attitude towards HPV vaccination adapted from different literature. The questionnaire was initially prepared in English and translated into Amharic and again back to English by professional translators to check for any inconsistencies and validated by 3 experts. Finally, the Amharic version was used for the data collection. A pilot study was done 1 week before actual data collection by taking a sample of 5% (31) in Kebele 4. The reliability test for the data collection tool was checked and revealed the Cronbach alpha value of 0.789, and 0.7 for knowledge and attitude respectively.

4.9. Data quality control

Before data collection, to ensure the quality of the data a pretest was done out of the study area before the actual data collection by taking a sample of 5% (31) in Kebele 10 and two-day training were given to data collectors and supervisor about the objective of the study, methods of data collection. Every day of data collection; the principal investigator, data collectors, and supervisor had meetings to find a solution for the challenges faced during data collection and the data collectors were submitting the collected data to the investigator. The collected data were checked for completeness.

4.10. Data processing and analysis

The collected data were entered into Epi data version 3.1 and analysis was done using SPSS version 25 statistical package. Descriptive statistics were used to describe the variable of the study. The bivariate and multivariate logistic regression models were fitted to identify the association between dependent and independent variables. All independent variables with P-value < 0.25 with knowledge, and attitude of HPV vaccine in binary logistic regression variables were transferred to multiple logistic regressions to adjust the effect of confounders and to differentiate the associated factors.

In the multivariable logistic regression model fitting, an adjusted odds ratio (AOR) with a 95% confidence interval (CI) was computed. A P-value less than 0.05 was considered to be statistically significant at 95% CI and the strength of association was declared using odds ratio. Finally, the result was presented in texts, tables, and graphs.

4.11. Ethical consideration

Before data collection, ethical clearance and an approval letter were taken from the Ethical Review Committee of Addis Ababa University College of Health Sciences School of Nursing and Midwifery. Then a letter was written for Debre Markos town administrator and respective kebele managers were informed about the purpose of the research undertaking. Data collection was collected after consent was taken from each participant. Privacy and confidentiality were ensured by not writing the name of the respondents on the questionnaire. The data were treated in the strictest confidence and were kept under lock and key.

4.12. Dissemination of result

The findings of this study first, will be disseminated to Addis Ababa University College of Health Science, School of Nursing, and Midwifery. Then it will also be shared for Debre Markos town administration and the health bureau. Similarly, the finding will be submitted to the Amhara region Health Bureau and other concerned stakeholders to consider the finding in their planning for HPV vaccination program.

In addition, the finding of this study will be presented at the different workshops, seminars, research symposiums organized at the local, national, and international levels. Finally, it will be published in an internationally reputable journal to make it accessible to the international scientific community.

5. Results

Socio-demographic characteristics of the respondents

A total of 601 study participants with a response rate of 100% were included in this study. The mean (SD) age of the respondents was 39.4 (±8.95) years and 477 (79.4 %) were married, 509 (84.7 %) were orthodox Christian, 227 (37.8 %) were housewife, mean monthly income of the participants were 3022.85(±2607) Ethiopian birr. The majority of the respondents 551 (91.7 %) had less than or equal to five children and 530 (88.2 %) had one daughter aged 9-14 years in the household. Table 1 shows the result of the Socio-demographic characteristics of the participants.

Table 1 Socio-demographic characteristics of mothers/guardians who have eligible daughters in Debre Markos Town, Northwest Ethiopia, 2021 (n=601)

Variables	Category	Frequency	**Percent** (%)
Age in years	21-29	69	11.5
	30-39	269	44.7
	40-49	174	29
	50 and above	89	14.8
Marital status	Married	477	79.4
	Divorced	74	12.3
	Widowed	50	8.3
Maternal educational level	Cannot read and write	80	13.3
	Read and write only	79	13.2
	Primary school	92	15.3
	Secondary school	109	18.1
	Diploma	148	24.6
	Degree and above	93	15.5
Religion	Orthodox Christian	509	84.7
	Muslim	70	11.6
	Protestant	21	3.5
	Others	1	0.2
Maternal occupation	Civil servant	183	30.4
	Self-employed	14	2.3
	Merchant	153	25.5
	Farmer	8	1.3
	Housewife	227	37.8
	Others	16	2.7
Maternal monthly income	Less than 600	94	15.5
	601-1650	144	24
	1651-3200	156	26
	3201-5250	91	15.2
	5251-7800	74	12.3
	7801-10900	36	6
	Above 10900	6	1
Paternal occupation	Civil servant	214	44.9
	Self-employed	56	11.7
	Merchant	171	35.9
	Farmer	3	0.6
	Others	33	6.9
Paternal educational level	Cannot read and write	12	2.5
	Read and write only	38	8
	Primary school	70	14.7
	Secondary school	86	18
	Diploma	124	26
	Degree and above	147	30.8
Paternal monthly income	Less than 600	8	1.7
	601-1650	13	2.7
	1651-3200	84	17.6
	3201-5250	140	29.4
	5251-7800	113	23.7
	7801-10900	105	22
	Above 10900	14	2.9
Number of children in the household	Less than or equal to 5	551	91.7
	6 and above	50	8.3
No_ of daughters aged 9-14 years	One	530	88.2
	More than one	71	11.8

Source of information

The majority of the respondents 381 (63.4%) heard about HPV vaccine and from this for 274 (71.9 %) respondents' main source of information about HPV vaccine was television.

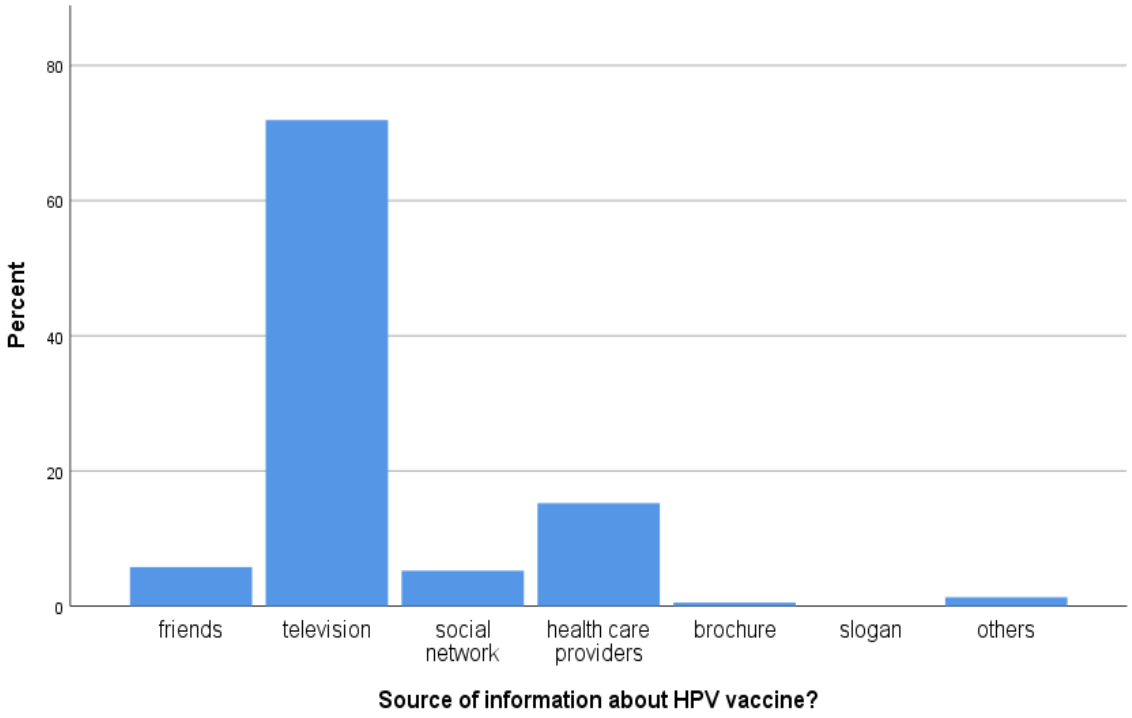

Figure 3 the percentage distribution of sources of information about HPV vaccine among mothers/guardians who have eligible daughters in Debre Markos Town, Northwest Ethiopia, 2021

Knowledge about HPV vaccine

More than half of the respondents 315 (52.4%) have limited awareness of the HPV vaccine. Knowledge of respondents about HPV vaccine shows that 453 (75.4%) of parents expressed that they heard about CC, but only 258 (42.9%) of parents know CC is a disease of the genital tract, even only 179 (29.8%) of parents know that HPV can cause CC. More than half of the participants 399 (66.4%) did not know HPV is transmitted by sexual contact; 373 (62.1%) did not know the recommendation of HPV vaccine before the onset of sexual activity, and 65 (10.8%) of the parents reported that HPV vaccine is given only for women those who have multiple sexual partners. Table 2 shows the result of knowledge about HPV vaccine.

Table 2 Knowledge about HPV vaccine among mothers/guardians who have eligible daughters in Debre Markos Town, Northwest Ethiopia, 2021 (n=601)

Items of knowledge questions	Response		
	Yes	No	I don't know
Ever heard about cervical cancer	453(75.4)	148(24.6)	
Cervical cancer is a disease of genital tract	258(42.9)	202(33.6)	141(23.5)
HPV can cause cervical cancer	179(29.8)	81(13.5)	341(56.7)
HPV infections are preventable	426(70.9)	21(3.5)	154(25.6)
HPV is transmitted by sexual contact	202(33.6)	186(30.9)	213(35.4)
A vaccine against HPV infection does exist	440(73.2)	34(5.7)	227(21.1)
Vaccination against HPV is recommended before the onset of sexual activity	228(37.9)	84(14)	289(48.1)
HPV vaccine recommended to prevent cervical cancer in the future	429(71.4)	48(8)	124(20.6)
HPV vaccine can be offered to female child aged 9-14 years old	350(58.2)	56(9.3)	195(32.4)
HPV vaccine is only for women who have multiple sexual partners	65(10.8)	303(50.4)	233(38.8)
HPV vaccine requires 2 round of vaccination for daughters under 14 years	215(35.8)	30(5)	356(59.2)
HPV vaccine can cause infertility	104(17.3)	306(50.9)	191(31.8)
know HPV vaccine is given in schools	439(73)	162(27)	

Attitude towards HPV vaccine

More than three-quarters of the participants 465 (77.4%) had positive attitude of the HPV vaccine. From total study participants, 330 (54.9%) replied, they don't think their daughters are susceptible to HPV infection; 154 (25.6%) of mothers/guardians said HPV vaccine is not safe and effective; 195 (32.4%) of respondents think HPV vaccine will lead to complicated sexual activities; 272 (45.3%) of respondents think vaccinating their daughter against HPV will encourage them to start sexual activity and 203 (33.8%) of mothers/guardians believe HPV vaccine promotes risky sexual behaviors among teenagers.

More than half of mothers/guardians 315 (52.4%) afraid of mild side effect of HPV vaccine for their daughter; 170 (28.3%) of respondents fear infertility from HPV vaccine for their daughter in the future, and 103 (17.1%) of respondents think only who are promiscuous would benefit from the vaccine. Table 3 shows the result of attitude towards HPV vaccine.

Table 3 Attitude towards HPV vaccine among mothers/guardians who have eligible daughters in Debre Markos Town, Northwest Ethiopia, 2021 (n=601)

Items of attitude questions	Response	
	Yes	No
Think your daughter is susceptible to HPV infection	271(45.1)	330(54.9)
Think HPV vaccine is safe and effective	447(74.4)	154(25.6)
Think being vaccinated for HPV reduce the risk of having HPV infection	518(86.2)	83(13.8)
Think HPV vaccine will not lead to complicated sexual activities	406(67.6)	195(32.4)
Vaccinating your daughter against HPV will not encourage them to start sexual activity	329(54.7)	272(45.3)
Think HPV vaccine promote risky sexual behaviors among teenagers	203(33.8)	398(66.2)
I would like to vaccinate my daughter against HPV if the vaccination is freely available.	497(82.7)	104(17.3)
Information on HPV helps me to decide whether my children should be vaccinated against HPV.	591(98.3)	10(1.7)
Afraid of mild side effect of HPV vaccine for your daughter (like pain and redness at the injection site)	315(52.4)	286(47.6)
fear of infertility from HPV vaccine for your daughter in the future	170(28.3)	431(71.7)
Thinks HPV vaccine is effective in preventing cervical cancer	463(77)	138(23)
Thinks only those who are promiscuous would benefit from the vaccine	103(17.1)	498(82.9)

Factors associated with knowledge about HPV vaccine

For bivariate logistic regression analysis, a total of thirteen variables were used and among these, eleven of the variables (maternal age, marital status, maternal educational level, maternal occupation, maternal monthly income, paternal occupation, paternal educational level, paternal monthly income, number of children in the household, hearing about HPV vaccine and attitude) were all candidate variables for multi-variable analysis. After controlling for confounders using the multivariate analysis model, maternal educational level, hearing about HPV vaccine, and attitude towards HPV vaccine was significantly associated with knowledge about HPV vaccine.

This study revealed that mothers who having a bachelor's degree or higher were about 8 times more likely to have good knowledge about HPV vaccine than mothers who cannot read and write (AOR=7.687; 95 % CI=1.837-32.168; p=0.005) and also mothers who had diploma were about 4 times more likely to have good knowledge about HPV vaccine than mothers who cannot read and write (AOR=3.540; 95%CI=1.165-10.754; P=0.026). Mothers who are not hearing about HPV vaccine before this study were about 82.8 % less likely to have good knowledge about HPV vaccine than mothers who heard about HPV vaccine before this study

(AOR=0.172; 95%CI=0.098-0.302; P=0.000). Mothers who having a positive attitude towards HPV vaccine were about 3 times more likely to have good knowledge about HPV vaccine than mothers who had a negative attitude towards HPV vaccine (AOR=2.959; 95%CI=1.580-5.539; P=0.001).

Table 4Bivariable and multivariable analysis of factors associated with knowledge about HPV vaccination among mothers/guardians who have eligible daughters in Debre Markos Town, Northwest Ethiopia, 2021 (n=601)

Variables	Category	Knowledge		COR(95 % CI)	AOR(95 % CI)	p-value
		Poor	Good			
Maternal age in years	21-29	37	32	1	1	
	30-39	138	131	1.884(0.982,3.613)*	0.757(0.361,1.588)	
	40-49	79	95	2.068(1.245,3.435)*	1.147(0.511,2.573)	
	50 and above	61	28	2.620(1.530,4.486)*	1.056(0.383,2.913)	
Marital status	Married	238	239	1	1	
	Divorced	42	32	0.759(0.463,1.243)	0.872(0.465,1.636)	
	Widowed	35	15	0.427(0.227,0.802)*	0.590(0.257,1.358)	
Maternal educational level	Cannot read and write	67	13	1	1	
	Read and write only	62	17	1.413(0.635,3.147)	0.862(0.308,2.416)	
	Primary school	63	29	2.372(1.133, 4.968)*	1.399(0.524,3.741)	
	Secondary school	56	53	4.878(2.415, 9.850)*	2.473(0.940,6.503)	
	Diploma	52	96	9.515(4.805, 18.841)*	3.540(1.165,10.754)**	0.026
	Degree and above	15	78	26.800(11.907, 60.3210)*	7.687(1.837,32.168)**	0.005
Religion	Orthodox Christian	266	243	1		
	Muslim	39	31	0.870(0.526,1.438)		
	Protestant	9	12	1.460(0.604,3.524)		
	Others	1	0	0.000(0.000,----)		
Maternal occupation	Civil servant	44	139	1	1	
	Self-employed	9	5	0.176(0.056,0.552)*	0.335(0.043,2.596)	
	Merchant	92	61	0.210(0.131,0.335)*	1.596(0.497,5.124)	
	Farmer	6	2	0.106(0.21,0.542)*	6.269(0.606,64.860)	
	Housewife	153	74	0.153(0.099,0.237)*	1.057(0.300,3.726)	
	Others	11	5	0.144(0.047,0.437)*	0.563(0.083,3.818)	
Maternal monthly income	Less than 600	64	30	1	1	
	601-1650	95	49	1.100(0.632,1.915)	0.826(0.393,1.738)	
	1651-3200	104	52	1.067(0.617,1.843)	0.740(0.324,1.691)	
	3201-5250	23	68	6.307(3.321,11.980)*	2.213(0.644,7.613)	
	5251-7800	17	57	7.153(3.574,14.316)*	2.418(0.590,9.918)	
	7801-10900	11	25	4.848(2.112,11.133)*	1.212(0.239,6.155)	
	Above 10900	1	5	10.667(1.193,95.346)*	0.638(0.45,9.046)	
Paternal occupation	Civil servant	70	144	1	1	
	Self-employed	33	23	0.339(0.185,0.620)*	1.008(0.403,2.523)	
	Merchant	111	60	0.263(0.172,0.0.402)*	0.786(0.366,1.688)	
	Farmer	3	0	0.000(0.00,--)	0.000(0.000,---)	
	Others	21	12	0.278(0.129,0.597)*	1.078(0.329,3.536)	

Table 4Bivariable and multivariable analysis of factors associated with knowledge about HPV vaccination among mothers/guardians who have eligible daughters in Debre Markos Town, Northwest Ethiopia, 2021 (n=601), continued

Variables	Category	Knowledge		COR(95 % CI)	AOR(95 % CI)	P- value
		Poor	Good			
Paternal educational level	Cannot read and write	10	2	1	1	
	Read and write only	31	7	1.129(0.201,6.340)	0.642(0.088,4.701)	
	Primary school	48	22	2.292(0.463,11.349)	1.159(0.174,7.728)	
	Secondary school	54	32	2.963(0.610,14.384)*	0.978(0.154,6.231)	
	Diploma	55	69	6.273(1.319,29.820)*	1.557(0.237,10.224)	
	Degree and above	40	107	13.375(2.808,63.715)*	2.066(0.291,14.657)	
Paternal monthly income	Less than 600	7	1	1	1	
	601-1650	5	8	11.200(1.042,120,363)*	9.423(0.401,221.239)	
	1651-3200	53	31	4.094(0.481,34.857)*	2.918(0.168,50.583)	
	3201-5250	82	58	4.951(0.593,41.336)*	2.307(0.138,38.550)	
	5251-7800	53	60	7.925(0.944,66.525*	1.228(0.069,21.727)	
	7801-10900	33	72	15.273(1.805,129.216)*	1.570(0.087,28.208)	
	Above 10900	5	9	12.600(1.186,133.892)*	1.089(0.046,25.788)	
Number of children in the household	Less than or equal to 5	281	270	1	1	
	6 and above	34	16	0.490(0.264,0.908)*	3.725(2.417,5.740)	
No_ of daughters aged 9-14 years	One	280	250	1		
	More than one	35	36	1.152(0.702,1.891)		
Ever heard about HPV vaccine	Yes	136	245	1	1	
	No	179	41	0.127(0.085,0.189)*	0.172(0.098,0.302)**	0.000
Attitude	Negative attitude	103	33	1	1	
	Positive attitude	212	253	3.725(2.417,5.740)*	2.959(1.580,5.539)**	0.001

Notes: 1, reference category: *candidate for multivariate at p<0.25:**significance at p<0.05
Abbreviations: COR, crude odds ratio; AOR, adjusted odds ratio; CI, confidence interval

Factors associated with attitude towards HPV vaccine

For bivariate logistic regression analysis, a total of thirteen variables were used and among these, ten of the variables (maternal age, maternal educational level, religion, maternal occupation, maternal monthly income, paternal occupation, paternal educational level, number of daughters aged 9-14, hearing about HPV vaccine and knowledge about HPV vaccine). After controlling for confounders using the multivariate analysis model, hearing about HPV vaccine and knowledge about HPV vaccine were significantly associated with attitude towards HPV vaccine.

This study revealed that mothers who did not hear about HPV vaccine before this study were about 71.5 % less likely to have a positive attitude towards HPV vaccine than mothers who heard about HPV vaccine before this study (AOR=0.285; 95%CI=0.163-0.499; P=000). Mothers who having a good knowledge about HPV vaccine were about 3 times more likely to have a positive attitude towards HPV vaccine than mothers who had poor knowledge about HPV vaccine (AOR=2.705; 95 % CI=1.454-5.035;0.002).

Table 5Bivariable and multivariable analysis of factors associated with attitude towards HPV vaccination among mothers/guardians who have eligible daughters in Debre Markos Town, Northwest Ethiopia, 2021 (n=601)

Variables	Category	Attitude		COR(95 % CI)	AOR(95 % CI)	p-value
		Neg.	Pos.			
Maternal age in years	21-29	9	60	1	1	
	30-39	66	203	0.461(0.217,0.980)*	0.483(0.199,1.175)	
	40-49	37	137	0.555(0.252,1.223)*	0.522(0.201,1.353)	
	50 and above	24	65	0.406(0.175,0.943)*	0.666(0.217,2.044)	
Marital status	Married	111	366	1		
	Divorced	14	60	1.300(0.700,2.414)		
	Widowed	11	39	1.075(0.533,2.170)		
Maternal educational level	Cannot read and write	26	54	1	1	
	Read and write only	25	54	1.040(0.534,2.024)	0.824(0.327,2.073)	
	Primary school	20	72	1.733(0.877,3.426)*	1.374(0.547,3.454)	
	Secondary school	23	86	1.800(0.934,3.470)*	1.072(0.410,2.801)	
	Diploma	32	116	1.745(0.948,3.212)*	0.912(0.281,2.960)	
	Degree and above	10	83	3.996(1.785,8.946)*	1.878(0.419,8.410)	
Religion	Orthodox Christian	113	396	1	1	
	Muslim	16	54	0.963(0.531,1.747)	0.881(0.417,1.863)	
	Protestant	7	14	0.571(0.225,1.448)*	0.450(0.111,1.1.821)	
	Others	0	1	460981457.682(0.000,--)	1414432378.483(0.000,-)	
Maternal occupation	Civil servant	32	151	1	1	
	Self-employed	6	8	0.283(0.092,0.870)*	0.671(0.114,3.958)	
	Merchant	44	109	0.525(0.313,0.881)*	1.715(0.454,6.488)	
	Farmer	1	7	1.483(0.176,12.480)	12.253(0.873,171.922)	
	Housewife	50	177	0.750(0.458,1.229)	2.691(0.646,11.210)	
	Others	3	13	0.918(0.247,3.410)	2.665(0.304,23.362)	
Maternal monthly income	Less than 600	28	66	1	1	
	601-1650	36	108	1.273(0.712,2.276)	0.813(0.399,1.656)	
	1651-3200	34	122	1.522(0.850,2.727)*	1.565(0.679,3.612)	
	3201-5250	15	76	2.149(1.058,4.366)*	1.666(0.469,5.911)	
	5251-7800	16	58	1.538(0.757,3.123)*	1.076(0.265,4.359)	
	7801-10900	7	29	1.758(0.689,4.483)*	0.667(0.135,3.283)	
	Above 10900	0	6	685352963.634(0.000,-)	177590985.776(0.000,--)	
Paternal occupation	Civil servant	35	179	1	1	
	Self-employed	18	38	0.413(0.212,0.805)*	0.575(0.224,1.476)	
	Merchant	47	124	0.516(0.315,0.845)*	0.576(0.256,1.296)	
	Farmer	1	2	0.391(0.035,4.432)	0.599(0.038,9.518)	
	Others	10	23	0.450(0.197,1.027)*	0.492(0.155,1.561)	

Table 5Bivariable and multivariable analysis of factors associated with attitude towards HPV vaccination among mothers/guardians who have eligible daughters in Debre Markos Town, Northwest Ethiopia, 2021 (n=601) continued

Variables	Category	Attitude		COR(95 % CI)	AOR(95 % CI)	p-value
		Neg.	Pos.			
Paternal educational level	Cannot read and write	4	8	1	1	
	Read and write only	12	26	1.083(0.272,4.312)	0.873(0.185,4.120)	
	Primary school	21	49	1.167(0.317,4.300)	0.874(0.189,4.052)	
	Secondary school	22	64	1.455(0.399,5.307)	0.816(0.184,3.628)	
	Diploma	30	94	1.567(0.441,5.571)	0.675(0.142,3.203)	
	Degree and above	22	125	2.841(0.788,10.248)*	0.799(0.151,4.218)	
Paternal monthly income	Less than 600	2	6	1		
	601-1650	6	7	0.389(0.056,2.697)		
	1651-3200	21	63	1.000(0.187,5.338)		
	3201-5250	39	101	0.863(0.167,4.461)		
	5251-7800	23	90	1.304(0.247,6.891)		
	7801-10900	17	88	1.725(0.321,9.281)		
	Above 10900	3	11	1.222(0.158,9.467)		
Number of children in the household	Less than or equal to 5	123	428	1		
	6 and above	13	37	0.818(0.421,1.587)		
No_ of daughters aged 9-14 years	One	110	420	1	1	
	More than one	26	45	0.453(0.268,0.767)*	0.567(0.284,1.131)	
Ever heard about HPV vaccine	Yes	52	329	1	1	
	No	84	136	0.256(0.172,0.382)*	0.2850(0.163,0.499)**	0.000
Knowledge	Poor knowledge	103	212	1	1	
	Good knowledge	33	253	3.725(2.417,5.740)*	2.705(1.454,5.035)**	0.002

Notes: 1, reference category: *candidate for multivariate at p<0.25:**significance at p<0.05
Abbreviations: COR, crude odds ratio; AOR, adjusted odds ratio; CI, confidence interval; Neg., negative: Pos., positive

In final model, having bachelor's degree or higher; having diploma and having a positive attitude towards HPV vaccine were positively associated with good knowledge. But not hearing about HPV vaccine was negatively associated with good knowledge about HPV vaccine. And also having a good knowledge about HPV vaccine was positively associated with positive attitude. But not hearing about HPV vaccine was negatively associated with positive attitude towards HPV vaccine.

6. Discussion

The study was conducted to assess knowledge and attitude towards HPV vaccine and associated factors among mothers who have eligible daughters in Debre Markos town. The finding of this study shows that less than half of the respondents (47.6%) had good knowledge about HPV vaccine which is consistent with the previous study conducted in Indonesia (44%)(29). On the other hand, it is somehow higher than the study conducted in Malaysia (38%)(24) and Sharjah (19%)(10). The discrepancy could be due to mothers those working in the medical field (health professionals) were excluded from the study conducted in Sharjah and the study conducted in Malaysia the questions were self-administer that may affect parents' responses related to questions clarity.

This study also indicates that the majority of the respondents (63.4%) heard about HPV vaccine which is consistent with a study conducted in Bangladesh (56%)(33). But a study conducted in Nigeria is lower than this study finding (36.5%)(8). The possible explanation for these differences might be due to the difference in the sample size (i.e. the Nigeria study was conducted on 148 women) and also the vaccination in Nigeria is given by cost. So, there may not be mobilization of information about HPV vaccine on media.

The finding of this study shows that 71.9% of the respondent's main source of information about HPV vaccine was television which is similar to a study conducted in United Arab Emirates(10). On the contrary, the finding of this study is higher than a study conducted in Bangladesh (30%)(33), in Serbia (29.1%)(38). Their main source of information is newspaper for Bangladesh and health care provider for Serbia. The reason behind this difference might be due to the difference in socio-economic and socio-demographic variables.

The finding of the current study indicates that only 29.8% of parents know that HPV can cause cervical cancer which is lower than Malaysia (86.8%)(24), Serbia (67.7%)(38), India (67.5%)(35), and Indonesia (64.74%)(34). This difference might be due to differences in study participant's level of education since the study in Malaysia the lower level of education was a primary school; in Indonesia, junior high school and convenience sampling were employed, and also in India, the study population was medical students.

The finding of this study shows (33.6%) of participants know HPV is transmitted by sexual contact which is similar to a study conducted in Malaysia (32.8%)(24). But it is lower than a study conducted in Indonesia (52%)(34), Serbia (64.2%)(38), Brazil (82%)(37), and India (97.5%)(35). The possible reason might be the difference in the sample size, the study population, and the time of the study.

The finding of the current study discovers that 73.2% of know the presence of a vaccine against HPV infection which is similar to a study done in Serbia (67.7%)(38). but, higher than a study conducted in Nigeria (18.9%)(8). This difference may be due to the introduction of the routine free HPV vaccination program at school in Ethiopia unlike in Nigeria which is given by cost.

In addition, the current study indicates that (37.9%) know the recommendation of HPV vaccine before the onset of sexual activity; which is almost similar to a study done in Serbia (43.3%)(38). On the other hand, it is higher than a study conducted in Ghana (21.7%)(39), and Indonesia (24%)(34). The possible reason might be the difference in study participants. Since both studies in Ghana and Indonesia includes males and females.

The finding of this study indicates that 71.4% of the respondents know HPV vaccine prevents cervical cancer in the future which is higher than a study done in Malaysia (31.8%)(24), India (55%)(35), and Ghana (55.9%)(39). The possible reasons might be due to the difference in sample size (i.e. the study done in Malaysia with a small sample size which is 280); time of the study (the study conducted in India among medical students immediately as the vaccine is introduced) and socio-demographic.

The finding of this study reveals that greater than half (58.2%) of the respondents know HPV vaccine recommended age for females which is higher than a study conducted in India on female medical students (35%)(35), and Indonesia (36.99%)(34). The reason for this variation may be this data was collected during the vaccine is given for daughters. So this gives the mothers to have recent information. But others study may face recall bias.

In the finding of the current study majority of the participants (77.4 %) had positive attitudes towards HPV vaccine which included in the range of a systemic review done in south east Asia (36.1-92.1)(18), and almost similar with a study conducted in India (69.07%)(31). But it

is higher than a study conducted in Gonder town, Ethiopia which is (59.9%) (6). The reason for this difference could be a difference in the study period since the study in Gonder is conducted as soon as the HPV vaccine is launched in Ethiopia.

The finding of this study reveals that 74.4% of respondents believe that HPV vaccine is safe and effective which is similar to a study done in Indonesia (75%)(34). On the other hand, it is higher than a study conducted in India (27%)(21). The reason for this difference might be a difference of study participants since the Indian study excludes single parents from the study.

Forty- five percent of respondents believe vaccinating their daughter against HPV will encourage them to start a sexual activity which is higher than a study done in Saudi (20 %)(30), the reason for this variation might be due to the difference of study participants since the Saudi study was done on health professionals and convenience sampling was used.

In the current study, 77% of participants believe that HPV vaccine is effective in preventing cervical cancer which is lower than a study conducted in Brazil (90.7%)(37). The possible reasons might be due to the difference in socio-economic, socio-demographic and the study conducted in Brazil was with small sample size (i.e. 219 participants).

The finding of this study shows that (52.4%) afraid of the mild side effect of HPV vaccination for their daughter which is greatly higher than a study conducted in Serbia (1.3%)(38). The possible cause for this difference might be the study conducted in Serbia was institutionally based and the participants were parents who have regular annual pediatric check-ups. This may give the participants information about HPV vaccine side effects.

The finding of the current study shows that maternal educational level, hearing about HPV vaccine, and attitude of the mothers/guardians have an impact on knowledge of HPV vaccine of participants. Mothers who having a bachelor's degree or higher were about 8 times more likely to have good knowledge about HPV vaccine than mothers who cannot read and write (AOR=7.687; 95 % CI=1.837-32.168; p=0.005) and also mothers who having diploma were about 4 times more likely to have good knowledge about HPV vaccine than mothers who cannot read and write (AOR=3.540; 95%CI=1.165-10.754; P=0.026). which is similar to a study conducted in the united states(42), and Nigeria(8). This might also be justified that those

who have higher educational levels and who heard about HPV vaccine may know about HPV vaccine by reading different sources.

The finding of the current study show hearing about HPV vaccine and knowledge about HPV vaccine was significantly associated with attitude towards HPV vaccine. Mothers not hearing about HPV vaccine before this study were about 82.8 % less likely to have good knowledge about HPV vaccine than mothers who heard about HPV vaccine before this study (AOR=0.172; 95%CI=0.098-0.302; P=0.000) which is similar to a study done in Brazil(37). Mothers having good knowledge about HPV vaccine were about 3 times more likely to have a positive attitude towards HPV vaccine than mothers who have poor knowledge about HPV vaccine (AOR=2.705; 95 % CI=1.454-5.035;0.002), which is similar to a study done in India(41). This justifies that knowing HPV vaccine would bring behavioral change and also hearing about the vaccine triggers the participants to read and know more about the vaccine.

7. Strengths and limitations of the study

Strengths of the study

- To keep the reliability of the study a pilot study was done and cronbach alpha was done.
- Large sample size is used to get a representative result
- Face-to-face interview-administered questionnaires were used to avoid misunderstanding of the questions.

Limitations of the study

- Since this study is used a cross-sectional study design. It does not show a true cause-effect relationship between dependent and independent variables.
- The information collected quantitatively was not triangulated with the qualitative method.

8. Conclusions and recommendations

Conclusions

In this study, knowledge about HPV vaccine was low. Maternal educational level, hearing about HPV vaccine and attitude towards HPV vaccine were factors associated with knowledge towards HPV vaccine. Attitude towards HPV vaccine was high. Knowledge about HPV vaccine and hearing about HPV vaccine were factors associated with attitudes of mothers/ guardians towards HPV vaccine. However, the finding of this study could only be generalized to this cohort of women in the study setting.

Recommendations

An integrated work on behavioral change communication and interferences focusing on improving the knowledge about HPV vaccine; continuous health education at different places like schools, community level and through medias to disseminate information regarding HPV vaccine may be the most effective strategies that should be considered by Debre Markos town health and educational offices including other nongovernmental organizations working on health and health-related issues.

To Debre Markos town health office

- It is better to arrange the educational session on HPV vaccine in collaboration with educational bureau and other NGOs through focusing on improving knowledge about HPV vaccine, and attitude towards HPV vaccine particularly for those mothers who have eligible daughters for HPV vaccine.
- Take the responsibility to facilitate local social media as a means of disseminating information on HPV vaccine to improve the knowledge about HPV vaccine and attitude towards HPV vaccine
- It is better to have community radio stations to mobilize education about HPV vaccine.

To district health office

- A health education program is prepared on HPV vaccine and its advantage to give at local community levels in collaboration with district educational bureau and others.

- Health extension workers and other health professionals are encouraged to teach about HPV vaccine and its benefit at the community level and home to home for mothers/guardians.

To Schools

- Since teachers are a major means of disseminating information about healthy behavior regarding HPV vaccine and its advantage to prevent CC to students; they have to be committed to teach and disseminate information at home, at school level, through medias and at community level using different opportunities to improve the gaps identified.

For Ministry of health

- Arranging airtime on television and radio to give a message for the general public about HPV vaccine and invite health professionals to give information to alleviate misconceptions about the vaccine.
- Leaflets regarding HPV vaccine be developed and distributed in the country.

For scientific community

- Further research be conducted using a mixed study design to explore the other socio-cultural factors that cannot be addressed by a quantitative study
- Further study conduct other than cross-sectional study design to explore the cause-effect relationship.

9. The implication of this study to midwifery practice

- To reduce morbidity and mortality of women from CC; health workers fully immersed in health education and health promotion as providers of information, dispelling myths and beliefs about HPV vaccine.
- To reduce maternal morbidity from CC need to bridge this information gap through a well-designed HPV education program integrated into a national CC prevention and control program.
- If mothers have good knowledge and attitude about HPV vaccine; they allow their daughters to vaccinate that leads to attaining satisfactory vaccination coverage.
- Other researchers take it as a reference and find other factors that linked with knowledge and attitude about HPV vaccine.

10. References

1. Gebremariam T. Human papillomavirus related cervical cancer and anticipated vaccination challenges in Ethiopia. International journal of health sciences. 2016;10(1):137.
2. Netfa F, Tashani M, Booy R, King C, Rashid H, Skinner SR. Knowledge, Attitudes and Perceptions of Immigrant Parents Towards Human Papillomavirus (HPV) Vaccination: A Systematic Review. Tropical Medicine and Infectious Disease. 2020;5(2):58.
3. Jalani FFM, Rani MDM, Isahak I, Aris MSM, Roslan N. Knowledge, attitude and practice of human papillomavirus (hpv) vaccination among secondary school students in rural areas of Negeri Sembilan, Malaysia. International journal of collaborative research on internal medicine & public health. 2016;8(6):56.
4. Fernandes R, Potter BK, Little J. Attitudes of undergraduate university women towards HPV vaccination: a cross-sectional study in Ottawa, Canada. BMC women's health. 2018;18(1):134.
5. Heena H, Durrani S, AlFayyad I, Riaz M, Tabasim R, Parvez G, et al. Knowledge, attitudes, and practices towards cervical cancer and screening amongst female healthcare professionals: A cross-sectional study. Journal of oncology. 2019;2019.
6. Alene T, Atnafu A, Mekonnen ZA, Minyihun A. Acceptance of Human Papillomavirus Vaccination and Associated Factors Among Parents of Daughters in Gondar Town, Northwest Ethiopia. Cancer Management and Research. 2020;12:8519.
7. Bisi-Onyemaechi AI, Chikani UN, Nduagubam O. Reducing incidence of cervical cancer: knowledge and attitudes of caregivers in Nigerian city to human papilloma virus vaccination. Infectious agents and cancer. 2018;13(1):29.
8. Okunade KS, Sunmonu O, Osanyin GE, Oluwole AA. Knowledge and acceptability of human papillomavirus vaccination among women attending the gynaecological outpatient clinics of a university teaching hospital in Lagos, Nigeria. Journal of tropical medicine. 2017;2017.
9. Abbas KM, Van Zandvoort K, Brisson M, Jit M. Effects of updated demography, disability weights, and cervical cancer burden on estimates of human papillomavirus vaccination impact at the global, regional, and national levels: a PRIME modelling study. The Lancet Global Health. 2020.

10. Saqer A, Ghazal S, Barqawi H, Babi JA, AlKhafaji R, Elmekresh MM. Knowledge and awareness about cervical cancer vaccine (HPV) among parents in Sharjah. Asian Pacific journal of cancer prevention: APJCP. 2017;18(5):1237.

11. Chan CK, Aimagambetova G, Ukybassova T, Kongrtay K, Azizan A. Human papillomavirus infection and cervical cancer: epidemiology, screening, and vaccination—review of current perspectives. Journal of oncology. 2019;2019.

12. Ogochukwu T, Akabueze J, Ezeome I, Aniebue U, Oranu E. Vaccination against Human Papilloma Virus in Adolescent Girls: Mother's Knowledge, Attitude, Desire and Practice in Nigeria. J Infect Dis Preve Med. 2017;5(151):2.

13. Btoush R, Brown DR, Tsui J, Toler L, Bucalo J. Knowledge and Attitudes Toward Human Papillomavirus Vaccination Among Latina Mothers of South American and Caribbean Descent in the Eastern US. Health equity. 2019;3(1):219-30.

14. Wollancho W, Amdissa D, Bamboro S, Wasihun Y, Tareke KG, Gizaw AT. Determining behavioral intention and its predictors towards cervical cancer screening among women in Gomma district, Jimma, Ethiopia: Application of the theory of planned behavior. Plos one. 2020;15(11):e0238472.

15. Ruddies F, Gizaw M, Teka B, Thies S, Wienke A, Kaufmann AM, et al. Cervical cancer screening in rural Ethiopia: a cross-sectional knowledge, attitude and practice study. BMC cancer. 2020;20(1):1-10.

16. Kasim J, Kalu A, Kamara B, Alema HB. Cervical Cancer screening service utilization and associated factors among women in the Shabadino District, Southern Ethiopia. Journal of Cancer Epidemiology. 2020;2020.

17. Ayenew AA, Zewdu BF, Nigussie AA. Uptake of cervical cancer screening service and associated factors among age-eligible women in Ethiopia: systematic review and meta-analysis. Infectious Agents and Cancer. 2020;15(1):1-17.

18. Kristina SA, Permitasari NPAL. Knowledge, attitudes and barriers towards human papillomavirus (HPV) vaccination in developing economies countries of South-East Asia Region: A systematic review. Systematic Reviews in Pharmacy. 2019;10(1):81-6.

19. Lack A, Hiligsmann M, Bloem P, Tünneßen M, Hutubessy R. Parent, provider and vaccinee preferences for HPV vaccination: A systematic review of discrete choice experiments. Vaccine. 2020.

20. Grandahl M, Chun Paek S, Grisurapong S, Sherer P, Tyden T, Lundberg P. Parents' knowledge, beliefs, and acceptance of the HPV vaccination in relation to their socio-demographics and religious beliefs: A cross-sectional study in Thailand. PloS one. 2018;13(2):e0193054.

21. Roy S, Dubey A, Saini D, Khanna M, Kamal VK, Yau C, et al. Knowledge, Attitude and Practice regarding HPV Vaccine among Parents and Caregivers of Female Child attending Pediatric OPD: Intervention for Primary Prevention. Ind J Soc Prev Rehab Onc. 2017;1(2):34-40.

22. Kose D, Erkorkmaz U, Cinar N, Altinkaynak S. Mothers' knowledge and attitudes about HPV vaccination to prevent cervical cancers. Asian Pacific Journal of Cancer Prevention. 2014;15(17):7263-6.

23. Rees CP, Brhlikova P, Pollock AM. Will HPV vaccination prevent cervical cancer? Journal of the Royal Society of Medicine. 2020;113(2):64-78.

24. Sopian MM, Shaaban J, Yusoff SSM, Mohamad WMZW. Knowledge, Decision-Making and Acceptance of Human Papilloma Virus Vaccination among Parents of Primary School Students in Kota Bharu, Kelantan, Malaysia. Asian Pacific journal of cancer prevention: APJCP. 2018;19(6):1509.

25. Papillomavirus H. Vaccines. National Cancer Institute. 2016.

26. Organization WH. Guide to introducing HPV vaccine into national immunization programmes. 2016.

27. Bogani G, Maggiore ULR, Signorelli M, Martinelli F, Ditto A, Sabatucci I, et al. The role of human papillomavirus vaccines in cervical cancer: Prevention and treatment. Critical reviews in oncology/hematology. 2018;122:92-7.

28. Stanley M. Human papillomavirus vaccines. The Vaccine Book. 2016:245-63.

29. Endarti D, Satibi SAK, Farida MA, Rahmawanti Y, Andriani T. Knowledge, perception, and acceptance of HPV vaccination and screening for cervical cancer among women in Yogyakarta Province, Indonesia. Asian Pacific journal of cancer prevention: APJCP. 2018;19(4):1105.

30. Almazrou S, Saddik B, Jradi H. Knowledge, attitudes, and practices of Saudi physicians regarding cervical cancer and the human papilloma virus vaccine. Journal of infection and public health. 2019;13(4):584-90.

31. M R, Sadiqunissa S, Ahmed M. Awareness and knowledge of human papilloma virus (HPV) vaccine in prevention of cervical cancer among medical students. International journal of reproduction, contraception, obstetrics and gynecology. 2018;7(12):5026.

32. Gedam JK, Rajput DA. Knowledge, attitudes, and practices among healthcare providers on cervical cancer, human papilloma virus and it's vaccine at ESI PGIMSR, MGM Hospital Parel Mumbai, India. International journal of reproduction, contraception, obstetrics and gynecology. 2017;6(9):3855.

33. Bhuiyan A, Sultana F, Islam JY, Chowdhury MAK, Nahar Q. Knowledge and Acceptance of Human Papillomavirus Vaccine for Cervical Cancer Prevention Among Urban Professional Women in Bangladesh: A Mixed Method Study. BioResearch open access. 2018;7(1):63-72.

34. Kristina S, Lienaningrum AS, Wulandari GP. Beliefs and acceptance of Human papillomavirus (HPV) vaccine among parents in urban community in Yogyakarta. Int J Pharm Res. 2020;12:662-7.

35. Choudhary G, Jodha B, SC PP, Yadav K, Goel K. Knowledge of HPV and attitude towards HPV vaccination among medical students of Jodhpur, Rajasthan. Int J Med Health Res. 2018;4(3):94-7.

36. Abakporo U, Abakporo U, Hussein A, Hussein A, Begun JW, Begun JW, et al. Knowledge, Beliefs and Attitudes of Somali Men in Olmsted County, Minnesota, U.S., on the Human Papillomavirus Vaccine and Cervical Cancer Screening: January 17, 2015. Journal of immigrant and minority health. 2018;20(5):1230-5.

37. Gattegno MV, Vertamatti MA, Bednarczyk RA, Evans DP. A cross-sectional survey of parental attitudes towards Human papillomavirus vaccination exclusion categories in Brazil. BMC international health and human rights. 2019;19(1):6.

38. Marić G, Birčanin Đ, Kisić V, Dotlić J, Zarić M, Kisić-Tepavčević D, et al. Parental perspective on human papillomavirus (HPV) vaccination in Serbia: Knowledge, attitudes and practice. Sexual & reproductive healthcare. 2018;16:192-8.

39. Drokow EK, Zi L, Han Q, Effah CY, Agboyibor C, Sasu E, et al. Awareness of Cervical Cancer and Attitude Toward Human Papillomavirus and Its Vaccine Among Ghanaians. Frontiers in Oncology. 2020;10.

40. Geneti HB, Hailu DA, Muleta G. Assessment of the knowledge, attitude and acceptability towards human papilloma virus and its vaccine among undergraduate female medical students. Gynecol Obstet (Sunnyvale). 2016;6(11):1-9.

41. Degarege A, Krupp K, Srinivas V, Ibrahimou B, Marlow LA, Arun A, et al. Determinants of attitudes and beliefs toward human papillomavirus infection, cervical cancer and human papillomavirus vaccine among parents of adolescent girls in Mysore, India. Journal of Obstetrics and Gynaecology Research. 2018;44(11):2091-100.

42. Mohammed KA, Vivian E, Loux TM, Arnold LD. Peer reviewed: Factors associated with parents' intent to vaccinate adolescents for human papillomavirus: Findings from the 2014 National Immunization Survey–Teen. Preventing Chronic Disease. 2017;14.

43. McBride KR, Singh S. Predictors of Adults' Knowledge and Awareness of HPV, HPV-Associated Cancers, and the HPV Vaccine: Implications for Health Education. Health education & behavior. 2017;45(1):68-76.

44. Cheruvu VK, Bhatta MP, Drinkard LN. Factors associated with parental reasons for "no-intent" to vaccinate female adolescents with human papillomavirus vaccine: National Immunization Survey-Teen 2008–2012. BMC pediatrics. 2017;17(1):52.

45. Kisaakye E, Namakula J, Kihembo C, Kisakye A, Nsubuga P, Babirye JN. Level and factors associated with uptake of human papillomavirus infection vaccine among female adolescents in Lira District, Uganda. The Pan African Medical Journal. 2018;31.

46. Mupandawana ET, Cross R. Attitudes towards human papillomavirus vaccination among African parents in a city in the north of England: a qualitative study. Reproductive health. 2016;13(1):97.

47. Senatla KT. Knowledge, attitudes and behaviour towards Human Papilloma Virus (HPV) and HPV vaccine among parents with adolescent girls 9 to 13 years in Sefhare, Botswana 2017.

48. Aschale TM. Markos town north western ethiopia. Journal of Resources Development and Management. 2017;35.

11. Annexes

Annex i: English Version Information sheet and Consent form

Title of the Research: assess knowledge and attitude towards human papillomavirus vaccine and associated factors among mothers who have eligible daughters in Debre Markos town, Northwest Ethiopia, 2021

Name of Principal Investigator: Melkam Tesfaye

Name of the Organization: Addis Ababa University College of Health Sciences School of Nursing and Midwifery Department of Maternity and Reproductive Health Nursing

Name of the Sponsor: Addis Ababa University College of Health Sciences

Introduction

This information sheet and consent form is prepared with the aim of assessing knowledge and attitude towards human papillomavirus vaccine and associated factors among mothers who have eligible daughters in Debre Markos town, Northwest Ethiopia, 2021

Purpose of the Research Project: This study aims to assess knowledge and attitude towards human papillomavirus vaccine and associated factors among mothers who have eligible daughters in Debre Markos town, Northwest Ethiopia, 2021

Procedure: The study involves mothers of eligible daughters who had fulfilled the inclusion criteria. You are selected to be one of the study participants if you are willing to take part in this study and we kindly invite you to take part in our project.

If you are willing to participate, we are so happy and we need you to clearly understand the aim of this study and show your agreement. Finally, you are kindly requested to give your genuine response in the interview.

Benefits, Risk, and /or Discomfort

By participating in this research project, you may feel some discomfort in wasting your time (a maximum of 30 minutes). However, your participation is definitely important to assess knowledge and attitude towards HPV vaccine. There is no risk or direct benefit in participating in this research project.

Incentives/Payments for Participating

You will not be provided any incentives or payment to take part in this project.

Confidentiality

The information collected from you will be kept confidential and stored in a file, without your name by assigning a code number to it. Hence, no report of the study ever identifies you.

Right to Refusal or Withdraw

You have the full right to refuse from participating in this research. You have also the full right to withdraw from this study at any time you wish.

Person to contact

This research project will be reviewed and approved by the Institutional Review Board (IRB) of Addis Ababa University College of Health Sciences. If you have any question you can contact any time, and you may ask at any time you want.

Name: **Melkam Tesfaye**

Address: Cell phone: +251928581596

Email:tmelkam70@gmail.com

English version questionnaires

A questionnaire prepared to assess knowledge and attitude towards human papillomavirus vaccine and associated factors among mothers who have eligible daughters in Debre Markos town, Northwest Ethiopia, 2021

Dear

Hello, my name is **Melkam Tesfaye** I am studying master's degree in Maternity and Reproductive Health Nursing at Addis Ababa University College of Health Sciences. I am interested in studying knowledge and attitude towards HPV vaccine and associated factors among mothers of eligible daughters in Debre Markos town. This questionnaire is designed for academic purposes which will be approved by Addis Ababa University, College of Health Sciences, School of Nursing and Midwifery, in partial fulfillment of master's degree in Maternity and Reproductive Health Nursing. I hope you will help me by answering these questions. None of your answers will be available to anyone. All the information you give me will be kept private. Anyone who will not be willing to participate in the study will have the right to discontinue at any time in the process. Confidentiality and privacy are maintained by ensuring the respondents answering the questions in a separate place where no one can see them. Therefore, I need your honest and genuine response. The results of the study will hopefully serve as an important input for policy and intervention programs.

I thank you in advance for taking the time to answer my questions.

Would you be willing to participate in the study?

1. Yes 2. No

If yes, proceed to the next page.

If no, please stop here.

Name of Researcher: Melkam Tesfaye

Address: Addis Ababa University College of Health Sciences

Phone No: +251928581596

E-mail: tmelkam70@gmail.com

Name of data collector_____ signature_____

Date of questionnaire interview _____month_____/2013 E. C.

Supervisor's name _____Date_____ signature_____

Time of questionnaire administer began _____ hours: minutes

Time of administered questionnaire finished_____ hours: minutes

Checked on _ _____ date_____month/ 2013 E.C.

1. Complete 2. Partially completed 3. Incomplete

Consent form

I, the undersigned, have been informed that this study is going to be conducted to assess knowledge and attitude towards HPV vaccine and associated factors among mothers who have eligible daughters in Debre Markos town. I am informed that the information I give will be kept confidential, and only used for this study. I am also conscious that I have the right not to respond to any question without my interest. Hence, I agree to participate in the research voluntarily with the hope of contributing to the effort of assessing knowledge and attitude towards HPV vaccine and associated factors among mothers who have eligible daughters.

Signature_____

Date_____

Annex ii: Amharic version information sheet and consent form

የጥናቱ ርዕሰ ጉዳይ፡ በምስራቅ ጎጃም ዞን ደብረ ማርቆስ ከተማ አስተዳደር ዉስጥ የሂዉማን ፓፒሎማ ቫይረስ ክትባት እንዲወስዱ የተፈቀደላቸዉ ሴት ልጆች እናቶችን ስለ ሂዉማን ፓፒሎማ ቫይረስ ክትባት ያላቸዉን እዉቀት፣ ግንዛቤ እና ተያያዥ ሁኔታዎችን ይዳስሳል።

ጥናቱን የሚያካሂደዉ ስም፡ መልካም ተስፋዬ

የተቋሙ ስም፡ አዲስ አበባ ዩኒቨርሲቲ ጤና ሳይንስ ኮሌጅ

የስፖንሰሩ ስም፡ አዲስ አበባ ዩኒቨርሲቲ ጤና ሳይንስ ኮሌጅ

መግቢያ፡ ይህ የመረጃ ዝርዝር እና የስምምነት ቅፅ በምስራቅ ጎጃም ዞን ደብረ ማርቆስ ከተማ አስተዳደር ዉስጥ የሂዉማን ፓፒሎማ ቫይረስ ክትባት እንዲወስዱ የተፈቀደላቸዉ ሴት ልጆች እናቶችን ስለ ሂዉማን ፓፒሎማ ቫይረስ ክትባት ያላቸዉን እዉቀት፣ ግንዛቤ እና ተያያዥ ሁኔታዎችን ይዳስሳል።

የጥናቱ አላማ፡ የዚህ ጥናት ዋና አላማ በምስራቅ ጎጃም ዞን ደብረ ማርቆስ ከተማ አስተዳደር ዉስጥ የሂዉማን ፓፒሎማ ቫይረስ ክትባት እንዲወስዱ የተፈቀደላቸዉ ሴት ልጆች እናቶችን ስለ ሂዉማን ፓፒሎማ ቫይረስ ክትባት ያላቸዉን እዉቀት፣ ግንዛቤ እና ተያያዥ ሁኔታዎችን ይዳስሳል። የዚህ ጥናት ዉጤት በደብረ ማርቆስ ከተማ አስተዳደር ስለ ሂዉማን ፓፒሎማ ቫይረስ ክትባት እዉቀት እና ግንዛቤ በመፍጠር በአካባቢዉ ብሎም በሀገሪቱ ያለዉን የሂዉማን ፓፒሎማ ቫይረስ ክትባት አጠቃቀም ለማሻሻል ያግዛል።

የጥናቱ ሂደት፡ በጥናቱ ዉስጥ ለመሳተፍ የተካተቱትን መመዘኛዎች ያሟሉ ተሳታፊዎችን ያካትታል።በዚህ ጥናት ለመሳተፍ ፍቃደኛ ከሆኑ በታላቅ አክብሮት ተጋብዘዋል። ለመሳተፍ ፍቃደኛ ከሆኑ፤ እኛ በጣም ደስተኞች ነን እናም የዚህን ጥናት አላማ በትክክል መረዳት እና ስምምነትዎን እዲያሳዩ እንፈልጋለን።በመጨረሻም በቃለ መጠይቁ ትክክለኛ ምላሽዎን እንዲሰጡ በአክብሮት እንጠይቃለን።

ጥቅማጥቅም፤ጉዳት እና/ወይም የማይመች ነገር፡ በዚህ ጥናት በመሳተፍዎ ቢበዛ 30 ደቂቃ ሊፍጀበዎት ይችላል ሆኖም ግን የናንተ ተሳትፎ በምስራቅ ጎጃም ዞን ደብረ ማርቆስ ከተማ አስተዳደር ዉስጥ የሂዉማን ፓፒሎማ ቫይረስ ክትባት እንዲወስዱ የተፈቀደላቸዉ ሴት ልጆች እናቶችን ስለ ሂዉማን ፓፒሎማ ቫይረስ ክትባት ያላቸዉን እዉቀት፣ግንዛቤ እና ተያያዥ

ሁኔታዎችን ለመዳሰስ እጅግ በጣም አስፈላጊ ነዉ።በዚህ ጥናት በመሳተፈዎ ምንም አይነት ጉዳት ወይም ቀጥተኛ ጥቅም አይኖረዉም።

ማበረታቻ/ለማበረታታት ክፍያዎች፡ በዚህ ጥናት ለመሳተፍ ማበረታቻ ወይም ክፍያ አይኖረዉም።

ሚስጥራዊነት፡ ከእርሰዎ የተሰበሰበዉ መረጃ በኮምፒተር ዉስጥ ባለ የሚስጥር ቁጥር ስምዎ ሳይኖር በሚስጢር ይቀመጣል።

የመቃወም ወይም የመተዉ መብት፡ በዚህ ጥናት ዉስጥ ያለመሳተፍ ሙሉ መብት አለዎት በተጨማሪም ጥናቱን ሳያጠናቅቁ በፈለጉት ሰዓት የመተዉ መብትዎ የተጠበቀ ነዉ።

ማግኘት የሚችሉት ሰዉ፡ ይህ ጥናት አዲስ አበባ ዩኒቨርሲቲ ጤና ሳይንስ ኮሌጅ በተቋማት ግምገማ ቦርድ እዲፀድቅ ይደረጋል።ማናቸዉም ጥያቄ ሲኖረዎት በማንኛዉም ጊዜ ማነጋገር ይችላሉ በተጨማሪም ማንኛዉንም መረጃ በፈለጉት ጊዜ ማግኘት ይችላሉ።

ስም፡ መልካም ተስፋዬ

ስልክ ቁጥር፡ 09 28 58 15 96

ኢ-ሜል፡ tmelkam70@gmail.com

የአማረኛ ቃለ-መጠይቅ

ይህ ቃለ -መጠይቅ በምስራቅ ጎጃም ዞን ደብረ ማርቆስ ከተማ አስተዳደር ዉስጥ የሂዉማን ፓፒሎማ ቫይረስ ክትባት እንዲወስዱ የተፈቀደላቸዉ ሴት ልጆች እናቶችን ስለ ሂዉማን ፓፒሎማ ቫይረስ ክትባት ያላቸዉን እዉቀት፣ ግንዛቤ እና ተያያዥ ሁኔታዎችን ለመዳሰስ የተዘጋጀ ነ ዉ፡ ፡

ዉድ የጥናቱ ተሳታፊዎች! ጤና ይስጥልኝ ፣ ስሜ **<u>ሜልካም ተስፋዬ</u>** ይባላል ፡ ፡ በአሁኑ ወቅት በአዲስ አበባ ዩኒቨርሲቲ በሚድዋይፍሪ ትምህርት ክፍል የሁለተኛ ዲግሪ ትምህርቴን እየተከታተልኩ እገኛለሁ፡ ፡ የሁለተኛ ዲግሪዬን ለመጨረስ ይረዳኝ ዘንድ በምስ ራቅ ጎጃም ዞን ደብረ ማርቆስ ከተማ አስተዳደር ዉስጥ የሂዉማን ፓፒሎማ ቫይረስ ክትባት እንዲወስዱ የተፈቀደላቸዉ ሴት ልጆች እናቶችን ስለ ሂዉማን ፓፒሎማ ቫይረስ ክትባት ያላቸዉን እ ዉቀት፣ ግንዛቤ እ ና ተያያዥ ሁኔታዎች በሚለዉ ርዕሰ ጉዳይ ላይ ጥናት እያደረኩ እገኛለሁ፡ ፡ ጥናቱ አዲስ አበባ ዩኒቨርሲቲ ጤና ሳይንስ ትምህርት ቤት በነርሲንግ እና ሚድዋይፍሪ ትምህርት ክፍል የጸደቀ ነዉ፡ ፡ ስለሆነም ከላይ የተዘረዘሩት የጥናቱ ዓላማዎች ይሳኩ ዘንድ በእናንተ በኩል በእውነታ ላ ይ የተመሠረተና ትክክለኛ የሆነ መረጃ እንድትሰጡኝ እየጠየኩ በቃለ መጠይቁ ላ ይ የምትመል ሱት መልስ ግላዊ እና ስማችሁን ያላካተተ በመሆኑ በከፍተኛ ሚስጥራዊነት የሚጠበቅ ይሆና ል ፡ ፡ ከዚህም በተጨማሪ በጥናቱ ላይ የምትሳተፉት በፍቃደኝነት ስለሆነ ካልተመቻችሁ ባስፈለጋችሁ ጊዜ ማቆም/ማቋረጥ መብታችሁ ነው፡ ፡ እርስዎ ጥያቄ በመመለስ ብትተባበሩኝ ለጥናቱ መሳካት የራስዎን ጉልህ ድርሻ ተወጡ ማለት ነው፡ ፡ መጠይቁን ለመመለስ ፍቃደኛ ነሽ/ነዎት ?

1. አዎ 2. አ ይደለሁም

አመሠግናለሁ፡ ፡

2. ጥናቱን የምሰራዉ፡ መልካም ተስፋዬ እባላለሁ

ስልክ ቁጥር ፡ 09 28 58 15 96

ኢ-ሜል፡ tmelkam70@gmail.com

ጥናቱን የሚሰበስበዉ ስም_____ ፊር ማ_____

ጥናቱ መሰብሰብ የተጀመረበት ቀን _____ወር _____/2013 ዓ/ም

የተቆጣጣሪዉ ስም_____ቀን _____ ፊር ማ_____

ጥናቱ መሰብሰብ የተጀመረበት ሰዓት _____: ደቂቃ

ጥናቱ ተሰብስቦ ያለቀበት ሰዓት _____: ደቂቃ

የተጣራበት ቀን _____ወር _____2013ዓ/ም

1. የተሟላ 2. በከፊል የተሟላ 3. ያልተሟላ

የ ጥናቱ ተሳታፊዎች ፍቃደኝነት ቅፅ

እኔ የጥናቱ ተሳታፊ የሆንኩኝ እናት በምስራቅ ጎጃም ዞን ደብረ ማርቆስ ከተማ አስተዳደር ዉስጥ የሂዉማን ፓፒሎማ ቫይረስ ክትባት እንዲወስዱ የተፈቀደላቸዉ ሴት ልጆች እናቶችን ስለ ሂዉማን ፓፒሎማ ቫይረስ ክትባት ያላቸዉን እዉቀት፣ ግንዛቤ እና ተያያዥ ሁኔታዎችን ለመዳሰስ የተዘጋጀ መሆኑን አውቄያለሁ፡ ፡ የምሰጠውም ግላዊ መረጃዬ በሚስጥራዊነት እንደሚጠበቅ እና ለዚህ ጥናት አላማ ብቻ እንደሚውል ተነግሮኛል ፡ ፡ ጥናቱ ውስጥ ያለፍላጎት ተሳታፊ ሆኜ መቀጠል እንደሌለብኝ እና መቀጠል ባልፈለግሁ ጊዜ ማቆም እንደምችል ተረድቻለሁ፡ ፡ በአጠቃላይ ከላይ የተዘረዘሩትን መብቶቼን በማወቅና የእኔ በዚህ ጥናት ላይ መሳተፍ ጥቅም አለው ብዬ በማመን በሙሉ ፍቃደኝነት ለመሳተፍ ተስማምቻለሁ፡ ፡

ፊር ማ_____ ቀን _____

Annex iii. English version questionnaires

Part 1: Socio-demographic characteristics			
S.no	Questions	Response	Skip
101	Age (in a year)	----------	
102	Marital status	1. Single 2. married 3. divorced 4. widowed	
103	Educational status	1. can't read and write 2. only read and write 3. primary school 4. secondary school 5. diploma 6. degree and above	
104	Religion	1. orthodox 2. Muslim 3. Protestant 4. Others----------	
105	Maternal occupation	1. Civil servant 2. Self-employed 3. Merchant 4. Farmer 5. Housewife 6. Others ----------	
106	Monthly income of women	……ETB	
107	Paternal occupation	1. Civil servant 2. Self-employed 3. Merchant 4. Farmer 5. Others……..	

108	Paternal educational level	1. can't read and write 2. only read and write 3. primary school 4. secondary school 5. diploma 6. degree and above	
109	paternal monthly income	----------ETB	
110	Number of children in the household	----------	
111	Number of daughters aged 9-14 years	----------	
Part 2: Source of information			
201	Have you ever heard about HPV vaccine before this study?	1. Yes 2. No	
202	Source of information about HPV vaccine?	1. Friend 2. Television 3. internet 4. health care providers 5. brochure 6. slogan 7. Others……..	
Part 3: Knowledge about HPV vaccine			
301	Have you ever heard about cervical cancer?	1. Yes 2. No	
302	Cervical cancer is a disease of genital tract	1. Yes 2. No 3. I do not know	
303	HPV can cause cervical cancer	1. Yes 2. No 3. I don't know	
304	HPV infections are preventable	1. Yes 2. No	

		3. I don't know	
305	HPV is transmitted by sexual contact	1. Yes 2. No 3. I do not know	
306	A vaccine against HPV infection does exist	1. Yes 2. No 3. I don't know	
307	Vaccination against HPV is recommended before onset of sexual activity	1. Yes 2. No 3. I don't know	
308	HPV vaccine recommended to prevent cervical cancer in the future	1. Yes 2. No 3. I don't know	
309	HPV vaccine can be offered to female child aged 9-14 years old	1. Yes 2. No 3. I don't know	
310	HPV vaccine is only for women who have had multiple sexual partners	1. Yes 2. No 3. I don't know	
311	HPV vaccine requires 2 round of vaccination for daughters under 14 years	1. Yes 2. No 3. I don't know	
312	HPV vaccine can cause infertility	1. Yes 2. No 3. I don't know	
313	Do you know HPV vaccine is given in schools?	1. Yes 2. No 3. I don't know	
Part 4: Attitude towards HPV vaccine			
401	Do you think your daughter is susceptible to	1. Yes	

	HPV infection?	2. No	
402	Do you think HPV vaccine is safe and effective?	1. Yes 2. No	
403	Do you think being vaccinated for HPV reduces the risk of having HPV infection?	1. Yes 2. No	
404	Do you think HPV vaccine will not lead to complicated sexual activities?	1. Yes 2. No	
405	Vaccinating your daughter against HPV will not encourage them to start sexual activity	1. Yes 2. No	
406	Do you think HPV vaccine promote risky sexual behaviors among teenagers	1. Yes 2. No	
407	I would like to vaccinate my daughter against HPV if the vaccination is freely available.	1. Yes 2. No	
408	Information on HPV helps me to decide whether my children should be vaccinated against HPV.	1. Yes 2. No	
409	Are you afraid of minor side effect of HPV vaccine(like redness and pain on the injection site) for your daughter	1. Yes 2. No	
410	Do you fear of infertility from HPV vaccine for your daughter in the future	1. Yes 2. No	
411	Do you think HPV vaccine is effective in preventing cervical cancer	1. Yes 2. No	
412	Do you think only those who are promiscuous would benefit from the vaccine	1. Yes 2. No	

Annex IV: Amharic version questionnaires

ክፍል 1. ማህበራዊና ስነ-ህዝባዊ መግለጫዎች			
ተ.ቁ	መጠይቆች	አማራጮች	ወደ ሚቀጥለዉ ይለፉት
101	ዕድሜሽ ስንት ነዉ(በዓመት)	_____በዓመት	
102	የጋብቻ ሁኔታ	1. ያገባች 2. ያላገባች 3. አግብታ የፈታች 4. ባሏ የሞተባት	
103	የትምህርት ደረጃ	1. ማንበበብና መፃፍ አልችልም 2. ማንበብና መፃፍ ብቻ 3. አንደኛ ደረጃ 4. ሁለተኛ ደረጃ 5. ዲፕሎማ 6. ዲግሪና ከዚያ በላይ	
104	እምነት	1. ኦርቶዶክስ ተዋህዶ 2. ሙስሊም 3. ፕሮቴስታንት 4. ሌላ ----------	

105	ስራ	1. የመንግስት ሰራተኛ 2. በራሴ ድርጅት/የግል ስራ 3. ነጋዴ 4. ገበሬ 5. የቤት እመቤት 6. ሌላ----------	
106	የእርስዎ የወር ገቢ ስንት ነዉ?	_____ በቁጥር(በብር)	
107	የትዳር አጋርዎ ስራ ምንድን ነው?	1. የመንግስት ሰራተኛ 2. በራሴ ድርጅት/የግል ስራ 3. ነጋዴ 4. ገበሬ 5. ሌላ----------	
108	የትዳር አጋርዎ ትምህርት ደረጃ?	1. ማንበበብና መፃፍ አይችልም 2. ማንበብና መፃፍ ብቻ 3. አንደኛ ደረጃ 4. ሁለተኛ ደረጃ 5. ዲፕሎማ 6. ዲግሪና ከዚያ በላይ	
109	የትዳር አጋርዎ የወር ገቢ ስንት ነዉ?	_____ በቁጥር(በብር)	
110	በቤት ዉስጥ ያሉ ልጆች ብዛት	_____	
111	ከ9-14 ዓመት ያሉ ሴት ልጆች ብዛት	_____	
ክፍል ሁለት ፡ የመረጃ ምንጭ			

201	ከዚህ ጥናት በፊት ስለ ሂዉማን ፓፒሎማ ቫይረስ ክትባት ሰምተዉ ያዉቃሉ	1. አዎ 2. የለም	
202	ስለ ሂዉማን ፓፒሎማ ቫይረስ መረጃዉን ያገኙት ከምንድን ነዉ	1. ከጓደኛ 2. ከቴሌቪዥን 3. ከኢንተርኔት 4. ከጤና ባለሙያ 5. ከመፅሄት/ጋዜጣ 6. ከመፈክር 7. ሌላ _____	

ክፍል ሶስት ፡ ስለ ሂዉማን ፓፒሎማ ቫይረስ ክትባት እዉቀት

301	ስለ ማህፀን በር ካንሰር ሰምተዉ ያዉቃሉ	1. አዎ 2. የለም	
302	የማህፀን በር ካንሰር የመራቢያ አካል በሽታ ነዉ	1. አዎ 2. አይደለም 3. አላዉቅም	
303	ሂዉማን ፓፒሎማ ቫይረስ የማህፀን በር ካንሰር ያመጣል	1. አዎ 2. አያመጣምም 3. አላዉቅም	
304	ሂዉማን ፓፒሎማ ቫይረስን መከላከል ይቻላል	1. አዎ 2. አይደለም 3. አላዉቅም	

305	ሂዉማን ፓፒሎማ ቫይረስ በግብረ ስጋ ግንኙነት ይተላለፋል	1. አዎ 2. አይደለም 3. አላዉቅም	
306	የሂዉማን ፓፒሎማ ቫይረስ ክትባት አለ	1. አዎ 2. የለም 3. አላዉቅም	
307	የሂዉማን ፓፒሎማ ቫይረስ ክትባት የሚፈቀደዉ ግብረ ስጋ ግንገኙነት ከመጀመራቸዉ በፊት ነዉ	1. አዎ 2. አይደለም 3. አላዉቅም	
308	የሂዉማን ፓፒሎማ ቫይረስ ክትባት የሚሰጠዉ ወደ ፊት በማህፀን በር ካንሰር ከመያዝ ለመከላከል ነዉ	1. አዎ 2. አይደለም 3. አላዉቅም	
309	የሂዉማን ፓፒሎማ ቫይረስ ክትባት የሚሰጠዉ ከ9-14 ዓመት ላሉ ሴት ልጆች ነዉ	1. አዎ 2. አይደለም 3. አላዉቅም	
310	የሂዉማን ፓፒሎማ ቫይረስ ክትባት የሚያስፈልገዉ ከብዙ ወንዶች ጋር የግብረ ስጋ ግንኙነት ለሚፈፅሙ ሴቶች ነዉ	1. አዎ 2. አይደለም 3. አላዉቅም	
311	ከ14 አመት በታች ላሉ ሴት ልጆች የሂዉማን ፓፒሎማ ቫይረስ ክትባት ሁለት ዙር መከተብ ያስፈልጋል	1. አዎ 2. አይደለም 3. አላዉቅም	
312	የሂዉማን ፓፒሎማ ቫይረስ ክትባት መካንነትን ያስከትላል	1. አዎ 2. አይደለም 3. አላዉቅም	

313	የሂዉማን ፓፒሎማ ቫይረስ ክትባት ትምህርት ቤቶች ላይ እንደሚሰጥ ያዉቃሉ	1. አዎ 2. አላዉቅም	
ክፍል 4፡ ስለ ሂዉማን ፓፒሎማ ቫይረስ ክትባት ግንዛቤ			
401	ልጅዎ ለሂዉማን ፓፒሎማ ቫይረስ ተጋላጭ ነች ብለዉ ያስባሉ?	1. አዎ 2. አላዉቅም	
402	የሂዉማን ፓፒሎማ ቫይረስ ክትባት ምቹና ትክክለኛ ነዉ ብለዉ ያስባሉ?	1. አዎ 2. አይደለም	
403	የሂዉማን ፓፒሎማ ቫይረስ ክትባት መከተብ ለሂዉማን ፓፒሎማ ቫይረስ ያለዉን ተጋላጭነት ይቀንሳል?	1. አዎ 2. አይደለም	
404	የሂዉማን ፓፒሎማ ቫይረስ ክትባት አስቸጋሪ የሆነ የግብረ ስጋ ግንኙነት አያስከትልም	1. አዎ 2. አይደለም	
405	ሴት ልጆችን የሂዉማን ፓፒሎማ ቫይረስ ክትባት ማስከተብ የግብረ ስጋ ግንኙነት እንዲጀምሩ አያበረታታም	1. አዎ 2. አይደለም	
406	የሂዉማን ፓፒሎማ ቫይረስ ክትባት በአስራዎቹ እድሜ ክልል ዉስጥ ያሉ ልጆችን ለአደጋ ተጋላጭ የሆነ የግብረ ስጋ ግንኙነት ያስከትላል	1. አዎ 2. አይደለም	
407	የሂዉማን ፓፒሎማ ቫይረስ ክትባት በነፃ የሚገኝ ከሆነ ልጆቼ እንዲከተቡ እፈልጋለሁ	1. አዎ 2. አይደለም	

408	ስለ ሂዉማን ፓፒሎማ ቫይረስ የማገኘዉ መረጃ ልጆቼ ክትባቱን እንዲወስዱ ለመወሰን ይረዳኛል	1. አዎ 2. አይደለም	
409	ለልጅዎ የሂዉማን ፓፒሎማ ቫይረስ ክትባትን አነስተኛ የጎንዮሽ ጉዳት (መድፌ የተወጉበት ቦታ ላይ መቅላት እና ህመም ያሉትን) ይፈራሉ	1. አዎ 2. አይደለም	
410	የሂዉማን ፓፒሎማ ቫይረስ ክትባት በልጅዎ ላይ ወደ ፊት መካንነት ያስከትላል ብለዉ ያስባሉ	1. አዎ 2. አይደለም	
411	የሂዉማን ፓፒሎማ ቫይረስ ክትባት በትክክል የማህፀን በር ካንሰርን ይከላከላል ብለዉ ያስባሉ	1. አዎ 2. አይደለም	
412	ከሂዉማን ፓፒሎማ ቫይረስ ክትባት ጥቅም የሚያገኙት ድንግልናቸዉን ያጡ ብቻ ናቸዉ ብለዉ ያስባሉ	1. አዎ 2. አይደለም	