HAWASSA UNIVERSITY

COLLEGE OF MEDICINE AND HEALTH SCIENCES

SCHOOL OF NURSING

PARENTS' KNOWLEDGE AND WILLINGNESS TO VACCINATE THEIR DAUGHTERS AGAINST HUMAN PAPILLOMAVIRUS AND THEIR ASSOCIATED FACTORS IN ALLE SPECIAL WEREDA, SOUTHERN ETHIOPIA 2023. A MIXED STUDY

BY: SELEMAYE ZENEBE (BSC)

A THESIS SUBMITTED TO HAWASSA UNIVERSITY, COLLEGE OF MEDICINE AND HEALTH SCIENCE, SCHOOL OF NURSING IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN PEDIATRIC AND CHILD HEALTH NURSING

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BY: SELEMAYE ZENEBE (BSC)

ADVISORS: MR. TOMAS YEHEYIS (MSc, ASST. PROFESSOR)

MR. FIKRU TADESSE (MSc, ASST. PROFESSOR)

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Declaration

I hereby declare that this MSc thesis is my original work and has not been presented for a degree in any other university, and all sources of material used for this thesis have been duly acknowledged.

Name: Selemaye Zenebe

Signature: _____

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

Name: _____

Signature: _____

Place and Date of Submission: _____

ADVISORS' APPROVAL SHEET

This is to certify that the thesis entitled "Parents' knowledge and willingness to vaccinate their daughter against human papillomavirus and its associated factors in Alle special Woreda, Southern Ethiopia 2023." submitted in partial fulfillment of the requirements for the degree of Master's with specialization in Pediatrics and Child Health Nursing, the graduate program of the School of Nursing, and will be carried out by Selemaye Zenebe ID. No. GPPeCNR 0010/14, under our supervision.

Therefore we recommend that the student has fulfilled the requirements and hence hereby can submit the thesis.

Mr. Tomas Yeheyis (Asst. prof.) _____ _____

Name of major advisor Signature Date

Mr. Fikru Tadesse (Asst. prof.) _____ _____

Name of co-advisor Signature Date

Date of Submission: _____

EXAMINER'S APPROVAL SHEET

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We, the undersigned, members of the Examiners of the final thesis defense by Selemaye Zenebe have read and evaluated his thesis entitled "Parents' knowledge and willingness to vaccinate their daughter against human papillomavirus and its associated factors in Alle special Wereda, Southern Ethiopia, 2023, and examined the candidate. This is, therefore, to certify that the thesis has been accepted in partial fulfillment of the requirements for the degree.

_____	_____	_____
Name of major advisor	Signature	Date
_____	_____	_____
Name of Examiner-I	Signature	Date
_____	_____	_____
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Final approval and acceptance of the thesis are contingent upon the submission of the final copy of the thesis to the Council of Graduate Studies (CGS) through the graduate committee (DGC) of the candidate's department.

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Abbreviation and Acronyms

AOR……Adjusted odd ratio

CDC……Communicable disease control

CI……Confidence Interval

COR……Crude odd ratio

CxCa……...Cervical Cancer

FRP……Financial Risk Protection

G.C…….Gregorian calendar

GAVI……..Global Alliance for Vaccine and Immunization

HHs…….Households

HPV……Human papilloma virus

KMs……Kilometers

LMICs……Low and Middle-Income Countries

OR……..Odds Ratio

SNNPR……..South nation nationalities and peoples region

SSA……Sub-Saharan Africa

STDs……..Sexually transmitted disease

STI…….Sexually transmitted infections

TV…….Television

VIF……Variance inflation factor

WHO……World Health Organization

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Abstract

Introduction: Cervical cancer is the most deadly cancer worldwide. Although human papillomavirus vaccination is the primary prevention mechanism there was low awareness, uptake, and willingness among parents primarily in developing nations. Therefore assessing parents' knowledge and willingness is necessary.

Objective: This study aims to assess knowledge, willingness, and associated factors of the human papillomavirus vaccination parents of daughters aged 9-14 years, in Alle special Wereda, Southern Ethiopia, 2023.

Materials and methods: A community-based cross-sectional study triangulated with the qualitative inquiry was employed among 418 parents in Alle Special Wereda, southern Ethiopia from April to May 2023. The data collected by interview were entered into Epi data 4.6 and exported to SPSS version 25 for analysis. Logistic regression analysis was employed to identify factors associated with human papillomavirus vaccine knowledge and willingness and the statistical significance of the association was asserted at a P-value of < 0.05. Manual thematic analysis was used to analyze qualitative findings.

Result: Of the total participants in the study, 29.7% and 40.2% have good knowledge about and willingness for the human papillomavirus vaccination respectively. Educational status (AOR=0.755, 95%CI (0.150-0.3805), heard human papillomavirus vaccine (AOR=0.254, 95%CI (0.065-0.985), fear of sexually transmitted infections (AOR=0.194, 95%CI (0.049-0.774), and attitude (AOR=0.071, 95%CI (0.0150-0.338) were significantly associated with knowledge. knowledge (AOR=0.112, 95%CI (0.035-0.362), attitude (AOR=0.260, 95%CI (0.068-0.987), and readiness (AOR=0.169, 95%CI (0.056-0.509) were significantly associated with willingness of human papillomavirus vaccine. In addition, lack of trust, poor perception, fear of unknown side effects, and misunderstanding were identified as major factors by qualitative findings.

Conclusion: Parents' knowledge and willingness to receive human papillomavirus vaccination was low. Knowledge was significantly associated with educational status, hearing human papillomavirus vaccine, fear of sexual infections, and attitude. Knowledge, attitude, and readiness were strongly associated with vaccination willingness. Therefore, to increase human papillomavirus vaccination, awareness, health education, and additional research are required.
Keywords: Alle Special Woreda, Human papillomavirus vaccine, Knowledge, Willingness

1. Introduction

1.1. Background

Human papillomavirus (HPV) is the most common cause of sexually transmitted illnesses and the most common viral infection of the reproductive system worldwide. (Burd, 2003, Okunade, 2020) It belongs to the Papovaviridae family of closely related viruses, each of which is classified as a type based on the sequencing of its nucleic acids and then given a number according to the order in which it was discovered. (Okunade, 2020) There are more than 200 varieties of HPV that have been identified, of which 30 are known to be sexually transmitted and to mostly affect the cervix, vagina, vulva, penis, and anus. (Burd, 2003)

Cervical cancer (CxCa), the most fatal and often diagnosed malignancy in women, is by far the most common HPV-related disease. (Sung et al., 2021) Chronic HPV infection is responsible for nearly all occurrences of CxCa.(mondiale de la Santé and hebdomadaire, 2022) It is the fourth most prevalent cancer in women worldwide, accounting for an estimated 604,000 new cases and 342,000 deaths worldwide in 2020. (Sung et al., 2021) Among these greater than 85% of cervical cancer cases were happening in less developed nations, which significantly burden the global health system. (Bray et al., 2018, mondiale de la Santé and hebdomadaire, 2022)

Based on their correlation with cervical cancer and its precursor lesions, the fifteen different types of HPV that have been associated with cervical cancer are categorized as high-risk (oncogenic) or low-risk (non-oncogenic). (Burd, 2003) While types 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 68, 73, and 82 are high-risk or oncogenic HPVs, types 6, 11, 42, 43, and 44 are low-risk or non-oncogenic HPVs.(Okunade, 2020, Burd, 2003, Walboomers et al., 1999)

The prevalence of HPV infection is higher in women from under-25-year-old populations and less developed countries (15–45%). While Northern America (4.7%) and Western Asia (1.7%) had the lowest HPV prevalence, Sub-Saharan Africa (24%), Eastern Europe (21.4%), and Latin America (16.1%) had the highest rates. Invasive cervical cancer cases caused by HPV16 and HPV18, which account for about 70% of all cases worldwide, are currently known and demonstrated to be the most dangerous high-risk genotypes. (Chan et al., 2019, Teka et al., 2021, de Sanjosé et al., 2018)

The human papillomavirus (HPV) vaccine is used to prevent some cancers primarily the fatal cervical cancer. (Ukumo et al., 2022) The first secure and reliable HPV vaccinations, the quadrivalent Gardasil/Silgard vaccine targeting HPV-6, 11, 16, and 18, and the bivalent Cervarix vaccine targeting HPV-16 and 18, were developed in 2006. (mondiale de la Santé and hebdomadaire, 2022) High HPV vaccination rates have been associated with a 73-85% decline in HPV prevalence and a 41-57% decline in high-grade cervical lesions. (Dereje et al., 2021a)

The main method for lowering the frequency and effects of cervical cancer in low-resource settings, such as Ethiopia, where there is a dearth of screening and diagnostic tools as well as medical facilities, is vaccination. As a result, Ethiopia adopted HPV vaccination for teenage girls aged nine to fourteen in 2018. (Organization., 2021)

For the acceptance and uptake of the HPV vaccine parents are the decision maker for their daughters. So, parents of adolescent girls' level of knowledge and willingness are crucial to overcoming community challenges and deciding on the vaccination for their daughters. (Gebremariam, 2016)

Therefore this study assessed the knowledge and willingness for the HPV vaccination among parents of eligible daughters which may help in the uptake of the vaccination among adolescent girls.

1.2. Statement of the problem

Cervical cancer (CxCa) is the fourth most frequently diagnosed and leading cause of cancer deaths for women globally. (Sung et al., 2021) It ranks second in incidence and mortality behind breast cancer in developing countries with more than 80% of the cervical cancer cases in the world being among them. (Sung et al., 2021, Bray et al., 2018) It is estimated that over a million women currently have cervical cancer, and up to 70% of the cases are caused by Human papillomavirus (HPV) type 16 and 18. (Mihretie et al., 2022b)

The majority of cervical cancer cases in 2020 (88%) occurred in low and middle-income countries(LMICs), where they account for 17% of all cancers in women. (mondiale de la Santé and hebdomadaire, 2022) The incidence and mortality in Sub-Saharan Africa (SSA) are among the highest in the world and account for over 70% of the worldwide cervical cancer burden with 70,000 new cases annually. (Alene et al., 2020a, Sung et al., 2021, Prudden et al., 2022) This was due to low health service utilization for cervical cancer screening and treatment and HPV coverage among LMICs.(Sung et al., 2021)

Ethiopia, one of the SSA countries and LMICs, has a high prevalence of CxCa. (Alene et al., 2020a). According to current estimates, 6294 women are diagnosed with cervical cancer each year, and more than three-fourths of them succumb to the disease, making it the second leading cause of cancer death. (Destaw et al., 2021) Cervical screening in the country is also very low which is below 2% due to different reasons. (Mihretie et al., 2022b)

HPV is a major risk factor leading to the development of cervical cancer, which is the most common illness, acquired from sexual encounters, typically during adolescence, and is brought on by chronic infection with one or more high-risk strains of HPV.(Alene et al., 2020a, Larebo et al., 2022) It is found in 99.7% of cervical cancer cases. (Walboomers et al., 1999)

Cervical cancer is a preventable disease. (Okunade, 2020) As a result, the World Health Organization (WHO) responded by announcing a strategy in 2020 to accelerate the elimination of cervical cancer among women globally by providing preventive HPV vaccines before the age of 15, screening women using a high-performance test, and early treatment of women with cervical lesions. (Prudden et al., 2022)

The introduction of the cervical cytology screening program (HPV screening) reduces cervical cancer rates in wealthy nations. However, the prevalence of the disease is rising in underdeveloped nations where cervical cancer screening is not generally accessible. (Arbyn et al., 2020, Paz-Zulueta et al., 2018)

Due to low effective CxCa screening utilization in developing countries like Ethiopia primary prevention(HPV vaccine) is a better option than secondary prevention(HPV screening) to decrease the prevalence and burden of CxCa.(Mihretie et al., 2022b) Increased HPV vaccination coverage can improve the distribution of both health and financial outcomes in populations, as well as reduce HPV-related hospitalizations and impoverishment, and bring significant cost savings and financial risk protection (FRP) benefits to affected poor women and their households, particularly in low-income developing countries. (Campos et al., 2017, Portnoy et al., 2021)

There are currently two commonly used vaccines (bivalent and quadrivalent) that offer protection against both HPV 16 and 18. (mondiale de la Santé and hebdomadaire, 2022) Additionally, the quadrivalent vaccine offers defense against HPV types 6 and 11, which are the causes of anogenital warts. Both vaccines are best recommended to be provided for girls aged 9–14 years before engaging in their first sexual activity because they are more effective if administered before HPV exposure. (Okunade, 2020, hebdomadaire, 2014, mondiale de la Santé and hebdomadaire, 2022)

The HPV vaccine was administered to 39.7% of the world's population, (68%),(28%) and (2.7%) in high-income, middle-income, and lower-middle-income countries respectively. (Bruni et al., 2016) In Africa there was low HPV vaccine coverage, but, only about 23.4% of cervical cancer-related research has addressed primary prevention. (Finocchario-Kessler et al., 2016).

Bivalent and Quadrivalent vaccines are currently being used in Ethiopia to immunize females against HPV.(Destaw et al., 2021) Girls aged 9-14 years were planned to be targeted before the onset of sexual activities. (Organization., 2021) However, due to a global HPV vaccine shortage, the country is implementing the vaccine in a school-based approach with the support of the Global Alliance for Vaccine and Immunization (GAVI) since December 2018 in a single cohort of 14 years old girls and hopes to expand to additional age cohorts based on the global availability of the vaccine.(Organization., 2021, Wigle et al., 2013, Destaw et al., 2021)

The uptake of the HPV vaccine is very low in our country due to different reasons that need further investigation and intervention. (Gebremariam, 2016) However, the target group for the vaccine was adolescent girls who needed parental consent to take the vaccine. So, parents' knowledge, and willingness are necessary but it is not adequately assessed in most developing countries including our country. (Dereje et al., 2021b) Additionally, most of the studies in our nation were quantitative studies done on urban populations and there was no study done exclusively on the rural population. (Destaw et al., 2021)

In the study area, although so many attempts have been made, there is no hospital for HPV screening and primary prevention is crucial for such environments. Studies on the HPV vaccine were also not done in the area. School-based HPV vaccination implementation was started in 2021 but still, there was very low uptake which needs holistic investigation to understand the basic challenges. So this study was intended to assess the knowledge and willingness of the parents and explore parental and community perceptions about the HPV vaccination in the rural population of Alle.

1.3. Significance of the Study

It will be useful for health organizations and other concerned bodies to plan an evidence-based program regarding the HPV vaccine. Also, it will contribute to the district and national baseline study as well as provide additional inputs for organizations that will work on the HPV vaccination programs.

In addition to the above, it will help as a baseline and opportunity for further community-based interventions that improve and raise parents' awareness about the HPV vaccine to have good information and attitudes about the HPV vaccine which leads them to allow their daughters to be vaccinated. As a result, it leads to reducing the lifetime risk of cervical cancer among adolescents who will be vaccinated based on the mushers taken after this study to reduce health burdens on the country.

The findings will help to determine the specific areas such as knowledge, willingness and perception related issues that challenge the HPV vaccine implementation program and that should be addressed to prevent cervical cancer. Finally, it will be useful for researchers as a reference for further studies.

2. Literature review

2.1. General Overview

Cervical cancer is one of the leading causes of cancer mortality and morbidity among women worldwide. (Sung et al., 2021) It recently became the second leading cause of death among women. Human papillomavirus is the necessary and prevalent cause of cancer and HPV vaccination can protect around 75% of cervical cancer. (Francis et al., 2010, Hutubessy et al., 2012)

In low-resource countries, primary prevention is considered the best option for the decrement of the cervical cancer burden in case there is low utilization of cancer screening and treatment. (Organization., 2021) Worldwide lack of awareness is one of the obstacles to the implementation of HPV vaccination among adolescent girls before the onset of sexual intercourse. (Beyen et al., 2022)

Each year, it results in 604,000 new cases and 342,000 deaths in adult women, with 88% of those instances taking place in low-income nations with limited access to pre-cancer screening and treatment. (Sung et al., 2021)

There are almost 27 million women in Ethiopia who are at risk of getting cervical cancer, and they range in age from 15 to older. On a national level, the Ministry of Health, Maternal, Newborn and Child Health (MNCH) directorate is in charge of providing the majority of the population with health services, including services related to reproductive and maternal health, including the prevention and treatment of cervical cancer. (Beyen et al., 2022)

A study was done on Human papillomavirus-related cervical cancer and anticipated vaccination challenges in Ethiopia; vaccine implementation for vulnerable girls and women faces multiple barriers that include high vaccine costs, inadequate delivery infrastructure, and lack of community engagement to generate awareness about the cervical cancer and early screening tools. (Gebremariam, 2016)

2.2. Knowledge about the HPV vaccine

The knowledge of the parents of age-eligible daughters about the HPV vaccine is crucial to implement the vaccination among the age-eligible daughters but the knowledge level about the HPV is low among parents across the Globe, especially among developing countries.

A community-based cross-sectional study done on female Parents in Thailand shows that Knowledge regarding the HPV vaccine among parents was quite low. Only half of the parents knew about the link between HPV and cervical cancer while one-third knew that the vaccine should be administered to children before they become sexually active. (Kruiroongroj and Thavorncharoensap, 2014)

In a national study done in China, only 17.1% of students reported having heard of HPV vaccines which shows that the knowledge is even low among female adolescents. (Zhang et al., 2021)

A systemic review done in Sub Sharan Africa reveals there is a low level of knowledge and awareness of cervical cancer, HPV, or HPV vaccine among the countries. (Perlman et al., 2014)

A descriptive cross-sectional study done on parental willingness to vaccinate adolescent daughters against human papillomavirus for cervical cancer prevention in Western Nigeria found that only 4% had their daughters vaccinated and the poor vaccine uptake was mostly due to lack of awareness of vaccination centers and the high cost of the vaccine. (Akinleye et al., 2020a)

In our country, there is little research done on the topic and among them, a study conducted in Debre Markos to assess knowledge and attitude towards the HPV vaccine and associated factors among mothers who have eligible daughters indicated that less than half of the respondents (47.6%) had good knowledge about the HPV vaccine. (Sinshaw et al., 2022)

A community-based cross-sectional study done in DebreTabor town among the parents of the daughters found that around sixty-five percent (64.6%) of participants had poor knowledge about HPV vaccination. (Mihretie et al., 2022b)

In another community-based cross-sectional study done in Addis Ababa Out of the study participants, 41.7% and 72.0% had poor knowledge of cervical cancer and HPV, respectively and 27.0% of the participants (more than a quarter) had never heard of the HPV vaccine.(Dereje et al., 2021b)

2.3 Parents' Willingness for their daughter's HPV vaccination

Family willingness or acceptance for the vaccination of their daughter is crucial for the implementation of the HPV vaccine. Globally there the different studies done about the willingness of parents and legal guardians toward HPV vaccinations.

According to a community-based cross-sectional survey, 79.9% of parents of adolescent girls in a rural area of Mysore, India, were willing to vaccinate their daughter with the HPV vaccination soon if they were invited to do so. (Adams et al., 2007)

In a cross-sectional study done on knowledge, acceptance, and willingness to pay for human papillomavirus (HPV) vaccination among female parents in Thailand vaccine acceptance was high at 76.9% for the bivalent and 74.4% for the quadrivalent vaccine. (Kruiroongroj and Thavorncharoensap, 2014)

The systemic review among the thirteen countries excluding Ethiopia of Sub-Saharan Africa revealed high willingness and acceptability of the HPV vaccine but low levels of knowledge and awareness of cervical cancer, HPV, or HPV vaccine. (Perlman et al., 2014)

Another study done on parental willingness to vaccinate their daughters against human papillomavirus for cervical cancer prevention in Western Nigeria found that only 4% had their daughters vaccinated though 79.2% were willing to vaccinate their daughters. (Akinleye et al., 2020a)

In Ethiopia, a few pieces of research were done on the willingness of parents. Among this, a community-based cross-sectional study done among female adolescent girl parents in Debre Tabor town found that 44.8% of participants were willing to get the HPV vaccine when it was available. (Mihretie et al., 2022b)

Another community-based cross-sectional study done in Addis Ababa found that 94.3% of the study participants were willing to vaccinate their daughters for HPV and it showed that there is high acceptability of the vaccination among the parents. (Dereje et al., 2021b)

2.4. Factors associated with knowledge and willingness for HPV vaccination

2.4.1. Factors associated with knowledge of HPV vaccination

A study done among Iranian mothers showed that maternal financial independence related to mothers' jobs, and parents' education related to the increment of knowledge. (Azh et al., 2021) Another similar cross-sectional study done on Chinese-American Parents' HPV Vaccination for Children indicated that knowledge of HPV and the HPV vaccine was very low, yet had a somewhat high level of desire to immunize their children against HPV. (Zhu et al., 2019)

A study was done among adults in the USA on predictors of knowledge and awareness of HPV, related cancers, and the HPV vaccine for the implication of health education assessed the factors associated with the three distinguished knowledge. It revealed that cervical cancer knowledge is predicted by age and income, knowledge of "other" HPV-associated cancers by relationship status and having less than eighteen years child in the household, and HPV knowledge which appear to be socially patterned. (McBride and Singh, 2017)

Another American study found that race/ethnicity, educational level, income, occupation, place of birth, place of parents' birth, use of the English language, health insurance coverage, type of health insurance, and having a primary care provider for the child were all significantly related to awareness and knowledge of the HPV vaccine. When a child in the home received the HPV vaccine, caregivers' awareness and knowledge about the HPV vaccine were correlated with it. (Kepka et al., 2021)

A community-based cross-sectional study conducted among parents in a Debre Tabor town of Northern Ethiopia showed that being government employees (AOR=5.46, 95% CI=2.42, 9.34), and having a family history of sexually transmitted diseases (STD) (AOR=1.76, 95% CI=1.14, 2.72) were significantly associated with knowledge of the human papillomavirus (HPV) vaccine. (Mihretie et al., 2022b)

A community-based cross-sectional study done on Knowledge and Attitude towards Human Papillomavirus Vaccine and Associated Factors among Mothers of daughters in Debre Markos Town, Northwest Ethiopia revealed that Maternal educational level, attitude towards HPV, and vaccine information about the HPV vaccine, were significantly associated predictors with knowledge towards HPV vaccine.(Sinshaw et al., 2022)

2.4.2. Factors associated with willingness for HPV vaccination

A study done among Iranian mothers showed that knowledge, positive attitude, the mother's job, and parents' education and economic status correlated with vaccination intention. (Azh et al., 2021) Another cross-sectional study done on Chinese parents' HPV vaccination intention for children indicated that knowledge, whether or not to involve children, doctor influence, and time living in the United States were significantly and independently related to parental intention to have their children vaccinated against HPV. (Zhu et al., 2019)

A cross-sectional study conducted among parents of Poland investigated that, being employed (OR 2.09; 95% CI: 1.10–3.86), having positive attitudes toward vaccines (OR 3.02; 95% CI: 1.34–6.49), previous information about HPV (OR 2.02; 95% CI: 1.17–3.51), and concerns about the side effects of the HPV vaccine (OR 0.60; 95% CI: 0.35–0.99) were independent predictors of parents' willingness to vaccinate. (Ganczak et al., 2018)

A descriptive cross-sectional study conducted among parents with children aged 9–14 years attending a leading referral hospital in Kenya revealed that positive beliefs and knowledge of the vaccine were positively associated with parental willingness to vaccinate their children. Mothers' desire to vaccinate was inversely associated with low levels of parenteral education and younger age. (Kolek et al., 2022)

In Ethiopia, a community-based cross-sectional study conducted in Gondar town showed that the acceptance to vaccinate daughters for HPV vaccination was affected by being from the richest household [AOR= 3.44, 95% CI = (1.97, 6.01)], good knowledge about cervical cancer [AOR=5.49, 95% CI= (2.62, 11.52)], and positive attitude towards HPV vaccination [AOR=21.53, 95% CI= (11.60, 39.96)] (Alene et al., 2020a)

A community-based cross-sectional study conducted among parents in Debre Tabor, Northern Ethiopia showed that participants' age (AOR=1.43, 95% CI=1.16, 2.87), secondary education, and above (AOR=1.70, 95% CI=1.05, 2.74), fear of HPV infection (AOR=2.29, 95% CI=1.21, 4.32), and having good knowledge of the HPV vaccine (AOR=3.30, 95% CI=2.21, 4.93) were significantly associated with willingness to receive the HPV vaccine. (Mihretie et al., 2022b)

Another study done in South West Ethiopia showed that primary education and above, having good knowledge and a positive attitude were factors associated with parental willingness to

vaccinate their daughters. It found that those parents with primary and above education were more likely to HPV vaccination than those parents with no education AOR: 2.9, 95% 95% CI (1.79, 4.95), Parents who were knowledgeable about HPV and HPV vaccinations were more likely than their counterparts to vaccinate their children against HPV (AOR: 2.1, 95% CI) (1.15, 4.10) Furthermore when compared to their peers, parents who had a positive attitude toward HPV and HPV vaccination were more likely to be ready to vaccinate their kids against HPV (AOR: 2, 95% CI) (1.30, 3.41). (Destaw et al., 2021)

In Hadiya, Ethiopia, a cross-sectional study indicated that there was a high degree of parental acceptability and that their views about and understanding of the HPV vaccine are important factors in determining their intentions to vaccinate their daughters. (Larebo et al., 2022)

2.5. Conceptual framework

The issue of HPV vaccination is crucial for the communities that are found especially in low-resource settings like Ethiopia. But its coverage depends on different factors including the knowledge and willingness of the parents and their awareness towards the vaccine. Pieces of the literature suggest that different factors like sociodemographic factors, information-related factors, reproductive health-related factors, attitudes towards the vaccine, and the like among the parents strongly determine the willingness of the parents to vaccinate their children. Based on this conceptual framework is developed by the principal investigator based on the review of existing literature.

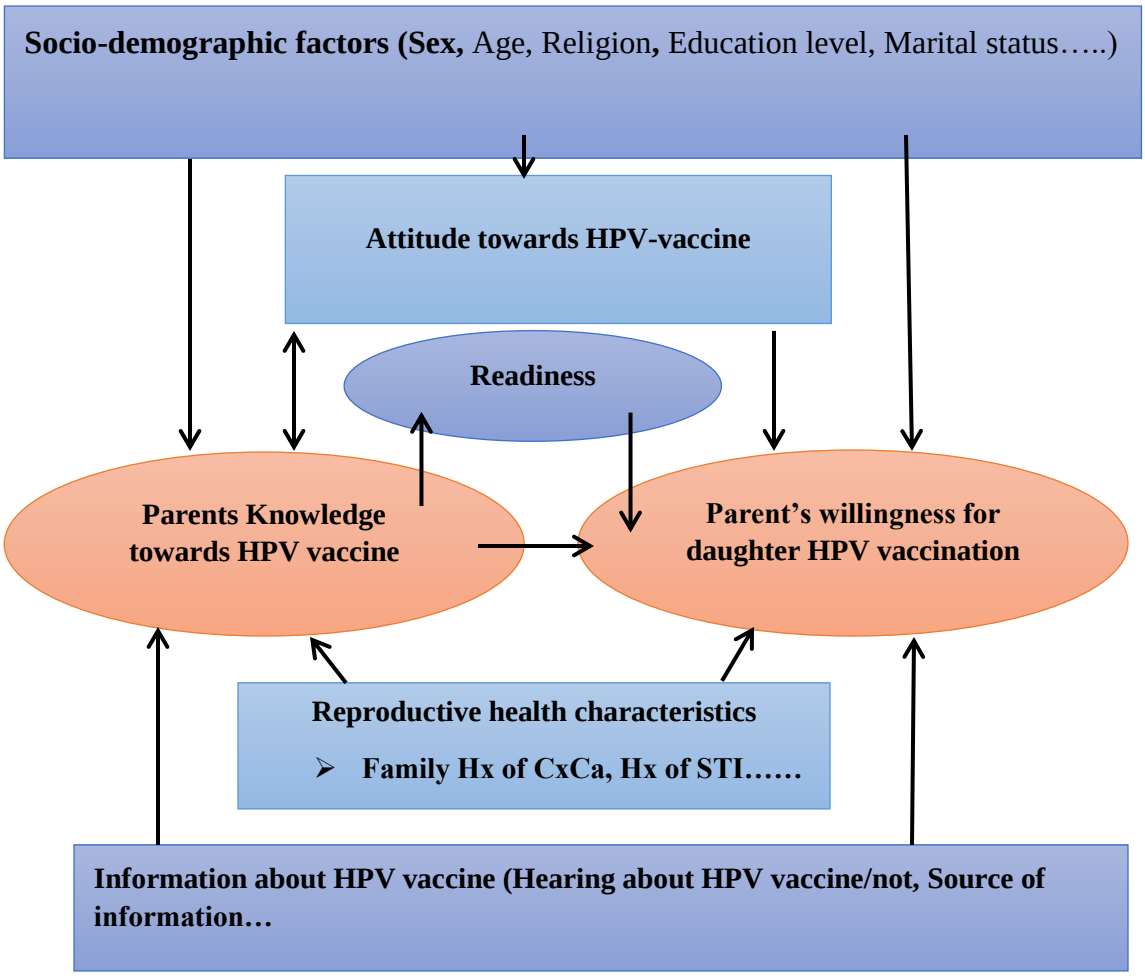

Figure 1. A conceptual framework for assessment of knowledge and willingness towards HPV vaccine among parents in Alle special woreda, Southern Ethiopia, 2023. ((Rabiu et al., 2020, Destaw et al., 2021, Larebo et al., 2022, Dereje et al., 2021b, Mihretie et al., 2022b, Birhanu, 2022)

3. Objective

3.1 General objective

To assess parents' knowledge and willingness to vaccinate their daughters aged 9-14 years against human papillomavirus and its associated factors in Alle Special Wereda, Southern Ethiopia 2023.

3.2 Specific objective

To determine parents' level of knowledge on HPV vaccination in Alle Special Wereda, southern Ethiopia 2023.

To determine parents' willingness for daughter's HPV vaccination in Alle Special Wereda, southern Ethiopia 2023.

To identify factors associated with parents' knowledge of HPV vaccination in Alle Special Wereda, southern Ethiopia 2023.

To identify factors associated with parents' willingness to vaccinate their daughters against HPV in Alle Special Wereda, southern Ethiopia 2023.

To explore the parental perception about HPV vaccines in Alle Special Wereda, southern Ethiopia 2023.

4. Materials and Methods

4.1. Study Setting

This study was conducted in Alle Special Woreda which is one of the administrative units in the Southern Ethiopian Region. The capital city of the special Woreda is Kolango. It is 650 km from Addis Ababa & 394 Km southwest of Hawassa. Alle Special Woreda is home to more than one culturally diversified ethnic group. The Climatic condition of Woreda is 59% hot & 29% semi-hot; the rest is 12 % Cold. The special wereda is found in the southwest of the Gamo Zone, North of the Konso Zone, and Southwest of Derashe Special Woreda. It was composed of 17 rural kebeles. In the woreda, there are 4 Health centers and 18 Health Posts. Regarding the Religion and Ethnicity of dwellers, most of them are Christian and Alle respectively.

The population of the special woreda is estimated to be 92,298 living in a total of 18880 households from the census done by Special Woreda Finance and Economic Development in the year 2023. The special woreda covers an area of 86,120 hectares.

4.2. Study design and period

A community–based cross-sectional study supplemented by a qualitative study was conducted from April 2023 to May 2023.

4.3. Source and Study Population

4.3.1. Source Population

All parents who have a daughter aged 9-14 in the special wereda.

4.3.2. Study population

All randomly selected of parents who have a daughter aged 9-14 in randomly selected kebeles in the special woreda.

4.3.3. Study unit

Parents

4.3.4. Sampling unit

Parent

4.4 Eligibility criteria

4.4.1. Inclusion Criteria

All parents with a child girl aged 9-14 years in the special wereda were included in the study.

4.4.2. Exclusion Criteria

Parents who are critically ill, unable to communicate, and resides below six months in the area.

4.5. Sample Size Determination

4.5.1. For the quantitative study

The sample size was determined using a single population proportion formula with knowledge estimates of P1= 35.4% and parents willingness P2= 44.8% with a margin of error of 0.05% at the 95% confidence level. (Mihretie et al., 2022a)

Based on this assumption, the actual sample size for the study was computed using the single population proportion formula as indicated below.

$n = \frac{(z\alpha/2)^2 * p1\ (1-p1)}{d^2} = \frac{(1.96)^2 * 0.354(1-0.354)}{(0.05)^2}$ ~= 351 participants + 10%NR = 386 HHs

$n = \frac{(z\alpha/2)^2 * p2\ (1-p2)}{d^2} = \frac{(1.96)^2 * 0.448(1-0.448)}{(0.05)^2}$ =380 HHs therefore this was taken

By considering 10% of non-responders final sample size was 418 households.

For the second objectives

Associated factor	CI	Power	Percent of outcome among exposed	Percent of outcome among unexposed	The ratio of exposed to unexposed	OR	N	10% of the non-response rate	Final sample size	References
Government employees	95	80	74	33.7	1	5.46	56	6	62	(Mihretie et al., 2022b)
Educational status	95	80	87	69	1	2.9	196	20	216	(Destaw et al., 2021)
Knowledge of cervical	95	80	56	27.6	1	3.3	108	11	119	(Mihretie et al., 2022b)

cancer and HPV vaccine										
Fear of HPV infection	95	80	48	29	1	2.3	220	22	242	(Mihretie et al., 2022b)

Table 1. The sample size calculation of the second objective for a study done on knowledge and willingness and associated factors among parents in Alle special Wereda 2023.

The sample size of the first objective is greater than the second objective so the sample size was 418 parents.

4.5.2. For the qualitative study

It was based on information saturation during the FGDs. For in-depth interviews, 15 mothers who didn't participate in quantitative data interviews were purposely selected and interviewed in-depth. In addition to this, five FGDs among 43 parents were held considering homogeneity composition.

4.6. Sampling and Sampling Procedure

4.6.1. For the quantitative study

In the special wereda, there are 17 kebeles and from this representative sample, five kebeles (Goroze, Gawada, Turuba, Kolango, and Adiss Olitima) were selected randomly by lottery method. The calculated samples were distributed to each of the selected kebeles under the proportional sample size allocation (PPS) method. Finally, the 418 households with eligible daughters were chosen using a systematic random sampling technique with a K-value of 4 based on the frame of eligible households taken from health extensions, and parents or caregivers were interviewed at their homes. Male caregivers were interviewed in case when a female caregiver was unavailable. If parents have more than one female between the ages of 9 and 14, one was chosen at random as the index female for interview questions.

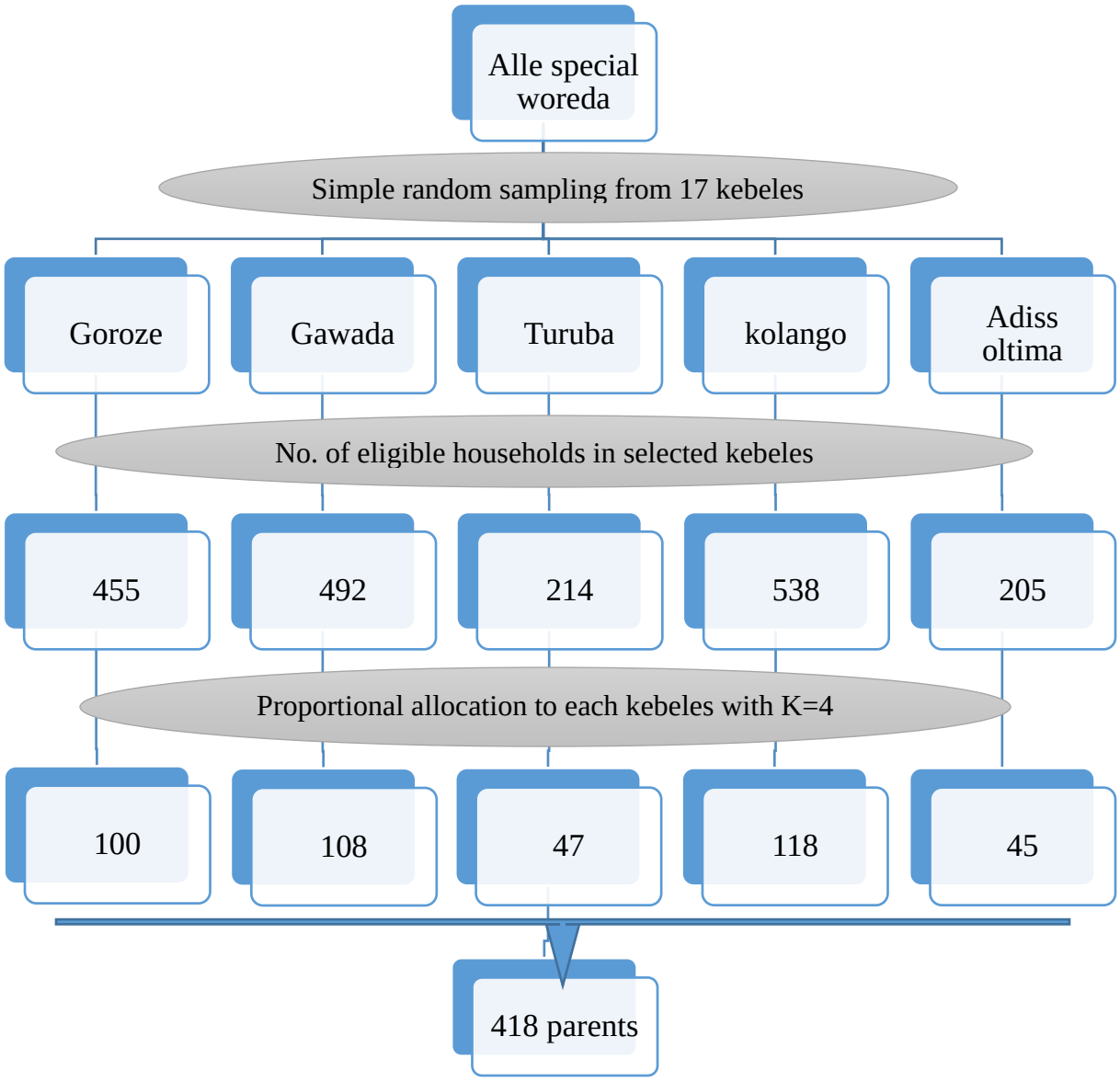

Figure 2. Schematic presentation of the sampling procedure to recruit parents for quantitative data based on eligible daughters in selected kebeles in Alle special Woreda, 2023.

4.6.2. For the qualitative study

A purposive sampling which includes 15 parents (three from each kebele) was employed. Five FGDs were held. The participants were purposely sampled taking care of group composition considering heterogeneity and homogeneity issues. Focus group discussions were held with

purposely selected community members. Each FGD was comprised of 8 to 12 target individuals with a total of 43 parents. The average duration of each FGD was 55 minutes.

4.7. Study Variables

4.7.1. Dependent Variable

Knowledge of the HPV vaccine

Willingness for HPV vaccination

4.7.2. Independent Variables

Socio-demographic factors (Age, religion, marital status, level of education, job...),

Reproductive health-related factors (family history of cervical cancer, concern over HPV infection, history of STDs...)

Information sources (newspapers, radio, TV, schools, medical professionals, health extension workers) and

Attitude towards HPV vaccines.

Readiness of HPV vaccine

4.8. Operational Definitions

Adequate Knowledge: A participant who scores≥50% on the Knowledge questions was declared as having adequate Knowledge of HPV vaccination. (Mihretie et al., 2022a)

Inadequate Knowledge: A participant who scores <50% on the Knowledge questions was declared as having inadequate Knowledge about HPV vaccinations. (Dereje et al., 2021b)

Willing: Parents who responded 'Yes' to the question 'Will you vaccinate your daughter for HPV vaccine?'.(Alene et al., 2020a, Destaw et al., 2021, Larebo et al., 2022)

Not willing: Parents who responded 'No' to the question 'Will you vaccinate your daughter for HPV vaccine?'(Destaw et al., 2021, Alene et al., 2020a, Larebo et al., 2022)

Ready: - A participant who scores≥50% on the childhood 7C vaccination readiness questions was declared as ready for HPV vaccination. (Geiger et al., 2021)

Not ready:- A participant who scores <50% on the childhood 7C vaccination readiness questions was declared as not ready for HPV vaccinations.(Geiger et al., 2021)

Favorable attitude: A participant who scores≥50% on the attitude questions was declared as having a positive attitude toward HPV vaccination. (Sinshaw et al., 2022)

Unfavorable attitude: A participant who scores <50% on the attitude questions was declared as having a negative attitude towards HPV vaccinations.(Sinshaw et al., 2022)

4.9. Data Collection Method and Procedures

4.9.1. For the quantitative study

The data were collected by structured face-to-face interviewer-administered questionnaires. The knowledge and attitude part of the data collection was adapted from different relevant literature. (Mihretie et al., 2022b, Larebo et al., 2022, Alene et al., 2020a, Sinshaw et al., 2022), and the parent's readiness were assessed by the Children-7C of Vaccination Readiness assessment tool. (Geiger et al., 2021) First, the questionnaires were developed in English and translated into the local language (Amharic) and then back to English by language experts to maintain consistency. Nurses and midwives who are familiar with the local language were recruited as data collectors under the supervision of two BSc nurses and the principal investigator. The training was given to data collectors and supervisors for one and a half days about data collection procedures, the content of the questionnaire, interview techniques, and confidentiality of the information obtained from the respondents.

4.9.2. For the qualitative study

In-depth interviews were conducted. An interview guide for interviews was developed based on a review of the existing literature and included considerations specific to our context. (Rendle and Leskinen, 2017, Elit et al., 2022) Two pilot interviews were conducted, resulting in minor adaptations to the topic guide.

Focus Group Discussions (FGDs) Guide: A semi-structured FGD guide was used as a guide during moderation after adaption from existing literature. (Ko et al., 2019) The FGDs were conducted by the principal investigator and assisted by other translators. All group discussion information was tape-recorded with consent from each participant.

4.10. Data Quality Assurance

The questionnaire was prepared in English by reviewing relevant literature first. (Mihretie et al., 2022b, Larebo et al., 2022, Sinshaw et al., 2022) Then translated into Amharic language and translated back to English to ensure the consistency of the thought of the questions. For the composite variables reliability analysis was done to assure internal consistency by Cronbach's alpha test.

One week before the actual data collection period, a pretest (5%) was undertaken in Non-selected kebeles and based on the finding, minor modifications of questions, wordings, phrases, and time were made.

4.11. Data Processing and Analysis

4.11.1. For the quantitative study

Data were collected from study respondents and checked for consistency and entered into epi-data version 4.4.2.1 and exported to SPSS version 25 for management and analysis. Descriptive statistics like frequency, distribution, and percentage calculations were done for most of the variables. Multi-collinearity among the predictor variables was checked by the Variance inflation factor (VIF >10). Finally, a 95% confidence interval and adjusted odds ratios (AORs) were computed to identify statistically significant associations with knowledge and willingness for HPV vaccination. Variables with p-value <0.25 in Bivariate logistic regression were taken as a candidate for Multivariable logistic regression. The level of statistical significance was set at P<0.05. The goodness of fit of the final model was using the Hosmer and Lemeshow test of goodness of fit considering good fit at a P-value>0.05 level of significance.

4.11.2. For the qualitative study

All in-depth interviews and FGDs were captured using voice recorders, and each day field notes were transcribed into the English language by FGD field facilitators each day. The supervisor independently examined the transcripts for accuracy. The data was analyzed through thematic analysis. Major themes were derived based on the objective of the study.

However, subthemes were derived from the text itself through repeated reading. After reading the transcripts, the researcher identified emergent themes and then coded each theme to delineate individual topics identified during the discussions. Transcripts were coded manually.

Statements were coded and assigned to the appropriate theme. Once the themes were determined, the transcripts were re-read to ensure that the themes accurately reflected the data. All themes identified were felt to capture the discussions from the in-depth interview and FGDs. The findings were presented in narratives by thematic areas based on the objective of the study. The quotes included in the results were typical views expressed in each in-depth interview and FGDs to exemplify emergent themes.

4.12 Ethical Consideration

Before the study was conducted, ethical clearance was obtained from the Institutional Review Board of Hawassa University College of Medicine and Health Science with reference number IRB/298/15. After getting ethical clearance, written permission was obtained from the Special Woreda health offices. Informed written consent from each study participant was obtained after explaining the purpose of the study. Individuals have been provided the right to participate voluntarily and if they did not volunteer to continue from the beginning or at any stage of the work, they were free to withdraw from the study at any time. During the interview, privacy and strict confidentiality were maintained. The information collected from this research will be kept confidential and stored in files.

4.13 Dissemination of the Research Result

The result of this study was submitted to Hawassa University, College of Medicine & Health Science, and School of Nursing.

Furthermore, it was submitted a copy of the research findings to the Alle special woreda health office, and also, presented at different seminars. Finally, it would be published in reputable journals.

5. Result

5.1. Sociodemographic characteristics of the respondents

A total of 418 parents of eligible daughters were included in the study giving a response rate of 100%. Among these parents of daughters, 402(96.2%) were females and the mean age (SD) of the parents was 38.98(±6.262) years with 191(45.7%) of them in the age category of 40-49 years of age. The mean monthly income of the parents was 3992.59(±2965.475) ETB and half of them 209(50%) were in the category of >3501ETB. Greater than half of the parents 236 (56.5%) had only one eligible daughter between the ages of 9 and 14 years. For qualitative data five focus group discussions were held with 43 participants and 15 parents were in-depth interviewed.

Table 2. Sociodemographic characteristics of the parent of daughters in Alle special Wereda, Southern Ethiopia 2023. (n= 418).

No	Variable	Category	Frequency	Percent (%)
1	Age	20- 29	27	6.5
		30-39	185	44.3
		40-49	191	45.7
		>50	15	3.6
2	Sex	Male	16	3.8
		Female	402	96.2
3	Marital status	Single	3	0.7
		Married	376	90
		Widowed	33	7.9
		Other	6	1.4
4	Religion	Protestant	295	70.6
		Orthodox	121	28.9
		Others	2	0.5
5	Educational level	Unable to read and write	221	52.9
		Able to read and write	49	11.7
		Primary school	15	3.6
		Secondary school	69	16.5
		College and above	64	15.3
6	Occupation of mother	Housewife	256	61.2
		Farmer	61	14.6
		Self-employee	22	5.3
		Government employee	46	11
		Merchant	30	7.2

		Others	3	0.7
7	Occupation of the father	Farmer	258	61.7
		Self-employee	59	14.1
		Government employee	63	15.1
		Merchant	32	7.7
		Others	6	1.4
8	Household income	<1000	60	14.4
		1001-1500	24	5.7
		1501-2500	46	11
		2501-3500	79	18.9
		>3501	209	50
9	No. of adolescent girls in the house	One	236	56.5
		More than one	182	43.5

5.2. Source of information of respondents

Out of 418 respondents about 131(31.3%) participants heard about cervical cancer and 147(35.2%) of the participants heard about the HPV vaccine. Regarding the source of information from those who have information majority 80(61.1%) (n=131) of the respondents heard about cervical cancer from health professionals and 81(55.1%) (n=147) of the respondents heard about the HPV vaccine from health professionals followed by friends 47 (31.9%).

In a qualitative study, the participants expressed and felt that they have no enough information about the vaccine. Some of them said that

"Before I said anything, it was the first time I heard what you said about the HPV vaccine; I have information about other vaccines from extension workers. Vaccine is a vaccine but what is meant by HPV?"..... (P1)

"……I have information about this vaccine (HPV vaccine) from a friend recently, but I'm not sure what it is or why it's necessary."…… (P5)

In both in-depth interviews and FGD the parents express their reasons for low awareness and available information sources as follows

"In our society, most of us were farmers and had no formal education. So, we have no information about many things and where we hear from if we don't hear from health experts"….P17

"Health information? It was from health professionals, we have no access to electricity, television, radio, and other sources as a community. So, where?"……. (p23)

And about their trusted source of information, there were contrary beliefs but most of the participants preferred health professionals.

I trust health experts more than my friends because they are more educated than us about vaccines. ……. (p4)

But other participants said that

Sometimes you do everything said by the government to stay on your work, so, it is better to believe my friend as they are concerned about me. …… (P13)

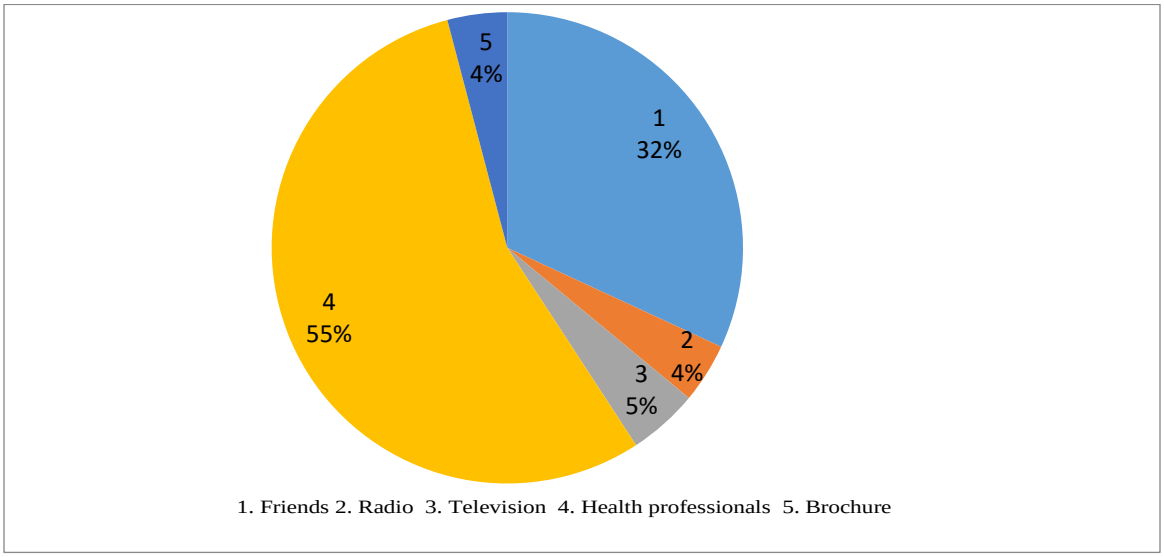

Figure 3. Sources of information about HPV vaccine among parents of daughters aged 9–14 Years in Alle Special Wereda, southern Ethiopia 2023.

5.3. Reproductive health characteristics of respondents

Almost all 416(99.5%) (n=418) of the participants had no family history of cervical cancer and 386(92.3%) of respondents had no family history of STD. Around half 208(49.8%) of the respondents fear STD and 378(90.4%) of the respondent's daughter were not take the HPV vaccine. The majority 292(69.2%) of daughters receive other recommended vaccines. Different reasons could be put out for the low uptake of the HPV vaccine but lack of awareness and trust was raised mostly by the participants.

Table 3. Reproductive health characteristics among parents of daughters aged 9–14 Years in Alle Special Wereda, 2023.

No.	Variable	Category	Frequency(N=418)	Percent (%)
1	Family history of cervical cancer	Yes	2	0.5
		No	416	99.5
2	Family history of STDs	Yes	32	7.7
		No	386	92.3
3	Fear of sexually transmitted diseases	Yes	208	49.8
		No	210	50.2
4	Girls take the HPV vaccine	Yes	40	9.6
		No	378	90.4
5	The daughter receives other recommended childhood vaccines	Yes	292	69.9
		No	126	30.1

5.4. Knowledge of the respondents on HPV vaccination

About 124 (29.7%) of the respondents had good knowledge about the HPV vaccine and cervical cancer. Nearly one-third 131(31.3%) of the parents responded that HPV is the main risk factor for cervical cancer and other cancers 139(33.3%) responded that HPV is limited to women as well and 149(35.6%) responded that having multiple sexual partners is the risk factor for HPV infection. More than one-third 153(36.6%) and 134(32.1%) responded that sex at an early age and that being a smoker increases the risk of transmission of HPV infection respectively. 151(36.1%) responded that cervical cancer can be prevented by taking the HPV vaccine before sexual intercourse and 149(35.6%) responded that the recommended age for taking the HPV vaccine is 9–14 years old. (Table-4)

Findings from the in-depth interview and FGD also showed that there was little knowledge about the HPV vaccine.

"I don't know about this vaccine (HPV vaccine). Sometimes I confused it with HIV, em….is that? I should have to learn more about it." …… (P31)

Another participant also expressed

"It is new for me to hear about the HPV vaccine. So, health experts and concerned government bodies should have to give us education about this vaccine before misleading information."……. (P27)

Table 4. Knowledge of human papillomavirus vaccine and cervical cancer among parents of daughters aged 9–14 Years in Alle special Woreda, 2023.

No.	Variable	Category	Frequency (N=418)	Percent (%)
1.	HPV is the main risk factor for cervical cancer and other cancers	Yes	131	31.3
		No	287	68.7
2.	HPV infection only limited to women	Yes	139	33.3
		No	279	66.7
3.	Having multiple sexual partners is the risk factor for HPV infection	Yes	149	35.6
		No	269	64.4
4.	Sex at an early age increases the risk of transmission of HPV infection	Yes	153	36.6
		No	265	63.4
5.	Being a smoker increases the risk of HPV infection	Yes	134	32.1
		No	284	67.9
6.	Sexual contact is the main transmitting route of HPV infection	Yes	148	35.4
		No	270	64.6
7.	People can transmit HPV to their partner even if they have no infection symptoms	Yes	135	32.3
		No	283	67.7
8.	Human papillomavirus is very common in women younger than 30 years.	Yes	154	36.8
		No	264	63.2
9.	Cervical cancer can be prevented by taking the HPV vaccine before sexual intercourse	Yes	151	36.1
		No	267	63.9
10.	HPV infection may lead to AIDS®	Yes	108	25.8
		No	310	74.2
11.	The recommended age for taking the HPV vaccine is 9–14 year-olds	Yes	149	35.6
		No	269	64.4

12.	HPV vaccine is given in schools	Yes	225	53.8
		No	193	46.2
Level of knowledge of respondents	Poor knowledge		294	70.3
	Good knowledge		124	29.7

5.5. Attitudes of respondents towards HPV vaccination

The majority 269(64.4%) of the respondents had an unfavorable attitude about cervical cancer and the HPV vaccine. Only 142(33.8%) agreed that HPV infection is a serious health concern and about one-third 140(33.5%) agreed that cervical cancer is a big problem for women and girls should get the HPV vaccine before their first sexual intercourse. 147(35.2%) believe that health information about the HPV vaccine is needed for adolescents and 144(34.5%) of the respondents think that getting a Pap test examination is not an embarrassment. Only 138(30%) agreed or strongly agreed that the HPV vaccine is effective in preventing cervical cancer. Also, 161(38.5%) and 182(43.5%) agreed or strongly agreed that the HPV vaccine can cause adverse effects and HPV vaccination causes daughters to be sexually active early respectively. (Table 5)

In both IDI and FGD, participants express their unfavorable attitudes.

> *"I think this vaccination may have another intention in that why it targets adolescent girls. May be to make them less fertile to decrease population growth as health professionals teach us before to decrease family size."……. (P11)*

Another participant said

"I have information about the cancer of the cervix and the vaccine that prevents it from the health professionals on last time campaign. Our society thinks that what we know if it is another thing. But in my opinion, the government has been giving us lots of vaccines that were important for our children before. So, how can it allow unnecessary things for us now? But thoughts about this vaccine in our society made me not fully trust it. So I never allow my daughter to take as well as I am not ready to recommend to others about things I don't fully believe in". …… (P7)

Table 5. Attitudes towards cervical cancer prevention and human papillomavirus vaccine among parents of daughters aged 9–14 Years in Alle special Woreda, 2023.

No.	Variable	Category	Frequency (N=418)	Percent (%)
1	A person who has only one sex partner can protect herself from HPV infection	Strongly agree	102	24.4
		Agree	54	12.9
		Neutral	17	4.1
		Disagree	115	27.5
		Strongly disagree	130	31.1
2	HPV vaccine education should be given to school adolescents	Strongly agree	78	18.7
		Agree	62	14.8
		Neutral	11	2.6
		Disagree	115	27.5
		Strongly disagree	152	36.4
3	HPV infection is a serious health concern	Strongly agree	93	22.2
		Agree	49	11.7
		Neutral	15	3.6
		Disagree	139	33.3
		Strongly disagree	122	29.2
4	Cervical cancer is a big problem for women	Strongly agree	83	19.9
		Agree	57	13.6
		Neutral	11	2.6
		Disagree	134	32.1
		Strongly disagree	133	31.8
5	Cervical cancer causes death in women	Strongly agree	98	23.4
		Agree	48	11.5
		Neutral	17	4.1
		Disagree	115	27.5
		Strongly disagree	140	33.5
6	Men's involvement is important in preventing cervical cancer	Strongly agree	95	22.7
		Agree	44	10.5
		Neutral	10	2.4
		Disagree	126	30.1
		Strongly disagree	143	34.4

7	Getting a Pap test examination is not an embarrassment	Strongly agree	104	24.9
		Agree	40	9.6
		Neutral	16	3.8
		Disagree	122	29.2
		Strongly disagree	136	32.5
8	Girls should get the HPV vaccine before their first sexual intercourse	Strongly agree	95	22.7
		Agree	45	10.8
		Neutral	17	4.1
		Disagree	122	29.2
		Strongly disagree	139	33.3
9	Health information about the HPV vaccine is needed for adolescents	Strongly agree	97	23.2
		Agree	50	12
		Neutral	20	4.8
		Disagree	117	28
		Strongly disagree	134	32.1
10	The HPV vaccine can cause adverse effects	Strongly agree	84	20.1
		Agree	77	18.4
		Neutral	44	10.5
		Disagree	111	26.6
		Strongly disagree	102	24.4
11	The HPV vaccine is effective in preventing cervical cancer	Strongly agree	105	25.1
		Agree	33	7.9
		Neutral	17	4.1
		Disagree	132	31.6
		Strongly disagree	131	31.1
12	HPV vaccination causes daughters to be sexually active early	Strongly agree	100	23.9
		Agree	82	19.6
		Neutral	24	5.7
		Disagree	110	26.3
		Strongly disagree	102	24.4

13	HPV vaccination increases awareness of sexually transmitted diseases	Strongly agree	118	28.2
		Agree	28	6.8
		Neutral	42	10
		Disagree	115	27.5
		Strongly disagree	115	27.5
Attitudes of respondent		Negative attitude	269	64.4
		Positive attitude	149	35.6

5.7. Willingness of HPV vaccination among respondents

Out of 418 respondents, 168(40.2%) of the respondents were willing to vaccinate their daughter. During qualitative interviews, 46.6% (n=58(9 from IDI and 18 from FGD)) expressed their willingness to accept the HPV vaccine for their daughter. More than half have no willingness and they mostly express by the phrases "*it is difficult to accept……"* and *"I am not sure and I am not ready to decide now to HPV vaccinate…"* frequent reasons that were raised in in-depth interviews and FGD were as follows.

One mother explained that

"I have two adolescent daughters. But I never want to allow taking the HPV vaccine as I have no trust in it." ……. (P22)

Another mother expresses her lack of trust and follows

"It is difficult to accept it for my daughter. Because my friends tell me that it is not good and the community overall tells me such things. I am looking forward to the truth from health experts."……. (P8)

But other participants were willing to accept the vaccine for their daughters according to their expressions one among them as follows

"My daughter will receive the vaccine since it will help to prevent the terrible cancer. The government should promote this for better acceptance as it is useful for daughters." P19

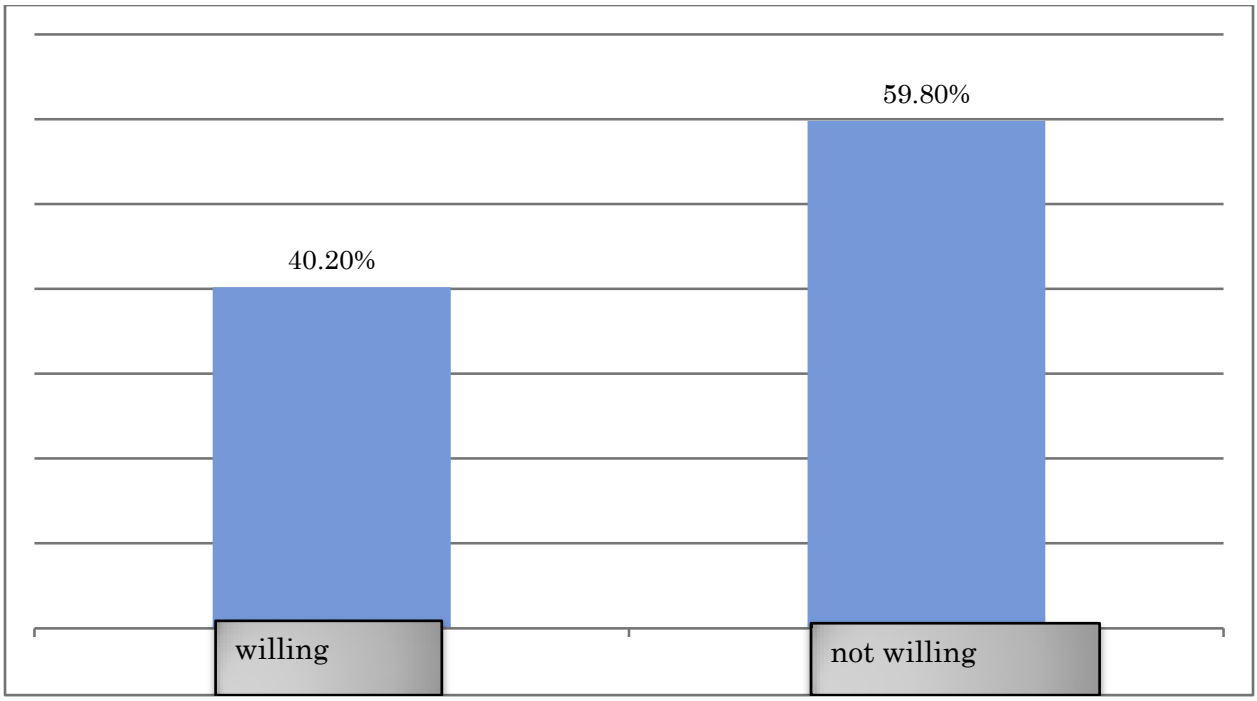

Figure 4. Willingness of HPV vaccination among parents in Alle wereda 2023

5.8. Readiness for HPV vaccination among respondents

The readiness of the respondents was measured by the standardized childhood 7C (Confidence, Complacency, Constraints, Calculation, Collective Responsibility, Compliance, Conspiracy) vaccine readiness tool. 159(38%) of the respondents were ready to vaccinate their daughters. 148(35.4%) of the respondents think that HPV vaccination side effects occur rarely and are not severe for their daughter and only 152(36.4%) of them agreed that political decisions about daughter HPV vaccinations are scientifically grounded. 156(37.3%) of the respondents accepted that they will get their daughter HPV vaccination because it is too risky for them to get HPV infected. On the other hand, 263(62.9%) of the respondents think that HPV vaccinations contain chemicals in toxic doses for daughters but 156(37.3%) of the respondents believe that daughter HPV vaccinations as a community effort to combat disease transmission.

In qualitative interviews, one mother said that:-

"I am not ready for now to say anything about this vaccine. I may think about it in the future as I don't feel confident about it."…..P25

Other participants explained that:

"I don't think this vaccine is safe for my daughter because she doesn't like any medication. She is also not at risk of this disease as I know her so why should she become vaccinated?".....P19

Another participant expressed her readiness as:

"I see my daughter's vaccination as contributing to the health of her future family. So, I will vaccinate her according to the recommended age in the future."……P14

Table 6. Readiness towards HPV Vaccine among parents of daughters aged 9–14 Years in Alle special Woreda, 2023

Variable	Category	Frequency (N=418)	Percent (%)
1.Readiness	Ready	159	38
	Not ready	250	62

5.7. Factor associated with knowledge of respondents

A total of 17 variables (age, sex, marital status, religion, educational status, Mothers occupation, Fathers occupation, monthly income, number of adolescent girls, ever heard about CxCa, ever heard about HPV vaccine, family history of STD, fear of STI, daughter take HPV vaccine, daughter take other recommended vaccine, attitude towards HPV vaccines) were used for binary logistic regression and among this 11 variables were candidate for multivariable logistic regression analysis at p-value <0.25. From this four variables educational status (AOR= 0.755(95%CI= 0.150-0.3805)P=.000), ever heard about the HPV vaccine (AOR=0.254(95%CI= 0.065- 0.985) P= 0.048), fear of STI(AOR= 0.194(95%CI= 0.049- 0.774) P= 0.02), and attitude toward HPV vaccine (AOR= 0.071((95%CI= 0.015- 0.338), P=(0.001) were significantly associated with the knowledge of the respondents towards HPV vaccine.

The study revealed that parents who had no formal education were 24.5% less likely to have good knowledge about the HPV vaccine compared to those who had secondary education and above. Parents who had never heard about the HPV vaccine were 74.6% less likely to have good knowledge than those who heard HPV vaccine. Parents who don't fear STIs were 80.6% less likely to have good knowledge of the HPV vaccine compared to those who fear STIs and parents who had negative attitudes were 92.6% less likely to have good knowledge of HPV compared to those with positive attitudes towards the HPV vaccine.

On the qualitative findings, the participants associate knowledge with the same factors as the following

I heard about the vaccine from my friend and since then I have been trying to find more information about the vaccine and its importance. I think I got some information about it after that time. ……. (P15)

I heard that the disease is serious and fatal and I don't want to see myself and my daughter suffering from such disease. I want to know more about it to protect my daughter and myself from this disease. ……. (P16)

I am a teacher and I have a college diploma. I have been advising my daughters in my school to take the vaccine because I know how much women suffer after they are infected by this disease called cervical cancer. ……. (P12)

Another participant expressed her refusal to know about the vaccine due to her unfavorable attitude.

I don't want to hear about this disease and vaccine because sometimes hearing leads to fear and making a decision to accept this unknown vaccine which may have a hidden mission behind it. …… (P10)

Table 7. Bivariate and Multivariable analysis of factors associated with knowledge about HPV vaccination among parents of daughters in Alle special Woreda, 2023 (n=418)

Variable	Category	Knowledge of respondents		COR	AOR	P_VALUE
		Good	Poor			
AGE	20_29	14(51.9%)	13(48.1%)	1	1	
	30_39	67(36.2%)	118(63.8%)	0.527(0.234-1.188)	0.755(0.150-3.805)	.734
	>=40	43(20.9%)	163(79.1%)	0.245(.107-0.56)	1.649(0.275_9.895)	.585
Educational status	No formal education	5(1.9%)	263(98.1%)	0.003(0.001-0.009)	**0.755(0.150-0.3805)**	**.000**
	Primary	3(20%)	12(80%)	0.041(0.011-0.159)	0.346 (0.044-2.704)	.312
	Secondary education and	116(85.9%)	19(14.1%)	1	1	

	above					
Mothers occupation	Civil servant	39(81.2%)	9(18.8%)	1	1	
	Others	85(23%)	285(77%)	0.069(0.32-0.148)	1.946 (0.577-6.566)	.283
Fathers occupation	Civil servant	45(70%)	19(29.7%)	1	1	
	Others	79(23.3%)	275(77.7%)	0.121(0.067-0.219)	1.421(0.470-4.300)	.533
Ever heard about CxCa	Yes	106(80.9%)	25(19.1%)	1	1	
	No	18(6.3%)	269(93.7%)	0.016(0.008-0.03)`	0.649(0.189_2.235)	.493
Ever heard about the HPV vaccine	Yes	110(74.8%)	37(25.2%)	1	1	
	No	14(6.3%)	257(94.8%)	0.018(0.01-0.035)	**0.254(0.065-0.985**	**.048**
Family history of STD	Yes	19(59.4%)	13(40.6%)	1	1	
	No	105(27.2%)	281(72.8%)	0.256(0.122_0.536)	0.653(0.145-2.943)	.579
Fear of STI	Yes	117(56.2%)	91(43.8%)	1	1	
	No	7(3.3%)	203(96.7%)	0.027(0.012-0.06)	**0.194(0.049-0.774)**	**.020**
The daughter takes the HPV vaccine	Yes	25(62.5%)	15(37.5%)	1	1	
	No	99(26.2%)	279(73.8%)	0.213(0.108-0.42)	2.756(0.843-9.017)	.094
The daughter takes other recommended vaccine	Yes	100(34.2%)	192(65%)	1	1	
	No	99(26.2%)	279(73.8%)	0.452(0.272_0.749)	0.859(0.256-2.883)	.805
Attitude of respondent	Unfavorable	4(1.5%)	265(98.5%)	0.004(0.01-0.011)	**0.071(0.015-0.338)**	**.001**
	Favorable	120(80.5%)	29(19.5%)	1	1	

5.8. Factors associated with willingness of respondents

For bivariate analysis 18 variables (age, sex, marital status, religion, educational status, Mother occupation, Father occupation, monthly income, number of adolescent girls, ever heard about

CxCa, ever heard about HPV vaccine, family history of STD, fear of STI, daughter take HPV vaccine, daughter take other recommended vaccine, attitude towards HPV vaccines, knowledge and readiness of HPV vaccine) were used and 12 variables were candidates for multivariable logistic regression with a P-value of <0.25. After controlling confounders by multivariable analysis three variables (knowledge (AOR= 0.260(95%CI= 0.068-0.987) P= 0.048), attitude (AOR= 0.112(95%CI= 0.035-0.362), P= 0.000), and readiness (AOR= 0.169(95%CI= 0.056-0.509), P= 0.002) were significantly associated with willingness to vaccinate their daughters HPV vaccine. Parents with unfavorable attitudes were 74% less likely to accept the HPV vaccine for their daughters compared to those who have favorable attitudes and parents with poor knowledge were 88.8% less likely to be willing to vaccinate their daughter. Parents who were not ready to vaccinate against HPV were 83.1% less likely to have willingness compared to those who were ready for the HPV vaccine.

The above finding was also supported by the qualitative findings as some of them associate the above variables with the willingness to HPV vaccine expressed blow

"I hear this vaccine was given in schools currently because my daughters were run out of the class through the window as the nurse and their teacher closed the door to provide them the HPV vaccine. They came home and told me that the vaccine source was from Illuminati (A demonic organization) intended to decrease fertility among young women. So how can I trust and allow them as I have no adequate knowledge about it?"……. (P9)

I have to wait to accept the vaccine for my daughter until I have enough information and trust in it. For now, I don't want to say anything. … (P2)

"…you asked why you haven't been immunized your daughter but I never heard what you say HPV vaccine." ……. (P6)

I think being ill is a matter of chance and God will not take or not take the HPV vaccine. Just leave it for me I don't want to allow it to my daughter rather I pray for her. …. (P3)

One father expresses his attitude and willingness as:

"… We lived here for a long time and we never hear the disease you call cancer. So now is this vaccine to cause cancer or to prevent cancer? They always said vaccine… vaccine and now we

are hearing about new diseases. Therefore I don't trust this vaccine (HPV vaccine) and never allow it to my daughter."…….. (P21)

Table 8. Bivariate and multivariable analysis of factors associated with willingness of HPV vaccination among parents of daughters in Alle special Woreda, 2023 (n=418)

Variable	Category	Willingness		COR	AOR	P=Value
		Willing	Not willing			
AGE	20_29	16(59.3%)	11(40.7%)	1	1	
	30_39	81(43.8%)	104(56.2%)	0.535(0.23-1.217)	1.171 (0.336-4.082)	0.804
	>=40	71(34.5%)	135(65.5%)	0.362(0.159-0.821)	1.289 (0.362-4.582)	0.695
Educational status	No formal education	53(19.8%)	215(80.2%)	0.059(0.035-0.099)	2.679 (0.550-13.045)	0.222
	Primary	6(40%)	9(60%)	0.159(0.052-0.486)	4.615 (0.676-31.490)	0.119
	Secondary education	109(80.7%)	26(19.3%)	1	1	
Mothers occupation	Civil servant	41(85.4%)	7(14.6%)	1	1	
	Others	127(34.3%)	243(65.7%)	0.089(0.039-0.205)	0.600(0.195-1.848)	0.374
Fathers occupation	Civil servant	49(76.6%)	15(23.4%)	1	1	
	Others	119(33.6%)	235(66.4%)	0.155(0.083-0.288)	0.616(0.244-1.554)	0.305
Ever heard about CxCa	Yes	106(80.9%)	25(19.1%)	1	1	
	No	62(21.6%)	225(78.4%)	0.065(0.039-0.109)	0.694(0.240-2.004)	0.499
Ever heard about the HPV vaccine	Yes	106(72.1%)	41(27.9%)	1	1	
	No	62(22.9%)	209(77.1%)	0.115(0.083-0.288)	2.696(0.808-9.001)	0.107
Family history of STD	Yes	22(68.8%)	10(31.2%)	1	1	
	No	146(37.8%)	240(62.2%)	0.277(0.127-0.6)	0.659(0.220-1.971)	0.455
Fear of STI	Yes	29(72.5%)	11(27.5%)	1	1	
	No	139(36.8	239(63.2%)	0.221(0.107-	1.294(0.621-	0.491

		%)		0.455)	2.697)	
The daughter takes other recommended vaccine	Yes	119(40.8 %)	173(59.2%)	1	1	
	No	49(38.9%)	77(61.1%)	0.925(0.603-1.419)	1.652(0.902-3.025)	0.104
Attitude of respondent	Negative	45(16.7%)	224(83.3%)	0.042(0.025-0.072)	**0.260(0.068-0.987)**	**0.048**
	Positive	123(82.6 %)	26(17.4%)	1	1	
Knowledge	Poor	60(20.4%)	234(79.6%)	0.038(0.0021-0.069)	**0.112(0.035-0.362)**	**0.000**
	Good	108(87.1 %)	16(12.9%)	1	1	
Readiness	Not ready	39(15.1%)	220(84.9%)	0.04(0.024-0.07)	**0.169(0.056-0.509)**	**0.002**
	ready	129(81.1 %)	30(18.9%)	1	1	

6. Discussion

A community-based cross-sectional study with mixed methods was done which intended to examine knowledge and willingness of HPV vaccine and its associated factors among parents of girls aged from 9-14 years in rural Alle special Woreda, southern Ethiopia. It reveals that most of the parents of adolescent girls had poor knowledge and the willingness level was very low which is below half of the participants.

It revealed that only nearly one-third (29.7% (95%CI (0.253-0.343)) of the participants have good knowledge about the HPV vaccine and cervical cancer. It was consistent with a finding from a previous study in Lebanon (31%)(Khalil et al., 2023) and a study done in logos Nigeria (Rabiu et al., 2020) and Iran (31.16%).(Azh et al., 2021) This could be a result of similarities in the characteristics and status of the respondents.

It was lower than previous studies done in certain areas of the same nation; Adiss Ababa (63.5%), Hadiya (79.1%, 95% CI [75.5, 82.5]), and Debremarkos. (47.6%). (Larebo et al., 2022, Mihretie et al., 2022b, Dereje et al., 2021b, Sinshaw et al., 2022) This might be due to the participants of this study being from rural populations where there was less access to health information, social media exposure, low educational level of participants, and other characteristics. The study was done in Addis Ababa, the capital of the country where there was access to many information sources. In Hadiya and Debretabor the respondents were town population but this study was done exclusively in rural populations considering where there were low socioeconomic statuses and health literacy as urbanization was associated with high knowledge in other studies.(Rancic et al., 2022)

About nearly one-third (31.3%) of the respondents had heard about cervical cancer before this study. This may be due to low health literacy levels and access as well as a lack of advertisements through local media among the rural population. This finding was less compared to studies done in West Nigeria and Sharjah. (Akinleye et al., 2020b, Saqer et al., 2017)

Regarding information about the HPV vaccine, 35.2% of the participants had heard about it before this study. This finding was in agreement with findings from studies done in Ilron Nigeria (35.1) (Adesina et al., 2018) and Sharjah.(Saqer et al., 2017) However, it is less than that of a Polish and West Nigerian study and higher than the studies done in China and Nepal.(Sobierajski et al., 2023, Akinleye et al., 2020b, Zhang et al., 2021)

The main source of information about the HPV vaccine was health professionals (55.1%) followed by friends (31.9%). Frequent reasons arose that there was no access to media and their main source was person-to-person communication so, health education should be needed for such settings as they have lower access to awareness. Many of the participants in the study expressed their low access to health information and the right information which needs interventions through concerned bodies as scanned information was reported as the main factor for vaccine trust and acceptance. (Moran et al., 2016)

The discrepancy between awareness about the HPV vaccine and cervical cancer is that the data for this study were collected after two weeks of the national HPV vaccination campaign and all are exposed to the information about the vaccine but not on its purpose. So, awareness will be a better intervention to avail information for the population about the vaccine and its purpose.

On multivariable logistic analysis, the educational status of the mother was associated with having good knowledge which is supported by a previous study.(Sobierajski et al., 2023, Sinshaw et al., 2022). This study revealed that parents who had no formal education were 24.5% less likely to have good knowledge about the HPV vaccine compared to those who had secondary education and above. This could be due to those with higher educational levels having access to different sources of information than those who had no formal education.

Having information about the HPV vaccine was another variable that was associated with good knowledge in this study. This finding was in line with studies done in northwest Ethiopia (Sinshaw et al., 2022), Indonesia (Kristina et al., 2020), and Lebanon.(Khalil et al., 2023) Parents who had never heard about the HPV vaccine were 74.6% less likely to have good knowledge than those who heard HPV vaccine. This implies that those who heard about the HPV vaccine were in search of more understanding than those who had no information as supported by different literature (Marlow et al., 2013).

Further fear of STIs is also associated with knowledge of the HPV vaccine and cervical cancer. Parents who don’t fear STIs were 80.6% less likely to have good knowledge of the HPV vaccine compared to those who fear STIs. This indicates that parents who fear STIs were more intent to be aware of infections of the reproductive tract and as a result, they have better knowledge than those who don’t fear STIs.

In addition, positive attitudes were associated with having good knowledge of the HPV vaccine and cervical cancer. This was in line with some of the previous studies. (Sinshaw et al., 2022) Parents who had negative attitudes were 92.6% less likely to have good knowledge of HPV compared to those with positive attitudes towards the HPV vaccine. This may be due to negative attitudes resulting in impending requiring knowledge and limiting and discouraging information-seeking behavior. (Birkie and Anbesaw, 2021)

Regarding the willingness of the parents, 40.2 %(95%CI (0.355-0.451)) of the respondents were willing to take the HPV vaccine for their daughters. This study was congruent with previous studies done in China (46.39%), Ilorin, Nigeria (44.9%), and Debretabor in Ethiopia (44.8%). This might be due to similar sociodemographic characteristics, and socio-economic status in the study setting. (Mihretie et al., 2022b, Zhang et al., 2023, Adesina et al., 2018)

However it was lower than the study done in Bench-shako, southwest Ethiopia (79.5%), Abakalik Nigeria (89.1%), Gonder(81.3%), and Addis Ababa Ethiopia(94.3%). (Destaw et al., 2021, Azuogu et al., 2019, Alene et al., 2020a, Dereje et al., 2021b) This discrepancy could be due to differences in the residence of the participants and the low educational level and socioeconomic status of the participants. (Marlow et al., 2013)

Only 9.6 %(40) 0f the daughters ever take at least one dose of the HPV vaccine. This finding was consistent with the study done in Abakalik, Nigeria (7%) and Lebanon (11.3%) but lower than the study in Ambo, Ethiopia. (Azuogu et al., 2019, Beyen et al., 2022) This may be due to the difference in study participants in which the study done in Ambo were adolescent school girls who are directly targeted in vaccination campaigns in our country. (Beyen et al., 2022)

On multivariable logistic regression analysis having good knowledge about the HPV vaccine and cervical cancer was significantly associated with the willingness of parents to HPV vaccinate their daughter. This was consistent with the study done in the Bench-shako zone, Debretabor, and Gonder town in Ethiopia. (Alene et al., 2020b, Destaw et al., 2021, Mihretie et al., 2022b) and study in Kenya.(Kolek et al., 2022) Good knowledge helps the respondents to analyze the problem associated with HPV infection therefore they can accept the HPV vaccine. Parents with poor knowledge were 88.8% less likely to have willingness to vaccinate their daughters. This indicated that family knowledge is crucial for the acceptance of HPV vaccination and concerned bodies should launch parental awareness creation programs. (Galvin et al., 2023)

Positive attitudes about the HPV vaccine were also significantly associated with the willingness of parents to HPV vaccinate their daughters. This was consistent with the study done in Benchshoko, Debretabor, and Addis Ababa in Ethiopia (Mihretie et al., 2022b, Destaw et al., 2021, Dereje et al., 2021b) and India. (Shetty et al., 2019) A parent with negative attitudes was 74% less likely to accept the HPV vaccine for their daughters compared with those who had positive attitudes.

The readiness of the parents towards the HPV vaccine was studied by using the 7C vaccination readiness tool and it was associated with the willingness of the parents to accept the HPV vaccine for their eligible daughters. Parents who had no readiness to vaccinate against HPV were 83.1% less likely to have willingness compared to those who have readiness towards the HPV vaccine.

Only 152(36.4%) of the respondents believe that Political decisions about daughter HPV vaccinations are scientifically grounded and the majority of the participants believe that the HPV vaccine contains toxic substances for daughters. This shows that there is a poor perception of the vaccine which needs emphasis to increase the acceptability of the vaccine.

The qualitative inquiry of this study captured that the community misunderstands that the HPV vaccine is not safe. About 64.6% of the participants believe that the HPV vaccine is severe for their daughters due to its side effects. This misinformation about the HPV vaccine safety concern is unfavorable news for the uptake of the HPV vaccine and will lead to vaccine hesitancy among the parents (Fernández et al., 2014). Other previous findings validated this finding. (Al-Nuaimi et al., 2011, Fernández et al., 2014)

Participants also mistake the HPV vaccine for other STIs like HIV and express this ambiguity as a result of low awareness levels. This finding is consistent with findings from the systemic review. (Klug et al., 2008) Fear of unknown side effects was the primary cause of lack of readiness for the HPV vaccine. This was also reported in a qualitative study in Uganda. (Turiho et al., 2017)

This study found that there were several misinterpretations of the HPV vaccine which leads to unfavorable attitudes these include:- causes and decreases in infertility, cervical cancer, and other unknown illnesses. This suggests there was a low awareness level about HPV vaccination which

needs emphasizes to increase the uptake of the vaccine. (Bond et al., 2016) In addition this study finds that HPV vaccination disagreed with some cultural and religious views. This study supports findings from different qualitative studies that reported parents who follow cultural and religious views have less acceptance of the HPV vaccine. (Bond et al., 2016, Wong and Obstetrics, 2008)

7. Conclusion and recommendation

Conclusion

Knowledge of parents/caregivers who have eligible daughters about the HPV vaccine and cervical cancer was very low among the rural population. Educational status, ever heard about the HPV vaccine, fear of STI, and attitude toward the HPV vaccine were significantly associated with the knowledge of the respondents about the HPV vaccine. Willingness to HPV vaccination is also low and good knowledge, positive attitude and readiness were significantly associated with willingness to vaccinate their daughters HPV vaccine. In addition, lack of trust, poor perception, fear of unknown side effects, and misunderstanding were identified as major factors by qualitative findings.

Recommendation

Based on the findings of the study:-

Research centers should encourage researchers to do more research on the HPV vaccine and cervical cancers and provide support for projects on HPV vaccine promotion and cervical cancer prevention to the primarily rural community intervention projects.

Health authorities should promote the HPV vaccine and cervical cancer promotion through mass media. Health professionals and health extension workers have to provide important information to the community in the health facilities and other community service centers.

8. Strengths and limitations of the study

The study was done exclusively on the rural population, triangulated with qualitative methods and a community-based study can be taken as strength of this research. On the other side, since the study was a cross-sectional study it doesn’t show a cause-effect relationship and it can be liable to recall bias and social desirability bias could be the limitation.

References

1. ADAMS, M., JASANI, B. & FIANDER, A. 2007. Human papilloma virus (HPV) prophylactic vaccination: challenges for public health and implications for screening. *Vaccine,* 25**,** 3007-3013.
2. ADESINA, K. T., SAKA, A., ISIAKA-LAWAL, S. A., ADESIYUN, O. O., GOBIR, A., OLARINOYE, A. O. & EZEOKE, G. G. J. S. J. O. M. S. 2018. Knowledge, practice and acceptability of HPV vaccine by mothers of adolescent girls in Ilorin, Nigeria. 13**,** 33-49.
3. AKINLEYE, H. W., KANMA-OKAFOR, O. J., OKAFOR, I. P. & ODEYEMI, K. A. 2020a. Parental willingness to vaccinate adolescent daughters against human papilloma virus for cervical cancer prevention in Western Nigeria. *Pan Afr Med J,* 36**,** 112.
4. AKINLEYE, H. W., KANMA-OKAFOR, O. J., OKAFOR, I. P. & ODEYEMI, K. A. J. P. A. M. J. 2020b. Parental willingness to vaccinate adolescent daughters against human papilloma virus for cervical cancer prevention in Western Nigeria. 36.
5. AL-NUAIMI, N., AL-GHAS, Y., AL-OWAIS, A., GRIVNA, M., SCHNEIDER, J., NAGELKERKE, N., BERNSEN, R. J. I. J. O. S. & AIDS 2011. Human papillomavirus vaccination uptake and factors related to uptake in a traditional desert city in the United Arab Emirates. 22**,** 400-404.
6. ALENE, T., ATNAFU, A., MEKONNEN, Z. A. & MINYIHUN, A. 2020a. Acceptance of Human Papillomavirus Vaccination and Associated Factors Among Parents of Daughters in Gondar Town, Northwest Ethiopia. *Cancer Manag Res,* 12**,** 8519-8526.
7. ALENE, T., ATNAFU, A., MEKONNEN, Z. A., MINYIHUN, A. J. C. M. & RESEARCH 2020b. Acceptance of human papillomavirus vaccination and associated factors among parents of daughters in Gondar town, Northwest Ethiopia. 8519-8526.
8. ARBYN, M., WEIDERPASS, E., BRUNI, L., DE SANJOSÉ, S., SARAIYA, M., FERLAY, J. & BRAY, F. 2020. Estimates of incidence and mortality of cervical cancer in 2018: a worldwide analysis. *The Lancet Global Health,* 8**,** e191-e203.
9. AZH, N., HOSSEINZADEH, K., JAVADI, A., GHOLAMI-TORANPOSHTI, S. J. I. J. O. N. & RESEARCH, M. 2021. Factors predicting mothers' intention toward human papilloma virus vaccination of adolescents: A cross-sectional study among iranian families. 26**,** 495.
10. AZUOGU, B., UMEOKONKWO, C., AZUOGU, V., ONWE, O., OKEDO-ALEX, I. & EGBUJI, C. 2019. Appraisal of willingness to vaccinate daughters with human papilloma virus vaccine and cervical cancer screening uptake among mothers of adolescent students in Abakaliki, Nigeria. 22**,** 1286-1291.
11. BEYEN, M. W. M., BULTO, G. A., CHAKA, E. E., DEBELO, B. T., ROGA, E. Y., WAKGARI, N., DANUSA, K. T. & FEKENE, D. B. J. P. O. 2022. Human papillomavirus vaccination uptake and its associated factors among adolescent school girls in Ambo town, Oromia region, Ethiopia, 2020. 17**,** e0271237.
12. BIRHANU, F. 2022. *Willingness of Vaccination Against Human Papillomavirus and Associated Factors Among Adolescent Female Students in Primary School of Bahir Dar City, North West, Ethiopia.*
13. BIRKIE, M. & ANBESAW, T. J. B. P. 2021. Knowledge, attitude, and associated factors towards mental illness among residents of Dessie town, northeast, Ethiopia, a cross-sectional study. 21**,** 1-10.

14. BOND, S. M., CARTMELL, K. B., LOPEZ, C. M., FORD, M. E., BRANDT, H. M., GORE, E. I., ZAPKA, J. G., ALBERG, A. J. J. J. O. P. & GYNECOLOGY, A. 2016. Racial and ethnic group knowledge, perceptions and behaviors about human papillomavirus, human papillomavirus vaccination, and cervical cancer among adolescent females. 29**,** 429-435.
15. BRAY, F., FERLAY, J., SOERJOMATARAM, I., SIEGEL, R. L., TORRE, L. A. & JEMAL, A. J. C. A. C. J. F. C. 2018. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. 68**,** 394-424.
16. BRUNI, L., DIAZ, M., BARRIONUEVO-ROSAS, L., HERRERO, R., BRAY, F., BOSCH, F. X., DE SANJOSÉ, S. & CASTELLSAGUÉ, X. 2016. Global estimates of human papillomavirus vaccination coverage by region and income level: a pooled analysis. *The Lancet Global Health,* 4**,** e453-e463.
17. BURD, E. M. J. C. M. R. 2003. Human papillomavirus and cervical cancer. 16**,** 1-17.
18. CAMPOS, N. G., SHARMA, M., CLARK, A., LEE, K., GENG, F., REGAN, C., KIM, J., RESCH, S. J. I. J. O. G. & OBSTETRICS 2017. The health and economic impact of scaling cervical cancer prevention in 50 low-and lower-middle-income countries. 138**,** 47-56.
19. CHAN, C. K., AIMAGAMBETOVA, G., UKYBASSOVA, T., KONGRTAY, K. & AZIZAN, A. J. J. O. O. 2019. Human papillomavirus infection and cervical cancer: epidemiology, screening, and vaccination—review of current perspectives. 2019.
20. DE SANJOSÉ, S., SERRANO, B., TOUS, S., ALEJO, M., LLOVERAS, B., QUIRÓS, B., CLAVERO, O., VIDAL, A., FERRÁNDIZ-PULIDO, C. & PAVÓN, M. Á. J. J. C. S. 2018. Burden of human papillomavirus (HPV)-related cancers attributable to HPVs 6/11/16/18/31/33/45/52 and 58. 2**,** pky045.
21. DEREJE, N., ASHENAFI, A., ABERA, A., MELAKU, E., YIRGASHEWA, K., YITNA, M., SHEWAYE, S., FASIL, T. & YOSEPH, Y. 2021a. Knowledge and acceptance of HPV vaccination and its associated factors among parents of daughters in Addis Ababa, Ethiopia: a community-based cross-sectional study. *Infect Agent Cancer,* 16**,** 58.
22. DEREJE, N., ASHENAFI, A., ABERA, A., MELAKU, E., YIRGASHEWA, K., YITNA, M., SHEWAYE, S., FASIL, T. & YOSEPH, Y. 2021b. Knowledge and acceptance of HPV vaccination and its associated factors among parents of daughters in Addis Ababa, Ethiopia: a community-based cross-sectional study. *Infectious Agents and Cancer,* 16**,** 1-7.
23. DESTAW, A., YOSEF, T. & BOGALE, B. J. H. 2021. Parents willingness to vaccinate their daughter against human papilloma virus and its associated factors in Bench-Sheko zone, southwest Ethiopia. 7**,** e07051.
24. ELIT, L., NGALLA, C., AFUGCHWI, G. M., TUM, E., DOMGUE, J. F. & NOUVET, E. 2022. Assessing knowledge, attitudes and belief toward HPV vaccination of parents with children aged 9-14 years in rural communities of Northwest Cameroon: a qualitative study. *BMJ Open,* 12**,** e068212.
25. FERNÁNDEZ, M. E., LE, Y.-C. L., FERNÁNDEZ-ESPADA, N., CALO, W. A., SAVAS, L. S., VÉLEZ, C., ARAGON, A. P. & COLÓN-LÓPEZ, V. J. P. C. D. 2014.

Peer Reviewed: Knowledge, Attitudes, and Beliefs About Human Papillomavirus (HPV) Vaccination Among Puerto Rican Mothers and Daughters, 2010: A Qualitative Study. 11.

26. FINOCCHARIO-KESSLER, S., WEXLER, C., MALOBA, M., MABACHI, N., NDIKUM-MOFFOR, F. & BUKUSI, E. 2016. Cervical cancer prevention and treatment research in Africa: a systematic review from a public health perspective. *BMC women's health,* 16**,** 1-25.
27. FRANCIS, S. A., NELSON, J., LIVERPOOL, J., SOOGUN, S., MOFAMMERE, N. & THORPE JR, R. J. 2010. Examining attitudes and knowledge about HPV and cervical cancer risk among female clinic attendees in Johannesburg, South Africa. *Vaccine,* 28**,** 8026-8032.
28. GALVIN, A. M., GARG, A., GRINER, S. B., MOORE, J. D. & THOMPSON, E. L. J. J. O. C. E. 2023. Health literacy correlates to HPV vaccination among US adults ages 27–45. 38**,** 349-356.
29. GANCZAK, M., OWSIANKA, B. & KORZEŃ, M. 2018. Factors that Predict Parental Willingness to Have Their Children Vaccinated against HPV in a Country with Low HPV Vaccination Coverage. *Int J Environ Res Public Health,* 15.
30. GEBREMARIAM, T. 2016. Human papillomavirus related cervical cancer and anticipated vaccination challenges in Ethiopia. *Int J Health Sci (Qassim),* 10**,** 137-43.
31. GEIGER, M., REES, F., LILLEHOLT, L., SANTANA, A. P., ZETTLER, I., WILHELM, O., BETSCH, C. & BÖHM, R. J. E. J. O. P. A. 2021. Measuring the 7Cs of vaccination readiness.
32. HEBDOMADAIRE, W. H. O. J. W. E. R. R. É. 2014. Human papillomavirus vaccines: WHO position paper, October 2014. 89**,** 465-491.
33. HUTUBESSY, R., LEVIN, A., WANG, S., MORGAN, W., ALLY, M., JOHN, T. & BROUTET, N. 2012. A case study using the United Republic of Tanzania: costing nationwide HPV vaccine delivery using the WHO Cervical Cancer Prevention and Control Costing Tool. *BMC medicine,* 10**,** 1-10.
34. KEPKA, D., BODSON, J., LAI, D., SANCHEZ-BIRKHEAD, A. C., DAVIS, F. A., LEE, D., TAVAKE-PASI, F., NAPIA, E., VILLALTA, J., MUKUNDENTE, V., MOONEY, R., COULTER, H. & STARK, L. A. 2021. Diverse caregivers' HPV vaccine-related awareness and knowledge. *Ethnicity & Health,* 26**,** 811-826.
35. KHALIL, J., BOUTROS, S., HASSOUN, A., HALLIT, S. & BARAKAT, H. J. B. P. 2023. Human papillomavirus vaccine knowledge and conspiracy beliefs among secondary school students in Lebanon. 23**,** 1-9.
36. KLUG, S. J., HUKELMANN, M. & BLETTNER, M. J. P. M. 2008. Knowledge about infection with human papillomavirus: a systematic review. 46**,** 87-98.
37. KO, L. K., TAYLOR, V. M., MOHAMED, F. B., DO, H. H., GEBEYAW, F. A., IBRAHIM, A., ALI, A. A. & WINER, R. L. J. P. R. 2019. "We brought our culture here with us": A qualitative study of perceptions of HPV vaccine and vaccine uptake among East African immigrant mothers. 7**,** 21-25.
38. KOLEK, C. O., OPANGA, S. A., OKALEBO, F., BIRICHI, A., KURDI, A., GODMAN, B. & MEYER, J. C. J. V. 2022. Impact of Parental Knowledge and Beliefs on HPV Vaccine Hesitancy in Kenya—Findings and Implications. 10**,** 1185.

39. KRISTINA, S., LIENANINGRUM, A. S. & WULANDARI, G. P. J. I. J. P. R. 2020. Beliefs and acceptance of human papillomavirus (HPV) vaccine among parents in urban community in Yogyakarta. 12**,** 662-667.
40. KRUIROONGROJ, S. & THAVORNCHAROENSAP, M. 2014. Knowledge, acceptance, and willingness to pay for human papilloma virus (HPV) vaccination among female parents in Thailand. *Asian Pacific Journal of Cancer Prevention,* 15**,** 5469-5474.
41. LAREBO, Y. M., ELILO, L. T., ABAME, D. E., AKISO, D. E., BAWORE, S. G., ANSHEBO, A. A. & GOPALAN, N. 2022. Awareness, Acceptance and Associated Factors of Human Papillomavirus Vaccine Among Parents of Daughters in Hadiya Zone, Southern Ethiopia: A Cross-Sectional Study. *medRxiv*.
42. MARLOW, L. A., ZIMET, G. D., MCCAFFERY, K. J., OSTINI, R. & WALLER, J. J. V. 2013. Knowledge of human papillomavirus (HPV) and HPV vaccination: an international comparison. 31**,** 763-769.
43. MCBRIDE, K. R. & SINGH, S. 2017. Predictors of Adults' Knowledge and Awareness of HPV, HPV-Associated Cancers, and the HPV Vaccine: Implications for Health Education. *Health Education & Behavior,* 45**,** 68-76.
44. MIHRETIE, G. N., LIYEH, T. M., AYELE, A. D., BELAY, H. G., YIMER, T. S. & MISKR, A. D. 2022a. Knowledge and willingness of parents towards child girl HPV vaccination in Debre Tabor Town, Ethiopia: a community-based cross-sectional study. *Reprod Health,* 19**,** 136.
45. MIHRETIE, G. N., LIYEH, T. M., AYELE, A. D., BELAY, H. G., YIMER, T. S. & MISKR, A. D. 2022b. Knowledge and willingness of parents towards child girl HPV vaccination in Debre Tabor Town, Ethiopia: a community-based cross-sectional study. *Reproductive Health,* 19**,** 1-12.
46. MONDIALE DE LA SANTÉ, O. & HEBDOMADAIRE, W. H. O. J. W. E. R. R. É. 2022. Human papillomavirus vaccines: WHO position paper (2022 update)–Vaccins contre les papillomavirus humains: note de synthèse de l'OMS (mise à jour de 2022). 97**,** 645-672.
47. MORAN, M. B., FRANK, L. B., CHATTERJEE, J. S., MURPHY, S. T., BAEZCONDE-GARBANATI, L. J. P. E. & COUNSELING 2016. Information scanning and vaccine safety concerns among African American, Mexican American, and non-Hispanic White women. 99**,** 147-153.
48. OKUNADE, K. S. 2020. Human papillomavirus and cervical cancer. *Journal of Obstetrics and Gynaecology,* 40**,** 602-608.
49. ORGANIZATION., W. H. 2021. Ethiopia launches Human Papillomavirus Vaccine for 14 year old girls 2018 *World Health Organization*.
50. PAZ-ZULUETA, M., ÁLVAREZ-PAREDES, L., RODRÍGUEZ DÍAZ, J. C., PARÁS-BRAVO, P., ANDRADA BECERRA, M., RODRÍGUEZ INGELMO, J. M., RUIZ GARCÍA, M. M., PORTILLA, J. & SANTIBAÑEZ, M. 2018. Prevalence of high-risk HPV genotypes, categorised by their quadrivalent and nine-valent HPV vaccination coverage, and the genotype association with high-grade lesions. *BMC cancer,* 18**,** 1-9.
51. PERLMAN, S., WAMAI, R. G., BAIN, P. A., WELTY, T., WELTY, E. & OGEMBO, J. G. 2014. Knowledge and awareness of HPV vaccine and acceptability to vaccinate in sub-Saharan Africa: a systematic review. *PLoS One,* 9**,** e90912.

52. PORTNOY, A., SWEET, S., DESALEGN, D., MEMIRIE, S. T., KIM, J. J., VERGUET, S. J. H. P. & PLANNING 2021. Health gains and financial protection from human papillomavirus vaccination in Ethiopia: findings from a modelling study. 36**,** 891-899.
53. PRUDDEN, H. J., ACHILLES, S. L., SCHOCKEN, C., BROUTET, N., CANFELL, K., AKABA, H., BASU, P., BHATLA, N., CHIRENJE, Z. M. & DELANY-MORETLWE, S. J. V. 2022. Understanding the public health value and defining preferred product characteristics for therapeutic human papillomavirus (HPV) vaccines: World Health Organization consultations, October 2021—March 2022. 40**,** 5843-5855.
54. RABIU, K. A., ALAUSA, T. G., AKINLUSI, F. M., DAVIES, N. O., SHITTU, K. A. & AKINOLA, O. I. 2020. Parental acceptance of human papillomavirus vaccination for adolescent girls in Lagos, Nigeria. *J Family Med Prim Care,* 9**,** 2950-2957.
55. RANCIC, N. K., MILJKOVIC, P. M., DELJANIN, Z. M., MARINKOV-ZIVKOVIC, E. M., STAMENKOVIC, B. N., BOJANOVIC, M. R., JOVANOVIC, M. M., MILJKOVIC, D. P., STANKOVIC, S. M. & OTASEVIC, S. A. J. M. 2022. Knowledge about HPV Infection and the HPV Vaccine among Parents in Southeastern Serbia. 58**,** 1697.
56. RENDLE, K. A. & LESKINEN, E. A. J. Q. H. R. 2017. Timing is everything: exploring parental decisions to delay HPV vaccination. 27**,** 1380-1390.
57. SAQER, A., GHAZAL, S., BARQAWI, H., BABI, J. A., ALKHAFAJI, R. & ELMEKRESH, M. M. J. A. P. J. O. C. P. A. 2017. Knowledge and awareness about cervical cancer vaccine (HPV) among parents in Sharjah. 18**,** 1237.
58. SHETTY, S., PRABHU, S., SHETTY, V., SHETTY, A. K. J. H. V. & IMMUNOTHERAPEUTICS 2019. Knowledge, attitudes and factors associated with acceptability of human papillomavirus vaccination among undergraduate medical, dental and nursing students in South India. 15**,** 1656-1665.
59. SINSHAW, M. T., BERHE, S. & AYELE, S. G. 2022. Knowledge and Attitude Towards Human Papillomavirus Vaccine and Associated Factors Among Mothers Who Have Eligible Daughters in Debre Markos Town, Northwest Ethiopia. *Infect Drug Resist,* 15**,** 781-793.
60. SOBIERAJSKI, T., MAŁECKA, I., AUGUSTYNOWICZ, E. J. H. V. & IMMUNOTHERAPEUTICS 2023. Feminized vaccine? Parents' attitudes toward HPV vaccination of adolescents in Poland: A representative study. 19**,** 2186105.
61. SUNG, H., FERLAY, J., SIEGEL, R. L., LAVERSANNE, M., SOERJOMATARAM, I., JEMAL, A. & BRAY, F. 2021. Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA: a cancer journal for clinicians,* 71**,** 209-249.
62. TEKA, B., GIZAW, M., RUDDIES, F., ADDISSIE, A., CHANYALEW, Z., SKOF, A. S., THIES, S., MIHRET, A., KANTELHARDT, E. J. & KAUFMANN, A. M. J. I. J. O. C. 2021. Population-based human papillomavirus infection and genotype distribution among women in rural areas of South Central Ethiopia. 148**,** 723-730.
63. TURIHO, A. K., OKELLO, E. S., MUHWEZI, W. W. & KATAHOIRE, A. R. 2017. Perceptions of human papillomavirus vaccination of adolescent schoolgirls in western Uganda and their implications for acceptability of HPV vaccination: a qualitative study. *BMC Research Notes,* 10**,** 431.
64. UKUMO, E. Y., WOLDEHAWARIAT, F. G., DESSALEGN, S. A., MINAMO, D. M., UKKE, G. G. J. C. M. & RESEARCH 2022. Assessment of Knowledge About Human

Papillomavirus Vaccination Among Primary School Girls in Arba Minch Town, South Ethiopia, 2020 an Institution-Based Cross-Sectional Study. 2205-2214.

65. WALBOOMERS, J. M., JACOBS, M. V., MANOS, M. M., BOSCH, F. X., KUMMER, J. A., SHAH, K. V., SNIJDERS, P. J., PETO, J., MEIJER, C. J. & MUÑOZ, N. J. T. J. O. P. 1999. Human papillomavirus is a necessary cause of invasive cervical cancer worldwide. 189**,** 12-19.
66. WIGLE, J., COAST, E. & WATSON-JONES, D. J. V. 2013. Human papillomavirus (HPV) vaccine implementation in low and middle-income countries (LMICs): health system experiences and prospects. 31**,** 3811-3817.
67. WONG, L. P. J. I. J. O. G. & OBSTETRICS 2008. Young multiethnic women's attitudes toward the HPV vaccine and HPV vaccination. 103**,** 131-135.
68. ZHANG, X., WANG, Z., REN, Z., LI, Z., MA, W., GAO, X., ZHANG, R., QIAO, Y. & LI, J. 2021. HPV vaccine acceptability and willingness-related factors among Chinese adolescents: a nation-wide study. *Human Vaccines & Immunotherapeutics,* 17**,** 1025-1032.
69. ZHANG, Z., SHI, J., ZHANG, X., GUO, X. & YU, W. J. V. 2023. Willingness of parents of 9-to-18-year-old females in China to vaccinate their daughters with HPV vaccine. 41**,** 130-135.
70. ZHU, L., ZHAI, S., SIU, P. T., XIA, H. Y., LAI, S., ZAMBRANO, C. N. & MA, G. X. J. A. J. O. H. B. 2019. Factors related to Chinese parents' HPV vaccination intention for children. 43**,** 994-1005.

8. Annexes

Annex i: English Version Information sheet and Consent form

Title of the Research: knowledge and willingness towards human papillomavirus vaccine and associated factors among parents who have eligible daughters in Alle special Wereda, Southern Ethiopia, 2023. Mixed study

Name of Principal Investigator: Selemaye Zenebe

Name of the Organization: Hawassa University College of Medicine and Health Sciences School of Nursing Department of pediatrics and child Health Nursing

Sponsor: Hawassa University College of Medicine and Health Sciences, City of Hope, USA, and Martin Luther University, Germany.

Introduction

This information sheet and consent form are prepared with the aim of assessing knowledge and

Willingness towards the human papillomavirus vaccine and associated factors among parents who have eligible daughters in Alle special Wereda, Southern Ethiopia, 2023.

Purpose of the Research Project: This study aims to assess knowledge and willingness towards

Human papillomavirus vaccine and associated factors among parents who have eligible daughters in Alle special Wereda, Southern Ethiopia, 2023.

Procedure: The study involves mothers of eligible daughters who have 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, Risks, and /or Discomfort

By participating in this research project, you may feel some discomfort in wasting your time (a

Maximum of 30-45 minutes). However, your participation is important to assess knowledge and willingness for the 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 to participate 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 Hawassa University College of Medicine and Health Sciences. If you have any questions you can contact me any time, and you may ask at any time you want.

Name: Selemaye Zenebe

Address: phone: +251919670505/0943802255

Email:selemayez@gmail.com

Dear;

My name is Selemaye Zenebe I am studying master's degree in Pediatrics and Child Health Nursing at Hawassa University College of Medicine and Health Sciences. I am interested in studying knowledge and willingness towards HPV vaccine and associated factors among parents of eligible daughters in Alle special Wereda. This questionnaire is designed for academic purposes and will be approved by Hawassa University, College of Medicine and Health Sciences, School of Nursing, in partial fulfillment of a master's degree in Pediatrics and Child 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 answer 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 not, please stop here.

Name of Researcher: Selemaye Zenebe

Address: Hawassa University College of Health Sciences

Phone No: +251919670505/0943802255

E-mail: selemayez@gmail.com

Name of data collector_____ signature_____

Date of questionnaire interview _____month_____/2015 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/ 2015 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 willingness towards HPV vaccine and associated factors among parents who have eligible daughters in Alle special Wereda. 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 attitudes toward the HPV vaccine and associated factors among mothers who have eligible daughters.

Signature_____

Date_____

Annexes II: English version Questionnaire

A questionnaire was prepared to assess knowledge and willingness towards the human papillomavirus vaccine and associated factors among parents who have eligible daughters in Alle special Wereda, Southern Ethiopia, 2023.

Part-1 Sociodemographic characteristics of respondents in Alle special Woreda, 2022/23

No	Question	Response	Remark
1	Age	----------	
2	Sex	1. Male	
		2. Female	
3	Marital status	1. Single	
		2. Married	
		3. Widowed	
		4. Divorced	
		5. Other	
4	Religion	1. Protestant	
		2. Orthodox	
		3. Muslim	
		4. Others	
5	Educational level	1. Unable to read and write	
		2. Able to read and write	
		3. Primary school	
		4. Secondary school	
		5. College and above	
6	Occupation of mother	1. Housewife	
		2. Farmer	
		3. Self-employee	
		4. Government employee	
		5. Merchant	
		6. Others	
7	Occupation of the father	1. Farmer	
		2. Self-employee	
		3. Government employee	
		4. Merchant	
		5. Others	
8	Household income	----------	
9	No. of adolescent girls in the house	----------	

Part-2. Information and source of information among parents of daughters aged 9–14 Years in Alle special Woreda, 2022/23

No.	Question	Response	Remark
1	Have you ever heard about cervical cancer?	1. Yes 2. No	
2	Have you ever heard about the HPV vaccine?	1. Yes 2. No	
3	Source of information	1. Friends 2. Radio 3. Television 4. Health professionals 5. Internet 6. Brochure 7. Others……..	

Part-3 Reproductive health characteristics among parents of daughters aged 9–14 Years in Alle special Woreda, 2022/23

No.	Question	Response	Remark
1	Is there any family history of cervical cancer?	1. Yes 2. No	
2	Is there any family history of STDs?	1. Yes 2. No	
3	Do you fear sexually transmitted infections?	1. Yes 2. No	
4	Did your girl/s take the HPV vaccine?	1. Yes 2. No	
5	Did your daughter receive other recommended childhood vaccines?	1. Yes 2. No	

Part-4 Knowledge of human papillomavirus vaccine and cervical cancer among parents of daughters aged 9–14 Years in Alle special Woreda, 2023

No.	Question	Response	Remark
1.	HPV is the main risk factor for cervical cancer and other cancers	1. Yes 2. No	
2.	HPV infection only limited to women	1. Yes 2. No	
3.	Having multiple sexual partners is the risk factor for HPV infection	1. Yes 2. No	
4.	Sex at an early age increases the risk of transmission of HPV infection	1. Yes 2. No	
5.	Being a smoker increases the risk of HPV infection	1. Yes 2. No	
5.	Sexual contact is the main transmitting route of HPV infection	1. Yes 2. No	
6.	People can transmit HPV to their partner even if they have no infection symptoms	1. Yes 2. No	
7.	Human papillomavirus is very common in women younger than 30 years.	1. Yes 2. No	
8.	Cervical cancer can be prevented by taking the HPV vaccine before sexual intercourse	1. Yes 2. No	
9.	HPV infection may lead to AIDS	1. Yes 2. No	
10.	The recommended age for taking the HPV vaccine is 9–14 year-olds	1. Yes 2. No	
11.	Do you know the HPV vaccine is given in schools?	1. Yes 2. No 3. I don't know	

Part-5 Attitudes towards cervical cancer prevention and human papillomavirus vaccine among parents of daughters aged 9–14 Years in Alle special Woreda, 2023.

No.	Question	Response	Remark
1	A person who has only one sex partner can protect herself from HPV infection	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree	

2	HPV vaccine education should be given to school adolescents	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree	
3	HPV infection is a serious health concern	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree	
4	Cervical cancer is a big problem for women	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree	
5	Cervical cancer causes death in women	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree	
6	Men's involvement is important in preventing cervical cancer	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree	
7	Getting a Pap test examination is not an embarrassment	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree	
8	Girls should get the HPV vaccine before their first sexual intercourse	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree	
9	Health information about the HPV vaccine is needed for adolescents	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree	
10	The HPV vaccine can cause adverse effects	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree	

11	The HPV vaccine is effective in preventing cervical cancer	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree	
12	HPV vaccination causes daughters to be sexually active early	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree	
13	HPV vaccination increases awareness of sexually transmitted diseases	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree	

Part-6, Readiness towards HPV Vaccine among parents of daughter aged 9–14 Years in Alle special Woreda, 2022/23

1.	HPV vaccination side effects occur rarely and are not severe for my daughter	1. Strongly agree 2. Agree 3. Somewhat agree 4. Neutral 5. Somewhat disagree 6. Disagree 7. Strongly disagree
2.	Political decisions about daughter HPV vaccinations are scientifically grounded.	1. Strongly agree 2. Agree 3. Somewhat agree 4. Neutral 5. Somewhat disagree 6. Disagree 7. Strongly disagree
3.	I am convinced the appropriate authorities only allow effective and safe HPV vaccines for daughters.	1. Strongly agree 2. Agree 3. Somewhat agree 4. Neutral 5. Somewhat disagree 6. Disagree 7. Strongly disagree
4.	My daughter does not need HPV vaccinations because infectious diseases do not hit her hard.	1. Strongly agree 2. Agree 3. Somewhat agree 4. Neutral 5. Somewhat disagree 6. Disagree

		7. Strongly disagree
5.	HPV vaccinations are unnecessary for my daughter because she rarely gets ill anyway.	1. Strongly agree 2. Agree 3. Somewhat agree 4. Neutral 5. Somewhat disagree 6. Disagree 7. Strongly disagree
6.	I will get my daughter HPV vaccinated because it is too risky for them to get infected	1. Strongly agree 2. Agree 3. Somewhat agree 4. Neutral 5. Somewhat disagree 6. Disagree 7. Strongly disagree
7.	I will make sure that my daughter receives HPV vaccinations in good time.	1. Strongly agree 2. Agree 3. Somewhat agree 4. Neutral 5. Somewhat disagree 6. Disagree 7. Strongly disagree
8.	HPV vaccinations are so important to me that I prioritize my daughter getting vaccinated over other things.	1. Strongly agree 2. Agree 3. Somewhat agree 4. Neutral 5. Somewhat disagree 6. Disagree 7. Strongly disagree
9.	I sometimes miss out on getting my daughter vaccinated because vaccination is bothersome.	1. Strongly agree 2. Agree 3. Somewhat agree 4. Neutral 5. Somewhat disagree 6. Disagree 7. Strongly disagree
10.	I get my daughter HPV vaccinated when I do not see disadvantages for them.	1. Strongly agree 2. Agree 3. Somewhat agree 4. Neutral 5. Somewhat disagree 6. Disagree 7. Strongly disagree
11.	I only get my daughter HPV vaccinated when the benefits outweigh the risks	1. Strongly agree 2. Agree 3. Somewhat agree

		4. Neutral 5. Somewhat disagree 6. Disagree 7. Strongly disagree
12.	For the HPV vaccine, I carefully consider whether my daughter needs it.	1. Strongly agree 2. Agree 3. Somewhat agree 4. Neutral 5. Somewhat disagree 6. Disagree 7. Strongly disagree
13.	I also get my daughter HPV vaccinated because protecting vulnerable risk groups is important to me	1. Strongly agree 2. Agree 3. Somewhat agree 4. Neutral 5. Somewhat disagree 6. Disagree 7. Strongly disagree
14.	I see daughter HPV vaccinations as a collective task against the spread of diseases.	1. Strongly agree 2. Agree 3. Somewhat agree 4. Neutral 5. Somewhat disagree 6. Disagree 7. Strongly disagree
15.	I also get my daughter HPV vaccinated because thereby other people are protected.	1. Strongly agree 2. Agree 3. Somewhat agree 4. Neutral 5. Somewhat disagree 6. Disagree 7. Strongly disagree
16.	It should be possible to exclude daughters from public activities (e.g., sports club activities) when they are not HPV vaccinated.	1. Strongly agree 2. Agree 3. Somewhat agree 4. Neutral 5. Somewhat disagree 6. Disagree 7. Strongly disagree
17.	The health authorities should use all possible means to achieve high HPV vaccination rates in daughters.	1. Strongly agree 2. Agree 3. Somewhat agree 4. Neutral 5. Somewhat disagree 6. Disagree 7. Strongly disagree

18.	It should be possible to sanction parents who do not follow the HPV vaccination recommendations by health authorities.	1. Strongly agree 2. Agree 3. Somewhat agree 4. Neutral 5. Somewhat disagree 6. Disagree 7. Strongly disagree
19.	Vaccinations cause diseases and allergies in daughters that are more serious than the diseases they ought to be protected from.	1. Strongly agree 2. Agree 3. Somewhat agree 4. Neutral 5. Somewhat disagree 6. Disagree 7. Strongly disagree
20	Health authorities knuckle under the power and influence of pharmaceutical companies concerning HPV vaccinations.	1. Strongly agree 2. Agree 3. Somewhat agree 4. Neutral 5. Somewhat disagree 6. Disagree 7. Strongly disagree
21.	HPV vaccinations contain chemicals in toxic doses for daughters. 5	1. Strongly agree 2. Agree 3. Somewhat agree 4. Neutral 5. Somewhat disagree 6. Disagree 7. Strongly disagree

Part 7: **Willingness towards HPV Vaccine among parents of daughter aged 9–14 Years in Alle special Woreda, 2022/23**

No.	Question	Response
1.	Are you willing for your daughter to receive the HPV vaccine	1. Yes 2. No

Annex III Interview and focus group discussion guide

1. Semi-structured in-depth interview guide questions for qualitative data collection

Domain	Question
Demographic	1. Age? ----------
	2. Sex ----------
	3. Number of daughters ----------

	4. Vaccination history ----------
	5. Kebele----------
	6. Occupation ----------
	7. Education----------
Attitudes	1. Would you be willing to have your daughter vaccinated against a virus that causes cancer? If yes, why? If not, why not?
	2. What do you think would be the benefit if your child was vaccinated against HPV?
	3. What do you think could go wrong with your child if she received the HPV vaccine?
	4. Would you advise someone else to be vaccinated against the HPV? If yes, why? If not, why not?
Beliefs	1. Do you believe vaccines can prevent disease? If not, can you tell us more If yes, can you tell us more
	2. If you had questions about a vaccine, who would you go to get more information?
	3. Those whose daughters have not been vaccinated ➢ Are there reasons why you have chosen not to vaccinate your daughter ➢ Is there anything that would make you want to get your daughters vaccinated?
	4. Those who vaccinated their daughter ➢ What things do you think could be done to encourage people to have their daughters vaccinated?
	5. Those who have not had their daughters vaccinated

Focused group discussion guide on HPV and HPV vaccine perception in Alle special Woreda, 2023.

This is research to be carried out as a partial requirement for a master's degree in pediatrics and child health nursing. You are kindly requested to participate in the focused group discussion organized on issues related to HPV infection and HPV vaccine in Alle special Woreda, SNNP, Ethiopia. The data you would like to provide will be kept confidential and all the information gathered will be used for only the purpose of this study.

1. What do you think about vaccines?
2. What do you think about the HPV vaccine?
3. Why do you think parents will/will not get their daughter vaccinated for HPV in Alle?
4. Can you tell us about cultural beliefs in the Alle community that can make it easy or difficult for adolescents to get vaccinated for HPV?
5. Can you tell us about religious beliefs in the Alle community and how people's beliefs play/do not play a role in parents' decision to get their adolescent daughter vaccinated for HPV?
6. What do you think is the role of family/friends in parents' decision to vaccinate their daughter for HPV?
7. Can you tell us about how family/friends may be helpful or not helpful in parents' decision to vaccinate their daughter for HPV?
8. What do you think is the role of the healthcare provider in parents' decision to vaccinate their daughter?
9. How much do you think people in the Alle community understand about HPV vaccination?
10. Is there anything more to tell us?

Annex IV: Amharic version information sheet and consent form

የጥናቱ ርዕሰ ፡ በኧለ ልዩ ወረዳ ዉስጥ የሂዉማን ፓፒሎማ ቫይረስ ክትባት እንዲወስዱ የተፈቀደላቸዉ ሴት ልጆች በተሰቦችን ስለ ሂዉማን ፓፒሎማ ቫይረስ ክትባት ያላቸዉን እዉቀት፣ ዝግጁነት እና ተያያዥሁኔታዎችን ይዳስሳል።

ጥናቱን ባለቤት ስም፡ ሰለማዬ ዘነበ

የተቋሙ ስም፡ ሀዋሳ ዩኒቨርሲቲ ህክምናና ጤና ሳይንስ ኮሌጅ

የስፖንሰሩ ስም፡ ሀዋሳ ዩኒቨርሲቲ ህክምናና ጤና ሳይንስ ኮሌጅ፣ ሲቲ ኦፊ ሆፕና፣ ማርቲን ሉተር ዩኒቨርሲቲ

መግቢያ፡ ይህ የመረጃ ዝርዝር እና የስምምነት ቅፅ በኧለ ልዩ ወረዳ ዉስጥ የሂዉማን ፓፒሎማ ቫይረስ ክትባት እንዲወስዱ የተፈቀደላቸዉ ሴት ልጆች በተሰቦችን ስለ ሂዉማን ፓፒሎማ ቫይረስ ክትባት ያላቸዉን እዉቀት፣ ዝግጁነት እና ተያያዥ ሁኔታዎችን ይዳስሳል።

የጥናቱ አላማ፡ የዚህ ጥናት ዋና አላማ በኧለ ልዩ ወረዳ ዉስጥ የሂዉማን ፓፒሎማ ቫይረስ ክትባት እንዲወስዱ የተፈቀደላቸዉ ሴት ልጆች እናቶችን ስለ ሂዉማን ፓፒሎማ ቫይረስ ክትባት ያላቸዉን እዉቀት፣ ዝግጁነት እና ተያያዥ ሁኔታዎችን ይዳስሳል።

የዚህ ጥናት ዉጤት በኧለ ልዩ ወረዳ ዉስጥ ስለ ሂዉማን ፓፒሎማ ቫይረስ ክትባት እዉቀት እና ዝግጁነት 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 30-45 ደቂቃ ሊፍጀበዎት ይችላል ሆኖም ግን የናንተ ተሳትፎ በኧለ ልዩ ወረዳ ዉስጥ የሂዉማን ፓፒሎማ ቫይረስ ክትባት እንዲወስዱ የተፈቀደላቸዉ ሴት ልጆች በተሰቦችን ስለ ሂዉማን ፓፒሎማ ቫይረስ ክትባት ያላቸዉን እዉቀት፣ፊላገት 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 ስምዎሰይኖር 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 በሀዋሳ ዩኒቨርሲቲ ህክምናና ጤና ሳይንስ ኮሌጅ በተቋማት ግምገማ ቦርድ እዲፀድቅ ይደረጋል። ማናቸዉም ጥያቄ ሲኖረዎት በማንኛዉም ጊዜ ማነጋገር ይችላሉ በተጨማሪም ማንኛዉንም መረጃ በፈለጉት ጊዜ ማግኘት ይችላሉ።

ስም፡ ሰለማዬ ዘነበ ስልክ ቁጥር፡ 09 19670505/0943802255 ኢ-ሜል፡ selemayez@gmail.com

ዉድ የጥናቱ ተሳታፊዎች!

ጤና ይስጥልኝ ፣ ስሜ ሰለማዬ ዘነበ ይባላል ፡ ፡ በአሁኑ ወቅት በሀዋሳ ዩኒቨርሲቲ በነርሲንግ ትምህርት ቤት የሁለተኛ ዲግሪ ትምህርቴን እየተከታተልኩ እገኛለሁ፡ ፡ የሁለተኛ ዲግሪዬን በከፍል ለመጨረስ ይረዳኝ ዘንድ በኧለ ልዩ ወረዳ ዉስጥ የሂዉማን ፓፒሎማ ቫይረስ ክትባት እንዲወስዱ የተፈቀደላቸዉ ሴት ልጆች ቤተሰቦችን ስለ ሂዉማን ፓፒሎማ ቫይረስ ክትባት ያላቸዉን እዉቀት፣ ዝግጁነትና እ ና ተያያዥ ሁኔታዎች በሚለዉ ርዕሰ ጉዳይ ላይ ጥናት እያደረኩ እገኛለሁ፡ ፡ ጥናቱ በሀዋሳ ዩኒቨርሲቲ ጤና ሳይንስ ትምህርት ቤት በነርሲንግ ትምህርት ክፍል የጸደቀ ነዉ፡ ፡ ስለሆነም ከላይ የተዘረዘሩት የጥናቱ ዓላማዎች ይሳኩ ዘንድ በእናንተ በኩል በእውነታ ላ ይ የተመሠረተና ትክክለኛ የሆነ መረጃ እንድትሰጡኝ እየጠየኩ በቃለ መጠይቁ ላይ የምትመልሱት መልስ ግላዊ እና ስማችሁን ያላካተተ በመሆኑ በከፍተኛ ሚስጥራዊነት የሚጠበቅ ይሆና ል ፡ ፡ ከዚህም በተጨማሪ በጥናቱ ላይ የምትሳተፉት በፍቃደኝነት ስለሆነ ካልተመቻችሁ ባስፈለጋችሁ ጊዜ ማቆም/ማቋረጥ መብታችሁ ነዉ፡ ፡ እርስዎ ጥያቄ በመመለስ ብትተባበሩኝ ለጥናቱ መሳካት የራስዎን ጉልህ ድርሻ ተወጡ ማለት ነዉ፡ ፡ መጠይቁን ለመመለስ ፍቃደኛ ነሽ/ነዎት ?

1. አዎ 2. አ ይደለሁም

አመሠግናለሁ፡ ፡

2. ጥናቱን የምሰራዉ፡ ሰለማዬ ዘነበ እባላለሁ

ስልክ፡- 09 19670505/0943802255 ኢ-ሜል፡ selemayez@gmail.com

ጥናቱን የሚሰበስበዉ ስም_____ ፊር ማ_____

ጥናቱ መሰብሰብ የተጀመረበት ቀን _____ወር _____/2015 ዓ/ም

የተቆጣጣሪዉ ስም_____ቀን _____ ፊር ማ_____

ጥናቱ መሰብሰብ የተጀመረበት ሰዓት _____: ደቂቃ

ጥናቱ ተሰብስቦ ያለቀበት ሰዓት _____: ደቂቃ

የተጣራበት ቀን _____ወር _____2015ዓ/ም

1. የተሟላ 2. በከፊል የተሟላ 3. ያልተሟላ

የ ጥናቱ ተሳታፊዎች ፍቃደኝነት ቅፅ

እኔ የጥናቱ ተሳታፊ የሆንኩኝ እናት/አባት በኧለ ልዩ ወረዳ ዉስጥ የሂዉማን ፓፒሎማ ቫይረስ ክትባት እንዲወስዱ የተፈቀደላቸዉ ሴት ልጆች እናቶችን ስለ ሂዉማን ፓፒሎማ ቫይረስ ክትባት ያላቸዉን እዉቀት፣ ዝግጁነትና 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 V: Amharic version questionnaires

የአማረኛ ቃለ-መጠይቅ

ይህ ቃለ -መጠይቅ በኧለ ልዩ ወረዳ ዉስጥ የሂዉማን ፓፒሎማ ቫይረስ ክትባት እንዲወስዱ የተፈቀደላቸዉ ሴት ልጆች በተሰቦችን ስለ ሂዉማን ፓፒሎማ ቫይረስ ክትባት ያላቸዉን እዉቀት፣ ዝግጁነት እና ተያያዥ ሁኔታዎችን ለመዳሰስ የተዘጋጀ ነ ዉ፡ ፡

ክፍል 1. ማህበራዊና ስነ-ህዝባዊ መግለጫዎች

ተ. ቁ	መጠይቆች	አማራጮች	ምርመራ
1	ዕድሜ(በዓመት)	----------	
2	ጾታ	1. ወንድ	
		2. ሴት	
3	የጋብቻ ሁኔታ	1. ያላገባች	
		2. ያገባች	
		3. ባሏ የሞተባት	
		4. አግብታ የፈታች	
		5. ሌላ ይገለጹ	
4	እምነት	1. ፕሮቴስታንት	
		2. ኦርቶዶክስ ተዋህዶ	
		3. ሙስሊም	
		4. ሌላ ----------	
5	የትምህርት ደረጃ	1. ማንበበብና መፃፍ አልችልም	
		2. ማንበብና መፃፍ ብቻ	
		3. አንደኛ ደረጃ	
		4. ሁለተኛ ደረጃ	
		5. ኮለጅና ከዚያ በላይ	
6	የእናት ስራ	የቤት እመቤት	
		ገበሬ	
		በራሴ ድርጅት/የግል ስራ	
		የመንግስት ሰራተኛ	
		ነጋዴ	
		ሌላ	
7	የቤት አባት ስራ	ገበሬ	
		በራሴ ድርጅት/የግል ስራ	
		የመንግስት ሰራተኛ	
		ነጋዴ	
		ሌላ	

8	የቤታችሁ ገቢ ስንት ነዉ	----------	
9	በጉርምስና ዕድሜ ላይ የሚገኙ ልጃገረዶች ቁጥር በቤትዎ	----------	

ክፍል 2. መረጃ እና የመረጃ ምንጭ

ተ. ቁ	መጠይቆች	አማራጮች	ምሪመራ
1	ከዚህ ጥናት በፊት ስለ የማህፀን በር ካንሰር ሰምተዉ ያውቃሉ?	1. አዎ 2. አይ	
2	ከዚህ ጥናት በፊት ስለ ሂዉማን ፓፒሎማ ቫይረስ ሰምተዉ ያውቃሉ?	1. አዎ 2. አይ	
3	ስለ መረጃዉን ያገኙት ከምንድን ነዉ	1. ከጓደኛ 2. ከረድዮ 3. ከቴሌቪዥን 4. ከጤና ባለሙያ 5. ከኢንተርኔት 6. ከመፅሄት/ጋዜጣ 7. ሌላ_____	

ክፍል-3 የስነ- ተዋልዶ ጤና ባህሪያት

ተ. ቁ	መጠይቆች	አማራጮች	ምሪመራ
1	በቤተሰብ ዉስጥ የማህፀን በር ካንሰር የታመመ ሰዉ አለ?	1. አዎ 2. አይ	
2	በቤተሰብ ዉስጥ የመራብያ አካላት ኢንፌክሽን የታመመ ሰዉ አለ?	1. አዎ 2. አይ	
3	በግብረ ሥጋ ግንኙነት የሚተላለፍ ኢንፌክሽን ይፈራሉ?	1. አዎ 2. አይ	
4	የእርስዎ ሴት ልጅ የሂዉማን ፓፒሎማ ቫይረስ ክትባት ወስደዋል?	1. አዎ 2. አይ	
5	ሴት ልጅዎ ሌሎች የሚመከሩ የልጅነት ክትባቶችን ወስዳለች?	1. አዎ 2. አይ	

ክፍል 4 ፡ ስለ ማህጸን በር ካንሰርና ሂዉማን ፓፒሎማ ቫይረስ ክትባት እዉቀት

ተ. ቁ	መጠይቆች	አማራጮች	ምሪመራ
1.	ስለ ማህፀን በር ካንሰር ሰምተዉ ያዉቃሉ	1. አዎ 2. አይ	

3.	ከዚህ ጥናት በፊት ስለ ሂዉማን ፓፒሎማ ቫይረስ ሰምተዉ ያውቃሉ?	1. አዎ 2. አይ	
3.	ከዚህ ጥናት በፊት ስለ ሂዉማን ፓፒሎማ ቫይረስ ክትባት ሰምተዉ ያውቃሉ?	1. አዎ 2. አይ	
4.	ሂዉማን ፓፒሎማ ቫይረስ ለማህፀን በር ካንሰር እና ለሌሎች ካንሰሮች ዋነኛው ተጋላጭነት ነው።	1. አዎ 2. አይ	
5.	የ ሂዉማን ፓፒሎማ ቫይረስ ኢንፌክሽን ሴቶችን ብቻ የሚያጠቃ ነው	1. አዎ 2. አይ	
6.	ብዙ የግብረ-ሥጋ ግንኙነት አጋሮች መኖሩ ለ ሂዉማን ፓፒሎማ ቫይረስ ኢንፌክሽን አደጋ ምክንያት ነው?	1. አዎ 2. አይ	
7.	ገና በለጋ እድሜ ላይ ያለ ወሲብ የ ሂዉማን ፓፒሎማ ቫይረስ ኢንፌክሽን የመተላለፍ እድልን ይጨምራል	1. አዎ 2. አይ	
8.	አጫሾች መሆን የ ሂዉማን ፓፒሎማ ቫይረስ ኢንፌክሽን አደጋን ይጨምራል	1. አዎ 2. አይ	
9.	የግብረ ሥጋ ግንኙነት የ ሂዉማን ፓፒሎማ ቫይረስ ኢንፌክሽን ዋና ማስተላለፊያ መንገድ ነው	1. አዎ 2. አይ	
10	ሰዎች ምንም አይነት የኢንፌክሽን ምልክቶች ባይኖራቸውም ሂዉማን ፓፒሎማ ቫይረስ ን ወደ አጋራቸው ሊያስተላልፉ ይችላሉ።	1. አዎ 2. አይ	
11	ሂውማን ፓፒሎማቫይረስ ከ 30 ዓመት በታች ለሆኑ ሴቶች በጣም የተለመደ ነው	1. አዎ 2. አይ	
12	የግብረ ሥጋ ግንኙነት ከመፈጸሙ በፊት የ ሂዉማን ፓፒሎማ ቫይረስ ክትባት በመውሰድ የማህፀን በር ካንሰርን መከላከል ይቻላል።	1. አዎ 2. አይ	
13	የ ሂዉማን ፓፒሎማ ቫይረስ ኢንፌክሽን ወደ ኤድስ ሊያመራ ይችላል	1. አዎ 2. አይ	
14	የ ሂዉማን ፓፒሎማ ቫይረስ ክትባት ለመውሰድ የሚመከረው እድሜ ከ9-14 አመት እድሜ ያለው ነው።	1. አዎ 2. አይ	
15	የ ሂዉማን ፓፒሎማ ቫይረስ ክትባት በትምህርት ቤቶች እንደሚሰጥ ያውቃሉ?	1. አዎ 2. አይ	

ክፍል-5 የማጎጸን በር ካንሰርን ለመከላከል እና የሂማን ፓፒሎማቫይረስ ክትባት ላይ ያለው አመለካከት 2015 ዓ.ም

ተ.ቁ	መጠይቆች	አማራጮች	ምረመራ
1	አንድ የወሲብ ጓደኛ ያለው ሰው ራሷን ከሂዉማን ፓፒሎማ ቫይረስ ኢንፌክሽን መጠበቅ ትችላለች።	1. በጣም እስማማለዉ 2. እስማማለዉ 3. ገለልተኛ 4. አልስማማም 5. በጣም አልስማማም	

2	የሂዉማን ፓፒሎማ ቫይረስ ክትባት ትምህርት ለትምህርት ቤት ጎረምሶች መሰጠት አለበት	1. በጣም እስማማለዉ 2. እስማማለዉ 3. ገለልተኛ 4. አልስማማም 5. በጣም አልስማማም	
3	የሂዉማን ፓፒሎማ ቫይረስ ኢንፌክሽን ከባድ የጤና ስጋት ነው	1. በጣም እስማማለዉ 2. እስማማለዉ 3. ገለልተኛ 4. አልስማማም 5. በጣም አልስማማም	
4	የማህፀን በር ካንሰር ለሴቶች ትልቅ ችግር ነው።	1. በጣም እስማማለዉ 2. እስማማለዉ 3. ገለልተኛ 4. አልስማማም 5. በጣም አልስማማም	
5	የማህፀን በር ካንሰር በሴቶች ላይ ሞት ያስከትላል	1. በጣም እስማማለዉ 2. እስማማለዉ 3. ገለልተኛ 4. አልስማማም 5. በጣም አልስማማም	
6	የማህፀን በር ካንሰርን ለመከላከል የወንዶች ተሳትፎ አስፈላጊ ነው።	1. በጣም እስማማለዉ 2. እስማማለዉ 3. ገለልተኛ 4. አልስማማም 5. በጣም አልስማማም	
7	የፓፕ ምርመራ ማድረግ አሳፋሪ አይደለም።	1. በጣም እስማማለዉ 2. እስማማለዉ 3. ገለልተኛ 4. አልስማማም 5. በጣም አልስማማም	
8	ልጃገረዶች ከመጀመሪያው የግብረ ሥጋ ግንኙነት በፊት የሂዉማን ፓፒሎማ ቫይረስ ክትባት መውሰድ አለባቸው	1. በጣም እስማማለዉ 2. እስማማለዉ 3. ገለልተኛ 4. አልስማማም 5. በጣም አልስማማም	
9	ስለ ሂዉማን ፓፒሎማ ቫይረስ ክትባት የጤና መረጃ ለወጣቶች ያስፈልጋል	1. በጣም እስማማለዉ 2. እስማማለዉ 3. ገለልተኛ	

		4. አልስማማም 5. በጣም አልስማማም	
10	የ ሂዉማን ፓፒሎማ ቫይረስ ክትባት የጎንዮሽ ጉዳቶችን ሊያስከትል ይችላል	1. በጣም እስማማለዉ 2. እስማማለዉ 3. ገለልተኛ 4. አልስማማም 5. በጣም አልስማማም	
11	የ ሂዉማን ፓፒሎማ ቫይረስ ክትባት የማኅጸን ነቀርሳን ለመከላከል ውጤታማ ነው።	1. በጣም እስማማለዉ 2. እስማማለዉ 3. ገለልተኛ 4. አልስማማም 5. በጣም አልስማማም	
12	የሂዉማን ፓፒሎማ ቫይረስ ክትባት ሴት ልጆች ቀደም ብለው የግብረ ሥጋ ግንኙነት እንዲፈጽሙ ያደርጋቸዋል።	1. በጣም እስማማለዉ 2. እስማማለዉ 3. ገለልተኛ 4. አልስማማም 5. በጣም አልስማማም	
13	የሂዉማን ፓፒሎማ ቫይረስ ክትባት በግብረ ሥጋ ግንኙነት የሚተላለፉ በሽታዎች ግንዛቤን ይጨምራል	1. በጣም እስማማለዉ 2. እስማማለዉ 3. ገለልተኛ 4. አልስማማም 5. በጣም አልስማማም	

ክፍል-6፣ ለሂዉማን ፓፒሎማ ቫይረስ ክትባት ዝግጁነት 2015 ዓ.ም

ተ. ቁ	መጠይቆች	አማራጮች	ምሪመራ
1.	የሂዉማን ፓፒሎማ ቫይረስ ክትባት የጎንዮሽ ጉዳቶች እምብዛም አይከሰቱም እና ለሴት ልጄ ከባድ አይደሉም	1. በጣም እስማማለዉ 2. እስማማለዉ 3. በጥቅቱ እስማማለዉ 4. ገለልተኛ 5. በጥቅቱ አልስማማም 6. አልስማማም 7. በጣም አልስማማም	
2.	ስለ ሴት ልጅ የሂዉማን ፓፒሎማ ቫይረስ ክትባት ፖለቲካዊ ውሳኔዎች በሳይንሳዊ መንገድ የተመሰረቱ ናቸው.	1. በጣም እስማማለዉ 2. እስማማለዉ 3. በጥቅቱ እስማማለዉ 4. ገለልተኛ 5. በጥቅቱ አልስማማም 6. አልስማማም	

		7. በጣም አልስማማም	
3.	የሚመለከታቸው ባለስልጣናት ለሴቶች ልጆች ውጤታማ እና ደህንነቱ የተጠበቀ የሂዉማን ፓፒሎማ ቫይረስ ክትባትን ብቻ እንደሚፈቅዱ እርግጠኛ ነኝ።	1. በጣም እስማማለዉ 2. እስማማለዉ 3. በጥቅቱ እስማማለዉ 4. ገለልተኛ 5. በጥቅቱ አልስማማም 6. አልስማማም 7. በጣም አልስማማም	
4.	ለሴት ልጄ የሂዉማን ፓፒሎማ ቫይረስ ክትባት አያስፈልጉም ምክንያቱም እሷ ያን ያህል ሀመም አይጎዳትም	1. በጣም እስማማለዉ 2. እስማማለዉ 3. በጥቅቱ እስማማለዉ 4. ገለልተኛ 5. በጥቅቱ አልስማማም 6. አልስማማም 7. በጣም አልስማማም	
5.	ለሴት ልጄ የሂዉማን ፓፒሎማ ቫይረስ ክትባት አያስፈልጉም ምክንያቱም እሷ የሚትታመመዉ አልፎአልፎ ነዉ	1. በጣም እስማማለዉ 2. እስማማለዉ 3. በጥቅቱ እስማማለዉ 4. ገለልተኛ 5. በጥቅቱ አልስማማም 6. አልስማማም 7. በጣም አልስማማም	
6.	ሴት ልጄን የሂዉማን ፓፒሎማ ቫይረስ ክትባት አስከትባታለዉ ምክንያቱም በበሽታ መጠቃት ለእሷ አደገኛ ነው።	1. በጣም እስማማለዉ 2. እስማማለዉ 3. በጥቅቱ እስማማለዉ 4. ገለልተኛ 5. በጥቅቱ አልስማማም 6. አልስማማም 7. በጣም አልስማማም	
7.	ሴት ልጄ በጣም አስፈላጊ የሆኑ የሂዉማን ፓፒሎማ ቫይረስ ክትባት በትክክለኛ ጊዜ መቀበሏን አረጋግጣለሁ።	1. በጣም እስማማለዉ 2. እስማማለዉ 3. በጥቅቱ እስማማለዉ 4. ገለልተኛ 5. በጥቅቱ አልስማማም 6. አልስማማም 7. በጣም አልስማማም	
8.	የሂዉማን ፓፒሎማ ቫይረስ ክትባት ለእኔ በጣም አስፈላጊ ስለሆኑ ልጄን ከሌሎች ነገሮች እንድትከተብ ቅድሚያ እሰጣለሁ።	1. በጣም እስማማለዉ 2. እስማማለዉ 3. በጥቅቱ እስማማለዉ	

		4. ገለልተኛ 5. በጥቅቱ አልስማማም 6. አልስማማም 7. በጣም አልስማማም	
9.	አንዳንድ ጊዜ ሴት ልጇን የሂዉማን ፓፒሎማ ቫይረስ መከተብ እተዋለዉ ምክንያቱም ክትባት አስጨናቂ ነው።	1. በጣም እስማማለዉ 2. እስማማለዉ 3. በጥቅቱ እስማማለዉ 4. ገለልተኛ 5. በጥቅቱ አልስማማም 6. አልስማማም 7. በጣም አልስማማም	
10.	ሴት ልጇን የሂዉማን ፓፒሎማ ቫይረስ ክትባት የሚከትባት ጉዳቱን ካላገኘዉ ብቻ ነው።	1. በጣም እስማማለዉ 2. እስማማለዉ 3. በጥቅቱ እስማማለዉ 4. ገለልተኛ 5. በጥቅቱ አልስማማም 6. አልስማማም 7. በጣም አልስማማም	
11.	ሴት ልጇን የሂዉማን ፓፒሎማ ቫይረስ ክትባት የማስከትባት ጥቅሙ ከጉዳቱ ሲበልጥ ብቻ ነው።	1. በጣም እስማማለዉ 2. እስማማለዉ 3. በጥቅቱ እስማማለዉ 4. ገለልተኛ 5. በጥቅቱ አልስማማም 6. አልስማማም 7. በጣም አልስማማም	
12.	ለእያንዳንዱ የሂዉማን ፓፒሎማ ቫይረስ ክትባት፣ ልጇ ያስፈልገዋል ወይ የሚለውን በጥንቃቄ ማጤን እንዳለብኝ በጥንቃቄ አስባለሁ።	1. በጣም እስማማለዉ 2. እስማማለዉ 3. በጥቅቱ እስማማለዉ 4. ገለልተኛ 5. በጥቅቱ አልስማማም 6. አልስማማም 7. በጣም አልስማማም	
13.	እኔም ሴት ልጇን የሂዉማን ፓፒሎማ ቫይረስ ክትባት አሰጣታለሁ ምክንያቱም ተጋላጭ የሆኑ የአደጋ ቡድኖችን መጠበቅ ለእኔ አስፈላጊ ነው።	1. በጣም እስማማለዉ 2. እስማማለዉ 3. በጥቅቱ እስማማለዉ 4. ገለልተኛ 5. በጥቅቱ አልስማማም 6. አልስማማም 7. በጣም አልስማማም	

14.	የሴት ልጅ የሂዉማን ፓፒሎማ ቫይረስ ክትባትን የበሽታዎችን ስርጭትን ለመከላከል እንደ አንድ የጋራ ተግባር ነው የማየው።	1. በጣም እስማማለዉ 2. እስማማለዉ 3. በጥቅቱ እስማማለዉ 4. ገለልተኛ 5. በጥቅቱ አልስማማም 6. አልስማማም 7. በጣም አልስማማም	
15.	እኔም ልጄን የሂዉማን ፓፒሎማ ቫይረስ ክትባት አስከተባታለሁ ምክንያቱም በዚህ ምክንያት ሌሎች ሰዎች ጥበቃ ይደረግላቸዋል።	1. በጣም እስማማለዉ 2. እስማማለዉ 3. በጥቅቱ እስማማለዉ 4. ገለልተኛ 5. በጥቅቱ አልስማማም 6. አልስማማም 7. በጣም አልስማማም	
16.	ለአንድ የተወሰነ በሽታ ክትባት ያልወሰደች ሴት ልጅን ከህዝባዊ እንቅስቃሴዎች (ለምሳሌ የስፖርት ክለብ እንቅስቃሴዎች) ማግለል መቻል አለበት።	1. በጣም እስማማለዉ 2. እስማማለዉ 3. በጥቅቱ እስማማለዉ 4. ገለልተኛ 5. በጥቅቱ አልስማማም 6. አልስማማም 7. በጣም አልስማማም	
17.	. በሴት ልጅ ላይ ከፍተኛ የሆነ የሂዉማን ፓፒሎማ ቫይረስ ክትባት የመከተብ መጠን ለማግኘት የጤና ባለስልጣናት ሁሉንም መንገዶች መጠቀም አለባቸው።	1. በጣም እስማማለዉ 2. እስማማለዉ 3. በጥቅቱ እስማማለዉ 4. ገለልተኛ 5. በጥቅቱ አልስማማም 6. አልስማማም 7. በጣም አልስማማም	
18.	በጤና ባለስልጣናት የየሂዉማን ፓፒሎማ ቫይረስ ክትባት ምክሮችን የማይከተሉ ወላጆችን ማገድ መቻል አለበት።	1. በጣም እስማማለዉ 2. እስማማለዉ 3. በጥቅቱ እስማማለዉ 4. ገለልተኛ 5. በጥቅቱ አልስማማም 6. አልስማማም 7. በጣም አልስማማም	
19.	የሂዉማን ፓፒሎማ ቫይረስ ክትባቶች መከላከል ከሚገባቸው በሽታዎች የበለጠ ከባድ የሆኑ በሽታዎችን እና አለርጂዎችን በሴት ልጅ ያስከትላሉ.	1. በጣም እስማማለዉ 2. እስማማለዉ 3. በጥቅቱ እስማማለዉ 4. ገለልተኛ	

		5. በጥቅቱ አልስማማም 6. አልስማማም 7. በጣም አልስማማም	
20.	የጤና ባለሥልጣናት የሕፃናት የሂዉማን ፓፒሎማ ቫይረስ ክትባትን በተመለከተ የመድኃኒት ኩባንያዎችን ኃይል እና ተፅእኖ ይጠቃሉ።	1. በጣም እስማማለዉ 2. እስማማለዉ 3. በጥቅቱ እስማማለዉ 4. ገለልተኛ 5. በጥቅቱ አልስማማም 6. አልስማማም 7. በጣም አልስማማም	
21.	የሂዉማን ፓፒሎማ ቫይረስ ክትባቶች ለሴት ልጅ መርዛማ መጠን ያላቸው ኬሚካሎች ይዘዋል	1. በጣም እስማማለዉ 2. እስማማለዉ 3. በጥቅቱ እስማማለዉ 4. ገለልተኛ 5. በጥቅቱ አልስማማም 6. አልስማማም 7. በጣም አልስማማም	

ክፍል-7፣ ለሂዉማን ፓፒሎማ ቫይረስ ክትባት ፈቃደኛነት 2015 ዓ.ም

ተ. ቁ	መጠይቆች	አማራጮች	ምርመራ
1.	ሴት ልጅህን የሂዉማን ፓፒሎማ ቫይረስ ክትባት ለማስከተብ ፈቃደኛ ኖት?	1. አዎ 2. አይ	

አባሪ III. የቃለ መጠይቅ እና የቡድን ውይይት መመሪያ

1. ከፊል የተዋቀረ የጥልቅ ቃለ መጠይቅ መረጃ መሰብሰብያ ጥያቄዎች

የመረጃው ዓይነት	ጥያቄ
የስነ ሕዝባዊ መረጃ	1. ዕድሜ? ----------
	2. ጾታ ---
	3. የሴት ልጆች ብዛት ----------
	4. የክትባት ታሪክ ----------
	5. ቀበሌ ----------
	6. ሙያ ----------
	7. ትምህርት ----------
እውቀት	1. ካንሰርን የሚከላከል ክትባት ሰምተህ ታውቃለህ?
	2. አዎ ከሆነ፣ ስለዚህ ክትባት የሚያስታውሱትን ሊነግሩን ይችላሉ?
	3. ስለ ሂዉማን ፓፒሎማ ቫይረስ ክትባት ሰምተህ ታውቃለህ?
	4. አዎ ከሆነ፣ ስለዚህ ክትባት ምንም ነገር ሊነግሩን ይችላሉ?
አመለካከቶች	1. ልጆቻችሁ ካንሰርን ከሚያመጣ ቫይረስ እንዲከተቡ ፈቃደኛ ትሆናላችሁ?

	• አዎ ከሆነ ለምን? • ካልሆነ ለምን አይሆንም?
	2. ልጅዎ በሂዉማን ፓፒሎማ ቫይረስ ላይ ከተከተበ ምን ጥቅም ይኖረዋል ብለው ያስባሉ?
	3. ልጅዎ የ ሂዉማን ፓፒሎማ ቫይረስ ክትባት ከወሰደች ምን ችግር ሊገጥማት ይችላል ብለው ያስባሉ?
	4. ሌላ ሰው በ ሂዉማን ፓፒሎማ ቫይረስ ላይ እንዲከተብ ምክር ይሰጣሉ? • አዎ ከሆነ ለምን? • ካልሆነ ለምን አይሆንም?
እምነቶች	1. ክትባቶች በሽታን ይከላከላል ብለው ያምናሉ? ➢ ካልሆነ የበለጠ ሊነግሩን ይችላሉ። ➢ አዎ ከሆነ፣ የበለጠ ሊነግሩን ይችላሉ።
	2. ስለክትባት ጥያቄዎች ካሉዎት፣ የበለጠ መረጃ ለማግኘት ወደ ማን ይሄዳሉ?
	3. ሴት ልጆቻቸው ያልተከተቡ 1. ሴት ልጅዎን ላለመከተብ የመረጡበት ምክንያቶች አሉ። 2. ሴት ልጆቻችሁን እንድትከተቡ የሚያደርጋችሁ ነገር አለ?
	4. ሴት ልጃቸውን የከተቡ ሰዎች ➢ ሴት ልጆቻቸውን እንዲከተቡ ለማበረታታት ምን መደረግ አለበት ብለው ያስባሉ

2. የቡድን ውይይት መመሪያ

ይህ በሕፃናት ሕክምና እና በሕፃናት ጤና ነርሲንግ ሁለተኛ ዲግሪ ለማግኘት እንደ ከፊል መስፈርት የሚከናወን ምርምር ነው። በደቡብ ክልል አሌ ልዩ ወረዳ በ ሂዉማን ፓፒሎማ ቫይረስ ኢንፌክሽን እና በ ሂዉማን ፓፒሎማ ቫይረስ ክትባት ዙሪያ በተዘጋጀው ተኮር የቡድን ውይይት ላይ እንድትሳተፉ በትህትና እንጠይቃለን። ማቅረብ የሚፈልጉት መረጃ በሚስጥር ይጠበቃል እና ሁሉም የተሰበሰበው መረጃ ለዚህ ጥናት ዓላማ ብቻ ጥቅም ላይ ይውላል።

i. ስለ ክትባቶች ምን ያስባሉ?

ii. ስለ ሂዉማን ፓፒሎማ ቫይረስ ክትባት ምን ያስባሉ?

iii. ወላጆች ልጆቻቸውን በአሌ ውስጥ ለኤችፒቭ ክትባት የማይወስዱት ወይም የሚወስዱት ለምን ይመስላችኋል?

iv. በጉርምስና ዕድሜ ላይ የሚገኙ ወጣቶች ለ ሂዉማን ፓፒሎማ ቫይረስ በሽታ መከተብ ቀላል ወይም አስቸጋሪ ስለሚያደርጉ በአሌ ማህበረሰብ ውስጥ ስላሉት ባህላዊ እምነቶች ሊነግሩን ይችላሉ?

v. በአሌ ማህበረሰብ ውስጥ ስላለው ሃይማኖታዊ እምነቶች እና የሰዎች እምነት ወላጆች በጉርምስና ዕድሜ ላይ የሚገኙ ልጆቻቸውን እንዲከተቡ ለማድረግ በሚያደርጉት ውሳኔ ላይ እንዴት ሚና እንደሚጫወት ወይም ሚና እንደሌለው ሊነግሩን ይችላሉ?

vi. ወላጆች ልጆቻቸውን ለሂዉማን ፓፒሎማ ቫይረስ በሽታ ለመከተብ በሚያደርጉት ውሳኔ የቤተሰብ/ጓደኞች ሚና ምን ይመስልሃል?

vii. ወላጆች ልጆቻቸውን ለ ሂዉማን ፓፒሎማ ቫይረስ በሽታ ለመከተብ በሚያደርጉት ውሳኔ ቤተሰብ/ጓደኞች እንዴት እንደሚረዱ ወይም እንደማይጠቅሙ ሊነግሩን ይችላሉ?

viii. ወላጆች ልጆቻቸውን ለመከተብ በሚያደርጉት ውሳኔ የጤና እንክብካቤ አቅራቢው ሚና ምን ይመስልዎታል?

ix. በአሌ ማህበረሰብ ውስጥ ያሉ ሰዎች ስለ ሂዉማን ፓፒሎማ ቫይረስ ክትባት ምን ያህል የተረዱት ይመስልዎታል?

x. ሌላ የሚሉት ነገር አለ?