

Practice and Factors Associated With Human Papilloma Virus Vaccination among Saint Gabriel Primary School Students, Oromia Regional State, Ilubabor Zone, Mattu City, Southwest Ethiopia, 2022

Endale Tamiru Burayu^{1*}, Bekem Dibaba Degefa¹, Melese Adugna Tola²

- 1 Department of Midwifery, College of Health Sciences, Mattu University, Mattu, southwest Ethiopia
- 2 Department of Midwifery, College of Health Sciences, Ambo University, Waliso Campus, Central Ethiopia

*Corresponding author:
Endale Tamiru Burayu

✉ endalejesus88@gmail.com

Department of Midwifery, College of Health Sciences, Mattu University, Mattu, southwest Ethiopia

Citation: Burayu ET, Degefa BD, Tola MA (2024) Practice and Factors Associated With Human Papilloma Virus Vaccination among Saint Gabriel Primary School Students, Oromia Regional State, Ilubabor Zone, Mattu City, Southwest Ethiopia, 2022. Health Sci J. Vol. 18 No. 5: 1139.

Abstract

Background: Human Papilloma Virus type 6 and 11 are core agent to the development of cervical neoplasia and detecting in 90 percent of cervical cancer. Although HPV vaccine has been consistently shown to be effective in reducing the incidence rate and mortality from the disease, there is limited access to HPV vaccination in developing countries. Thus, this study was aimed to assess practice and factors associated with Human Papillomavirus vaccination among Saint Gabriel primary school students, Oromia regional state, Ilubabor Zone, Mattu city, Southwest Ethiopia, 2022.

Methods: An institutional based cross-sectional study was conducted using a self-administered questionnaire among female students in St. Gabriel primary school of Mattu city from January 1st-30, 2022. Multistage sampling technique was employed and a total of 293 female students were took part in the study. Backward logistic regression by using adjusted odds ratio with respect to 95% of confidence interval was conducted for the strength and association between HPV vaccination practice and its associated factors. P-value of < 0.05 was used to declare statistical significance.

Result: The practice of HPV vaccination among St. Gabriel primary school students was 57.3% [CI=53.6, 60.8]. Having the history of other vaccine use [AOR= 2.4, CI=1.27-9.2], being knowledgeable about HPV vaccine [AOR 1.7, CI= 1.71-2.82] and being positive attitude towards HPV vaccine [AOR=2, CI=1.3-4.9] were significantly associated with practice of HPV vaccination.

Conclusion: More than half of the respondents were took the HPV vaccination. The factors like being knowledgeable, having a positive attitude, and having history of other vaccine use were significantly associated with HPV vaccination practice by primary academy female students.

Keywords: Human Papilloma Virus; Vaccination; Mattu city; Saint Gabriel primary school

Received: 1-May-2024, Manuscript No. iphsj-24-14741; **Editor assigned:** 4-May-2024, PreQc No. PQ-14741; **Review** 20-May-2024, QC No. Q-14741, **Revised:** 25-May-2024, Manuscript No. Iphsj-24-14741 (R); **Published:** 30-May-2024; DOI: 10.36648/1791-809X.18.5.1139

Introduction

Cervical cancer, (complication of Human Papillomavirus (HPV) infection), is the 2nd most common cancer in women worldwide [1]. According to the Cervical Cancer Crisis Card of 2013, this cancer had killed around two hundred seventy five thousand women and end up with five hundred thousand new cases worldwide. Amongst this, greater than 85 percent of the cases were occurring in developing countries [2,3]. Advanced stage of Cervical Cancer remained the major causes of morbidity and mortality among women in developing countries. According to 2013, data from the WHO, United Nations and the World Bank,

Ethiopia ranked 20th next to Japan with mortality rate of 14 per 100,000 with a total death of 3,235 [4-6]. It presented the socio-economic burden at the society level, national level, and international levels. The known Epidemiological risk factors for cervical cancer are; HPV infection, high-risk sexual partner, early initiation of sexual act, history of Sexually Transmitted Diseases, cigarette smoking, immune-suppression, multiparty and long-term oral contraceptive pill use [7].

HPV type 6 and 11 are the core agent to the development of cervical neoplasia and detecting in 90 percent of cervical cancer [8]. Globally, about 70 percent of invasive cervical cancer in women was tackled by HPV vaccination [9]. Although HPV vaccine

had shown to be very effective in reducing the incidence rate and mortality from the cervical cancer, there is limited access to HPV vaccination and few screening programs. On average, the coverage of cervical cancer vaccination was 19 percent and 63 percent in developing countries and developed countries respectively [10,11].

HPV vaccine (Gardasil and Cervix) is not uniformly recommended globally. For instance, in high income countries like; North America, Australia and Europe, it is recommended as large-scale use in the public health-care systems and the national immunization programs [12] However, in many low income countries like Ethiopia, HPV vaccines are not available through national immunization programs. Similarly, the HPV vaccine should be given by three doses in other countries but in Ethiopia the vaccine is given as campaign program for 9–14 years females in two doses at 6-month intervals [13,14].

Vaccination of schoolgirls is the most beneficial public health intervention to prevent cervical cancer. Vaccinating of 9-14 aged female students are very important since they are virgins most probably, prone to HPV infection and the tomorrow's generations to take the responsibility to care and educate the society.

Since HPV vaccination is a new program in the study area, it was mistakenly considered as COVID 19 vaccine in many schools and also there is no study conducted on the practice of HPV vaccine and associated factors in the study area before. Thus, this study assessed the practice of HPV vaccination and identified the factors that affect the practice of HPV vaccination.

Additionally, the finding from this study offers available information to authorities and help as a baseline for further researches, so that proper intervention could be taken to upgrade the practice towards HPV vaccine. Also this study was aimed to incorporate additional factors which are not addressed in the previous studies done outside of the study area. At the end of the study, recommendations were given for the concerned bodies.

Methodology

Study Design Period and Setting

Institutional grounded cross-sectional study design was employed from January 1st-30, 2022. The study was conducted at St. Gabriel Primary school of Mattu city. Mattu (Mettu) is the city in southwestern Ethiopia located in the Ilubabor zone of Oromia Regional State, about 600 km far from Addis Ababa. It covers about 2,184 hectares, having periodic rain fall ranges from 623.5/mm to 106/mm and the altitude ranging from 1200 to 1400 meter above ocean position. It has a total population of 41,231. From this, 51% are females and 49% are males. Out of these, about 12,369 were youth people aged 10–24 years (adolescents). The city has woyina dega climate, there are flat plains on the mother and part of Mattu which is suitable to commercial, farmer and agro-industry. There are three public primary seminaries in the city and at St. Gabriel Primary school around 1440 students were enrolled during 2022 academic calendar.

Source and Study Population

The source population was all female students who were enrolled

in Saint Gabriel primary school during 2022 Academic calendar. The study population was comprised of all female students those selected randomly from each class in Saint Gabriel primary school during 2022 academic calendar.

Sample Size Determination and Sampling Procedure

The single population proportion formula was used to calculate the sample size. The proportion of practice was taken from the related study done at North Shoa Zone and set up to be 66.5% [15]. By adding 10% non-response rate, considering the supposition of a 95% confidence level and 5% margin of error, the sample size came 376 female students. Since the source population is <10,000, we used reduction formula and final sample size was became 305. Multistage random sampling was applied to choose participants of the study from the source population. During the first stage, St. Gabriel primary school was chosen by lottery method. In the second stage, out of Six grades (each has six sections) in the school and seven of them were selected by lottery system again. In the third stage, the needed sample size was taken by consecutive sampling method. The first person was selected randomly and all the other selected students were included consecutively till the proportion in the section was met [Figure 1].

Data Collection Process and Tools

The data collection tool was self-administered questionnaire, which was adopted and modified after reviewing different literature [2,11,14]. The questionnaire was first prepared by English and then restated to local language Afan Oromo. To keep for harmony, the questionnaire translated back into English again by language expert. It was composed of four parts. The first part contained information on the socio-demographic characteristics, the alternate part held behavioral and reproductive health related of the study participants. The third part contained knowledge assessing questions, finally the fourth part held attitude of students (study participants) about HPV vaccination. The fourth part was also evaluated their practice towards HPV vaccine. Six Bachelors health care providers as data collector and two Masters of Science holders as supervisors were assigned for this study. Moreover, teachers and school administrators were not involved in administering the questionnaire and also were not allowed to enter into data collection room during data collection to assure privacy of participants. Additionally, to overcome information impurity the data were collected from all students from selected section contemporaneously.

Data Quality Control

To maximize delicacy and absoluteness of variables in the study, special attention was given to the construction of the questionnaire, the wording of the questions; restatement and re-translation were precisely considered during the designing of the questionnaire. Applicable design and sampling procedures was also precisely considered to maintain the quality of this study. To maintain the consistency of the variables, pretest of the questionnaire was conducted prior to the factual data collection begun on 16 students (5% of sample size) at Hurumu

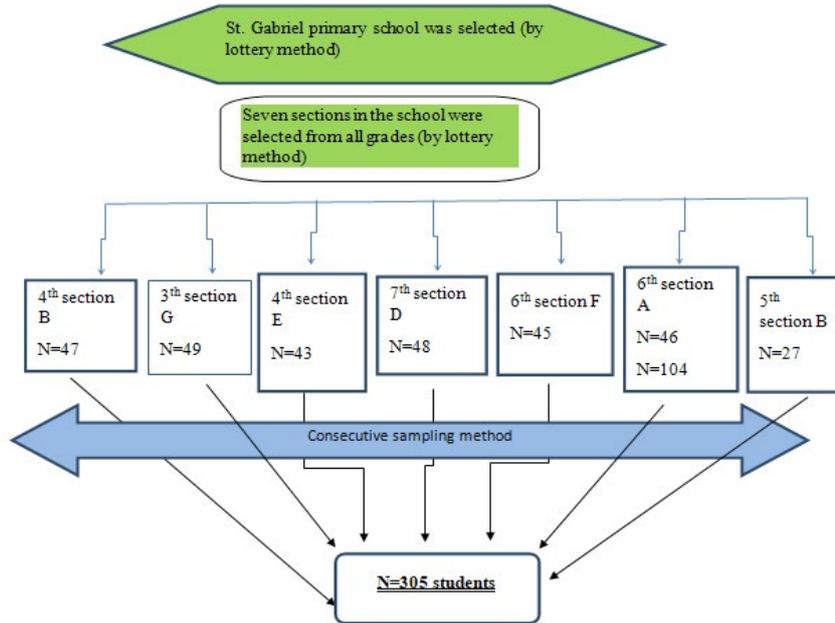


Figure 1 Diagrammatic representation of sampling procedure among St. Gabriel primary school students, Oromia Region, Ilubabor Zone Mattu city, Southwest Ethiopia, 2022.

primary school, which is out of the study area, thereby possible adjustment or revision was made. The Cronbach's alpha value was set up to be 0.82. Two days successive training regarding; the objective of the study, confidentiality of information and how to handle the questionnaires for data collection was given for data collectors and supervisors before factual data collection was begun. The completed questionnaires were collected every day after checking the completeness, consistency of the data and by furnishing timely feedback by supervisors.

Data Analysis and Processing

First data was entered by Epi data 3.1 version software and also exported to SPSS 20 for analysis. Independent variables like students' socio-demographic, Behavioral and reproductive health related characteristics, knowledge, and attitude questions were described using frequencies and percentages. Also, the result was presented in texts, tables and charts. The overall goodness of fit was checked by the Hosmer and Lemeshow test. Odds ratios (ORs), 95% confidence intervals (95% CIs) and p-values were done to identify associated factors and to determine strength of association with the dependent variables. Bivariate logistic regression was conducted to see the crude significant association of each variable to the dependent variable. Factors significant at $\alpha=0.25$ level were retained for consideration in the multivariable logistic regression using backward logistic regression. In the final model only factors significant at $\alpha < 0.05$ significance level was declared as significant.

Operational Definition

HPV vaccination practice: refers to a student who ever vaccinated HPV vaccination at least once and it is measured as a dichotomous outcome; practiced and not practiced [15].

- **Knowledgeable:** refers to for those who scored mean and above the mean were considered as knowledgeable (from 8 questions, answering 4 and above questions)
- **Not knowledgeable:** refers to for those scored below the mean (four or less questions) were considered as not knowledgeable.
- **Attitude:** measured by 5 Likert scale questions with a score of 5 (1 strongly disagree, 2 disagree, 3 neutral, 4 strongly agree, and 5 agree),
- **Positive attitude:** Refers to for those scored the mean and the above mean (answering 3 or more questions)
- **Negative attitude:** refers to for those scored below the mean

Result

Socio-Demographic Characteristics

Out of the total 305 female students of St Gabriel primary school students, who were invited to complete the questionnaires, 12 students were refused, making the overall response rate of 96.1 %. Amongst the total respondents, 239(81.6%) were at the age interval of 9-14. Most of the student's family income per month was >4000 ET Birr [Table 1].

Behavioral and Reproductive Health Related Characteristics of Respondents

Regarding substance addiction only 3(1%) of the respondents had bad habit. Among those 2(66.7%) chew chat and 1 drink alcohol [Table 2].

Table 1: Socio-demographic characteristics of the female students in St. Gabriel primary school, Oromia Region, Ilubabor Zone Mattu city, Southwest Ethiopia, 2022 (n =293).

Variable		Frequency	Percent (%)
Age	9-14	239	81.6
	15-19	41	14
	>20	13	4.4
	TOTAL	293	100
Religion	Orthodox	109	37.2
	Protestant	106	36.2
	Muslim	78	26.6
	TOTAL	293	100
Residence	Urban	181	61.8
	Rural	112	38.2
	Total	293	100
Ethnicity	Oromo	237	80.9
	Amhara	31	10.6
	SNNPR	18	6.1
	Gambella	6	2
	Tigre	1	0.5
	TOTAL	293	100
Grade	3 th	48	16.4
	4 th	90	30.7
	5 th	24	8.3
	6 th	90	30.7
	7 th	41	13.9
	TOTAL	293	100
Fathers level of education	No formal education	23	7.8
	Elementary	58	19.9
	Secondary	88	30
	College and above	124	42.3
	Total	293	100
Family income/month	<2000 ET birr	61	20.8
	2000-4000 ET birr	96	32.8
	>4000 ET birr	136	46.4

Knowledge about Cervical Cancer Vaccination and HPV Virus

204(69.6%) of respondents had heard about cervical cancer vaccination but about 89(30.4%) were not heard nothing about cervical cancer vaccination. Almost the total respondents around 189 (64.5%) of the students were Knowledgeable towards HPV vaccine and HPV [Table 3].

Regarding their source of information about cervical cancer vaccination, teachers, news media like TV, radio, books, health worker, poster and family were the major source of information reported by the students while no responded source were from religious leader. Generally among the total respondents, around 189 (64.5%) of the students were Knowledgeable towards HPV vaccine and HPV [Figure 2].

Attitudes of Respondents toward Cervical Cancer Vaccination

Out of total five questions prepared to assess the attitude of participants, 162 (55.4%) of the respondents had positive attitude

Table 2: Some behaviors/habits characteristics among female students in St. Gabriel primary school, Oromia Region, Ilubabor Zone, Mattu city, Southwest Ethiopia, 2022 (n =293).

Variable	Categories	Frequency	Percent (%)
Do you use any substance?	Yes	3	1
	No	290	99
	TOTAL	293	100
If yes, Which type?	Chat	2	66.7
	Alcohol	1	38.3
	Cigarette	0	0
	Other	0	0
	TOTAL	3	100
For how many years did you used it?	<1 year	1	
	>1 year	2	
Have you been pregnant before?	Yes	2	0.7
	No	291	99.3
Have you ever given birth before?	Yes if yes	2	100
	No	0	0
If yes, how many times?	1 times	2	100
	2 times	0	0
	>2	0	0
Have you ever taken another vaccine before?	Yes	273	93.2
	No	20	6.8

Table 3: HPV vaccine and HPV knowledge assessment of female students in Matu St. Gabriel primary school, Oromia Region, Ilubabor Zone, Mattu city, Southwest Ethiopia, 2022 (n =293).

Variable	Categories	Frequency	Percent (%)
Have you heard about cervical cancer vaccination?	Yes	204	69.6
	No	89	30.4
Have you heard about human papilloma Virus?	Yes	119	40.6
	No	174	59.4
Do you think HPV can cause cervical cancer?	Yes	165	51.9
	No	128	48.1
Do you know manifestation of HPV?	Yes	84	28.7
	No	209	71.3
Have you heard treatments of HPV?	Yes	95	32.4
	No	198	67.6
Do you know the prevention of HPV?	Yes	114	38.9
	No	179	61.1
Do you think that HPV is STI?	Yes	119	40.6
	No	174	59.4
How can cervical cancer be prevented?	Avoid multiple sexual partner	110	37.5
	Avoid HPV	38	13
	Condom	52	17.8
	Vaccination	30	10.2
	I Don't know	63	21.5

towards cervical cancer vaccination and 84 (28.8%) had negative attitude (who scored below the mean) [Figure 3].

Practice of Respondents toward HPV Vaccination

Out of 305 study participants, around 168(57.3%) of the

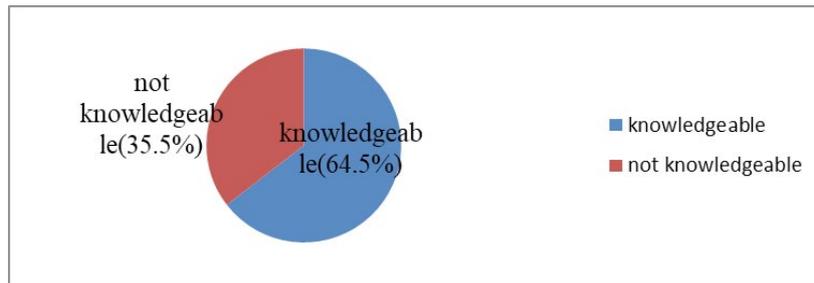


Figure 2 Knowledge of respondents about HPV vaccine and HPV among female students in St. Gabriel primary school, Oromia Region, Ilubabor Zone, Matu city, Southwest Ethiopia, 2022 (n =293).

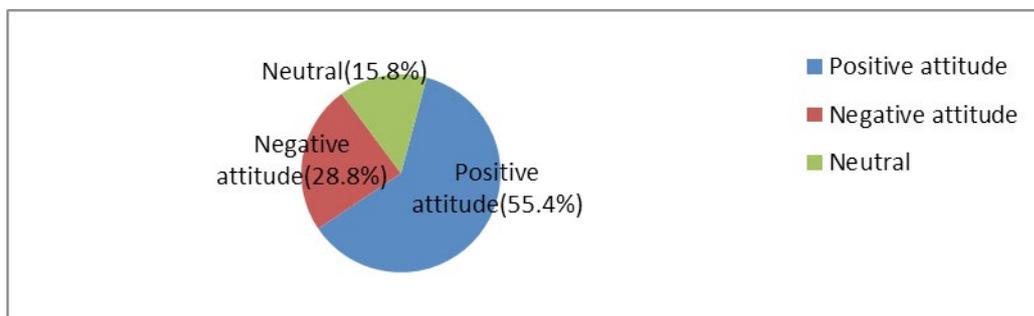


Figure 3 Attitude of respondents towards HPV vaccination in St. Gabriel primary school, Oromia Region, Ilubabor Zone, Matu city, Southwest Ethiopia, 2022 (n =293).

students were vaccinated HPV vaccine and 125 (42.7%) were not vaccinated. Among vaccinated students 127(75.6%) were took it one time and 41(24.4%) were took two times.

Factors Associated With HPV Vaccination Practice

On bivariate logistic regression, age, grade, family's income per month, religion, History of another Vaccine use, knowledge and attitude had an association with practice towards HPV vaccine at p-value of <0.25. But on multivariate logistic regression, History of other Vaccine use, knowledge and attitude were remained significantly associated with practice towards HPV vaccine at p-value <0.05. The odds of practicing HPV vaccination is 2.4 times higher for those students who had the history of other vaccine use than those who have no history about any vaccine use [AOR= 2.4, CI=1.27-9.2]. The students who were knowledgeable about HPV vaccine were 1.7 times more likely to practice HPV vaccination than those of not knowledgeable about it [AOR 1.7=, CI= [1.71-2.82]. The odds of having HPV vaccine among the students who had positive attitude were 2 times higher when compared with their counterparts [AOR=2, CI=1.3-4.9] [Table 4].

Discussion

The practice of HPV vaccination among St. Gabriel primary school students was 57.3% [CI=53.6, 60.8]. This was substantially higher than the study done in a globalized country, in which the level of uptake was much greater in Scotland {94.4%} and Taiwan {91%} [15,16]. The difference between the previous study and this finding might be due to the vaccine obtainability; as these countries are have better health coverage. They had also executed routine vaccination of HPV for all entitled Girls.

This paper found to be greater than affiliated study conducted in Malaysia (50.1%) and Uganda (17.61%) [17,18]. This might be due to differences in operational definition, study setting and current national campaign for HPV vaccination in Ethiopia. In Uganda and Malaysia, completion of three doses of the vaccine as per the recommended schedule is must to say practiced, but in this study those who received HPV vaccine at least one schedule were taken as practiced HPV vaccine.

In Malaysia the study was conducted at private facilities but in this study it was conducted at governmental school. Also this difference may be due to the introduction of the free HPV vaccination program at school in Ethiopia unlike in Malaysia which was given by cost at private setting. This result is slightly lower than the study conducted in Northern Shoa, where the practice of HPV vaccination was 66.5% [14]. This distinction could be due to Study setting, Sample size, study period and availability of screening setting in North Shoa, here screening for HPV be only at tertiary hospitals.

In this study around 64.5% of the repliers were knowledgeable towards HPV vaccine. It is higher than the study conducted in Indonesia (44%) and Malaysia (38%) [19,20]. The distinction could be due to study setting, sample size and socio-demographic status. Consistently, in this study around 55.4% of the respondents had positive attitude towards the vaccine this may be elaborated by the fact that most initiative factors of adolescents' practice are developed from their good attitude which can be summarized as the impact of attitude on conduct/behavior. The finding was lower than study conducted at Adis Ababa in which 63.5% of the study participants had positive attitude towards the vaccine

Table 4: Factors associated with practice towards Human Papilloma Virus Vaccination in St. Gabriel primary school, Oromia Region, Ilubabor Zone, Mattu city, Southwest Ethiopia, 2022 (n =293).

Variables	Categories	Practice towards HPV vaccine		Crude OR	Adjusted OR [95% CI]
		Practiced	Not-practiced		
Age	9-14	147 (50.2%)	92(31.4%)	2.5	2.11[1.34-6.62]
	15-19	21(7.2%)	33(11.2%)	1	1
Religion	Orthodox	66(22.5%)	43(14.7%)	1.2	1.01[0.67-2.22]
	Protestant	58(19.8%)	48(16.4%)	0.93	0.02[0.51-1.7]
	Muslim	44(15%)	34(11.6%)	1	1
Grade	4 th	61(20.8%)	35(11.9%)	3	2[1.1-8.32]
	7 th	60(20.5%)	31(10.6%)	3.32	1.52[1.2-9.3]
	6 th	40(13.7%)	47(16%)	1.5	1.2[0.54-4.2]
	5 th	7(2.4%)	12(4.1%)	1	1
Family's Income/ month	<2000	38(12.9%)	23(7.8%)	1.2	0.62[0.64-2.23]
	2000-4000	50(17.1%)	46(16.4%)	0.76	0.07[0.44-1.29]
	>4000	80(27.3%)	56(19.1%)	1	1
History of other Vaccine use	Yes	162(55.3%)	111(37.9%)	3.41	2.4[1.27-9.2]**
	No	6(2%)	14(4.8%)	1	1
Knowledge	Knowledgeable	121(41.3%)	68(23.2%)	2.2	1.7[1.71-2.82]**
	Not- knowledgeable	47(16%)	57(19.5%)	1	1
Attitude	Positive attitude	110(37.5%)	53(18.1%)	2.5	2[1.3-4.9]**
	Negative attitude	37(12.6%)	47(16%)	0.94	0.8[0.5-1.93]
	Neutral	21(7.2%)	25(8.5%)	1	1

1=reference category, ** strongly associated at P-value <0.05, AOR=adjusted odds ratio

[21]. This difference might be due to Adis Ababa is the capital city of Ethiopia, so that it is highly urbanized with a huge access to health-grounded information and anticipated high position of health knowledge as compared to other parts of the country.

On other way, in this study, knowledge and attitude towards the HPV vaccine were found to be associated factors for the HPV vaccination practice among students. These findings of the study are in line with findings of other studies conducted in Gondar town, North Ethiopia [22], and France [23]. Similarly it is Consistent to the studies conducted in south Ethiopia and Adis ababa, as evidenced by the commonest source of information for the HPV vaccination in the current study was mass media [24,25].

Likewise, in this study the students who have history of any other vaccine use in their lifetime were strongly associated with the practice of HPV vaccination. Although there are limited supportive findings in our country, this might be due to those who had the history of other vaccine use has no fear for vaccine, ignores some rumors like HPV vaccine can cause infertility, and knows of the public health significance of any vaccine.

In this study since the COVID-19 and HPV vaccine were given contemporaneously in our setup there may be information and recall bias among students but it is the first study from the southwest Ethiopia of Oromia region to comprehensively identify practice of HPV vaccination among the primary school students.

Conclusion

More than half (significant proportions 57.3% [CI=53.6, 60.8]) of the participants have been vaccinated for HPV. Since, it is a new program in the study setting; it is a good proportion when

compared with other related findings. The factors like being knowledgeable, having a positive attitude, and having history of other vaccine use were significantly associated with HPV vaccination practice by primary school female students. Health facilities in zonal area should include raise and routine strategies for vaccine delivery in addition to the campaign based delivery to speed up the practice (utilization) of HPV vaccination more than this. Since, Schools and health professionals were the primary sources of information; they should enhance the knowledge level of the students, strengthen the messages delivery strategy, to build a positive attitude among the students. They have to use behavioral change communication strategies and activities for HPV vaccination in a good manner. Families and other stakeholders should allow and support female students for the utilization of the recommended dose of HPV vaccination as per the schedule.

Availability of data and materials

The data sets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

Funding

The financial support for this thesis was gained from the Mattu University. The funder had no role in the design of the study, collection, analysis, interpretation of the data, and in the writing of the manuscript.

Authors' contributions

All authors made an equal contribution to the conception, design, and execution, acquisition of data, analysis, and interpretation. All authors have also read and agreed to its content, gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

Acknowledgment

The authors are grateful to the Mattu University and participants of the study who shared their time to give their genuine responses, data collectors, supervisors of the study and St. Gabriel primary school administrators for their Cooperation.

Ethical clearance and consent to participate

The ethical clearance and approval was incurred from Mattu University internal research review board (IRB) (Ref. No.MDD/96/2014) was received before the study was conducted. Respondents were informed about the objective and purpose of the study and written informed assent from student's families for those of less than 18 years old and written informed consent for those of greater than 18 years old were taken from each respondent. All the study participants were told that they have a full right to participate and the study participants were assured for an attainment of confidentiality for the information obtained from them. Data was collected anonymously and kept in lock with the investigators and all procedures were performed in accordance with the guidelines and regulations put forward under the Declaration of Helsinki.

References

- Haileselassie W, Mulugeta T, Tigeneh W, Kaba M, Labisso WL (2019) The Situation of Cancer Treatment in Ethiopia: Challenges and Opportunities. *J Cancer Prev* 24: 33-42.
- WHO (2013) WHO guidance notes: comprehensive cervical cancer prevention and control: a healthier future for girls and women. World Health Organization.
- Ali, Farhad, Kuelker, Rainer, Taye, Belaynew (2013) Understanding cervical cancer in the context of developing countries. *Annals of Tropical Medicine and Public Health* 5: 3-15.
- Jemal ABF, Forman D, O'Brien M, Ferlay J, Center M et al (2012) Cancer burden in Africa and opportunities for prevention. *Cancer* 118: 4372-4384.
- Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I (2021) Global Cancer Statistics 2020: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. *CA Cancer J Clin* 71: 209-249.
- Maree JE, Lu XM, Wright SC (2012) Combining breast and cervical screening in an attempt to increase cervical screening uptake An intervention study in a South African context. *Eur J Cancer Care (Engl)* 21: 78-86.
- Alan DeCherney LN, Murphy Goodwin T, Neri L (2012) CURRENT Diagnosis & Treatment Obstetrics & Gynecology.
- Wu LW, Lin LP, Chen SF, Hsu SW, Loh CH (2012) Knowledge and attitudes regarding cervical cancer screening among women with physical disabilities living in the community. *Res Dev Disabil* 33: 376-381.
- Smith JS, Lindsay L, Hoots B, Keys J, Franceschi S (2007) Human papillomavirus type distribution in invasive cervical cancer and high-grade cervical lesions: a meta-analysis update. *Int J Cancer* 121: 621-32.
- Savas HG, Taskin L (2011) Determining nurse-midwives' knowledge of the Pap-smear test and their rate of being tested in Turkey. *Asian Pac J Cancer Prev* 12: 1353-1360.
- Wright TC, Van Damme P, Schmitt HJ, Meheus A (2006) Chapter 14: HPV vaccine introduction in industrialized countries. *Vaccine* 31: 122-131.
- ACOG Practice Bulletin no 109 Cervical cytology screening. *Obstet Gynecol* 114: 1409-1420.
- Katahoire, Anne R, John A, Murokora D (2013) *International Journal of Child and Adolescent Health*. Hauppauge 6: 211-219.
- Kisaakye E, Namakula J, Kihembo C, Kisakye A, Nsubuga P (2018) Level and factors associated with uptake of human papillomavirus infection vaccine among female adolescents in Lira District, Uganda. *Pan African Medical Journal* 31: 14801.
- Kassa HN, Bilchut AH, Mekuria AD, Lewetie EM (2021) Practice and Associated Factors of Human Papillomavirus Vaccination Among Primary School Students in Minjar-Shenkora District, North Shoa Zone, Amhara Regional State, Ethiopia, 2020. *Cancer Manag Res* 13: 6999-7008.
- Loke AY, Kwan ML, Wong YT, Wong AKY (2017) The Uptake of Human Papillomavirus Vaccination and Its Associated Factors among Adolescents: A Systematic Review. *J Prim Care Community Health* 8: 349-362.
- Ndikom CM, Oboh P (2017) Perception, acceptance and uptake of Human papillomavirus vaccine among female adolescents in selected secondary schools in Ibadan, Nigeria. *African Journal of Biomedical Research* 20: 237-244.
- Jalani FF, Isahak I, Aris MS, Roslan N (2016) Knowledge, attitude and practice of human papillomavirus (HPV) Vaccination among Secondary School Students in Rural Areas of Negeri Sembilan, Malaysia. *Int J Collab Res Intern Med Public Health* 8: 56.

- 19 Saqer A, Ghazal SH, Barqawi H, Babi JA, AlKhafaji R, et al. (2017) Knowledge and Awareness about Cervical Cancer Vaccine (HPV) Among Parents in Sharjah. *Asian Pac J Cancer Prev* 18: 1237-1241.
- 20 Endarti D, Satibi S, Kristina SA, Farida MA, Rahmawanti Y (2018) Knowledge, Perception, and Acceptance of HPV Vaccination and Screening for Cervical Cancer among Women in Yogyakarta Province, Indonesia. *Asian Pac J Cancer Prev* 27: 1105-1111.
- 21 Dereje N, Ashenafi A, Abera A, Melaku E, Yirgashewa K (2021) 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 Alene T, Atnafu A, Mekonnen ZA, Minyihun A (2020) Acceptance of Human Papillomavirus Vaccination and Associated Factors Among Parents of Daughters in Gondar Town, Northwest Ethiopia. *Cancer Manag Res* 16: 8519-8526.
- 23 Haesebaert J, Lutringer-Magnin D, Kalecinski J, Barone G, Jacquard AC (2012) French women's knowledge of and attitudes towards cervical cancer prevention and the acceptability of HPV vaccination among those with 14 - 18 year old daughters: a quantitative-qualitative study. *BMC Public Health* 27: 1034.
- 24 Asfaw S, Morankar S, Abera M, Mamo A, Abebe L (2019) Talking health: trusted health messengers and effective ways of delivering health messages for rural mothers in Southwest Ethiopia. *Arch Public Health* 77: 8.
- 25 Belete N, Tsige Y, Mellie H (2015) Willingness and acceptability of cervical cancer screening among women living with HIV/AIDS in Addis Ababa, Ethiopia: a cross sectional study. *Gynecol Oncol Res Pract* 18: 6.