

Assessment of the Knowledge, Attitude and Acceptability towards Human Papilloma Virus and its Vaccine among Undergraduate Female Medical Students, South-West Ethiopia

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Abstract

Background: Human papilloma virus (HPV) infection is the most common viral infection of the reproductive organ and other body parts causing a range of health problem both in females and males. It is associated with 99.7% of cervical cancers. Though different preventive strategies including HPV vaccine are proved to be effective in preventing cervical cancer that occur as a result of persistent HPV infection, it is the second commonest cancer among female in Ethiopia.

Objective: This study aimed to assess the knowledge level and attitude of female undergraduate medical students towards HPV and its vaccine and their acceptability for the vaccine.

Methods: A Cross-sectional study was conducted at Jimma University, Ethiopia from February 10-16, 2016. Tests for association were done by chi-square and binary logistic regression at significance level of 5%.

Results: Overall, a low knowledge level and favorable attitude for HPV and its vaccine was observed among the study participants. Similarly their willingness for accepting HPV vaccine for self is low reported by only by less than half of the study participants, 196 (49.4%). Tests of association using a chi-square and binary logistic regression at significance level of 5% showed that age and year of study in medical school have a statistically significant association with their knowledge of HPV and its vaccine.

Conclusion and recommendation: This study showed low knowledge level and high unfavorable attitude towards HPV infection and its vaccine among female undergraduate university students. Their willingness to receive HPV vaccine for self is also low. Though an in-depth community based study is recommended; sexual and reproductive health education to the public in general and specifically to the adolescents and young should be given an emphasis probably using strategies like; incorporating in curricula as of primary level, through use of mass-medias and the health system.

Keywords: Human papillomavirus; Knowledge; Attitude; Acceptability; HPV-vaccine; Student; Ethiopia

Introduction

Human papilloma virus (HPV) infection is the most common viral infection of the reproductive tract and is the cause of a range of conditions in both females and males, including precancerous lesions that may progress to become cancerous. Although the majority of HPV infections do not cause symptoms or disease and resolve spontaneously, persistent infection with high-risk HPV genotypes may result in disease. In women, persistent infection with specific oncogenic types of HPV (most frequently types 16 and 18) may lead to precancerous lesions which, if untreated, may progress to cervical cancer [1].

In Ethiopia, women ages 15 years and older who are at risk of developing cervical cancer are around 27.9 million. Recent estimates

indicate that every year 7095 women are diagnosed with cervical cancer and 4732 die from the disease. Cervical cancer ranks as the second most frequent cancer among women and the second most frequent cancer among women between 15 and 44 years of age in Ethiopia.

The screening practice is underdeveloped; hence, only 0.6% among the total women population whose age is 18-69 years screened every 3 years, and 1.6% urban women and 0.4% rural women [2-5]. In Tikur Anbessa Specialized Hospital, the only cancer referral facility in Ethiopia, of all cancer types diagnosed around 30.3% accounted for cervical cancer [6].

Unlike other reproductive organ cancers, cervical cancer is potentially preventable. Effective screening programs in conjunction with human papilloma virus (HPV) vaccination can lead to a significant reduction in the morbidity and mortality associated with this cancer [7].

With increasing knowledge on the different HPV types, new strategies to prevent cervical cancer can be envisioned either through vaccination against HPV in children or young women prior to first sexual contact or secondary preventive screening for HPV high-risk types [8]. The HPV types reported in Ethiopia are HPV 16, HPV 18, HPV 45 and HPV 58, with crude prevalence rates of 71.8%, 18.4%, 1.8% and 0.6%, respectively [9]. Highly immunogenic and safe HPV vaccines recently have been licensed for use, the first explicitly designed to prevent cancer induced by a virus, which can reduce the morbidity and mortality of cervical cancer by offering protection to HPV types 16 and 18 as well as benign lesions caused by HPV types 6 and 11 [10-15].

A few studies have investigated the role of the vaccine's properties, such as cost, efficacy, and disease(s) targeted, in vaccine acceptance. Forty adolescent (ages 14 to 18 years) and adult (ages 20 to 50 years) about that, both the adolescents and adults showed preference for the same vaccines: those with higher efficacy (90%), specific physician recommendation, and low or moderate cost [15-23]. Whether the vaccine provided protection against genital warts in addition to protection against cervical cancer did not figure largely in decision making [24].

Because of the many unique features of HPV vaccines, including the target population of 9-13 year old girls, medical students in general and female students in particular can play an important role beyond recommending and administering the vaccines: they can be a source of information to girls who are eligible for the vaccine, parents, teachers, health care professionals, and the general community. HPV vaccine implementation should include educating girls about the benefit of vaccination, and can provide opportunities to educate their mothers about the need for cervical cancer screening and early treatment. HPV vaccine introduction may also provide the impetus to improve, strengthen, and integrate health services for 9-13 year olds at national, regional, and local levels [25].

The aim of this study is to assess knowledge, attitude towards human papilloma virus and its vaccine among Jimma University female medical students.

Materials and Methods

Study setting

The study was conducted in Jimma University; which is located 356 km South-west of Addis Ababa, Ethiopia. Jimma University is one of the leading public universities in the country whereby among other disciplines the training of different health professionals including undergraduate study in medicine and clinical postgraduate studies are provided.

Study design

This cross-sectional study was conducted from the 10th to the 16th of February 2016 at Jimma University. Data was collected from the respondents using pre-tested, validated and self-administered questionnaires.

Study population

The study populations were all female undergraduate medical students who were registered and are actively attending their training in pre-medicine (year-I), pre-clinical year, clinical and their final year/

graduating batch/6th year of study in medicine at the college of health sciences of Jimma university. There were a total of 448 female students who were actively attending their training during the study period and all of them were enrolled into the study apart from those who were not found to attend their class during the data collection period for different reasons like because of illness.

Data collection instrument and method

Participants were given a self-administered questionnaire and explanation was provided to assist them in completing the questionnaire by trained residents of Obstetrics and Gynecology at the university. The information obtained from questionnaires included: Socio-demographic data, Knowledge and awareness about HPV infection, cervical cancer and preventive methods against cervical cancer including HPV vaccination, Attitude towards HPV and its vaccine and Acceptability for HPV vaccine.

The knowledge of HPV and HPV vaccine was assessed using the following 11 questions with an options of; True, False and Uncertain: Human Papilloma Virus is a sexually transmitted infection, Human Papilloma Virus is very common worldwide, Human Papilloma Virus infects only women, Human Papilloma Virus may cause cervical cancer, There is a vaccine for Human Papilloma Virus, Human Papilloma Virus may cause cancer in males, Vaccine can be offered to female children age 9 and above, Complete HPV vaccine requires three injections/doses, HPV vaccine is indicated only for women with more than one sexual partner, The vaccine for human papilloma virus prevents other STIs and The HPV vaccine prevents cervical cancer totally. Similarly data on attitude towards HPV and its vaccine and acceptability for HPV vaccine was collected using 9 and 6 questions respectively. Overall the questionnaire were divided into 4 parts:

- Socio-demographic characteristics of the participants
- Knowledge of HPV and its vaccine
- Attitude towards HPV and its vaccine
- Acceptance of HPV vaccination.

The questionnaire was designed by the researchers basing on a previously published questionnaire. A pre-test was done among 5% non-study subjects in similar institution/population from the department of nursing and midwifery undergraduate 1st Degree students.

Ethical considerations

A letter of ethical clearance obtained from the ethical review board committee of the college of Health Sciences of Jimma University and informed consent from each study participants were secured.

Statistical analysis

The data was checked for its completeness. Then it was cleaned, entered to Microsoft Excel 2007 package and analyzed using SPSS version 21. Level of knowledge of the respondents was classified based on their score and of the overall 11 knowledge questions regarding HPV infection and its vaccine, study participants who scored <50% (i.e. answered correctly ≤ 5 questions) were labeled as not having adequate knowledge and those who score >50% were labeled as having a good knowledge. The reliability of the items was assessed by the Cronbach's alpha coefficient which was above 0.7 for Knowledge and Acceptability for HPV vaccine, but for their attitude it indicated minimally adequate reliability which was around 0.5. In addition to

this the validity of instrument was assured as the data was collected using self-administered questionnaires which show internally valid.

Descriptive statistics including frequencies and percentages were calculated for each item in the questionnaire. Attitudes of the respondents were divided into three categories of Agree, Disagree and neutral.

The relation between HPV knowledge, acceptability of the HPV vaccine, and the possible associated factors were evaluated using a Chi-squared test to determine the presence of association and Logistic regression analysis at a 5% statistical significance level was used to assess the strength of association.

Results

Socio-demographic characteristics

Of the total of 448 female undergraduate medical students who were formally registered and were in training at different level of medical education at Jimma University College of Health Sciences, 397 students had successfully completed the questionnaire, making the response rate to be 88.6%. The study participants' age ranged from 18-34, with the mean age of 22.1 years. Close to half the study participants; 187(47.1%) were from pre-clinical (PC) year of study (PC-I and II), followed by Pre-medicine (year-I) 101(25.4%), Clinical(C) year (C-I and II) and those in their internship (6th year) were the least 18(4.5%).

The majorities of the study participants were Oromo in ethnicity 163(41.1% and Orthodox Christian in religion 215(54.2%). Though one-third of the study participants had reported a personal history of having the experience of sexual intercourse with the age at first sexual intercourse being after 18 years in 121(30.5%) of them, only ten (2.5%) of the study participants are married. Of the total study participants, 9(2.3%) of them reported family history of cervical cancer and the parent/s of 39(9.8%) of them are health professionals (Table 1).

Knowledge of HPV infection and its vaccine

Two hundred and twenty three (56.20%) of the study participants were found to have a poor knowledge about HPV and its vaccine, while the rest were labeled to having a good knowledge. While sixty three (15.9%) of the study participants didn't answer any of the 11 knowledge questions about HPV and its vaccine correctly, all of the 11 knowledge was answered correctly by only 23(5.8%) of them the study population (Figure 1).

Even though the overall knowledge score assessed to be poor among the study participants there are specific question for which more than half of the study participants knew that; "HPV is STI", "HPV may cause cervical cancer" and "HPV has vaccine" among 240(60.5%), 257(64.7%) and 213(53.7%) of them respectively. The rest eight knowledge assessment questions were correctly answered by less than half of the study participants of which the least known facts to the study participants regarding HPV and its vaccine were; "HPV may cause cancer in males" and "the number of total doses required for complete HPV vaccine" known only to 107(27.0%) and 109(27.5%) of the study participants respectively (Table 2).

Attitude towards HPV and its vaccine

The overall attitude of the study participants towards, HPV and its vaccine is found to be low; where by only 44.4% of they were found to

have an overall favorable attitude for HPV and its vaccine. Awareness of study participants towards the extent of prevalence of carcinoma of the cervix in Ethiopia is high among all study participants the majorities 244(61.5%) agree that "Carcinoma of the cervix is highly prevalent in Ethiopia". The attitude of study participants towards HPV vaccine was not found to be favorable among most of the study participants, only 114(28.7%) of them don't agree that "HPV vaccine will increase the risk of multiple sexual partner behavior among adolescents".

Variables		Number	Percent
Age group in years	15-19	122	30.7
	20-24	262	66
	≥25	13	3.3
Ethnicity	Oromo	163	41.1
	Amhara	147	37
	Gurage	18	4.5
	Somali	10	2.5
	Others*	59	13.1
Religion	Orthodox	215	54.2
	Muslim	98	24.7
	Protestant	76	19.1
	Others**	8	2.1
Level of study in school of medicine	Pre-medicine	101	25.4
	Pre-clinical	187	47.1
	Clinical year	91	22.9
	Internship	18	4.5
Occupation of the parent/s	Health professional	39	9.8
	Non-health professional	358	90.2
Marital status	Married	10	2.5
	Single	387	97.5
Age at first sexual intercourse	<15	2	0.5
	15-17	11	2.8
	≥18	121	30.5
	None‡	263	66.2
Family history of cervical cancer	Yes	9	2.3
	No	388	97.7

*-Tigre; Hadiya; Wolayita; Sidama; Adere; Agawu; Silte and Kaffa. **-Catholic and different traditional religions; ‡ -Those who didn't commence sexual intercourse till data collection time.

Table 1: Socio-demographic characteristics of undergraduate female medical students, Jimma University, 2016.

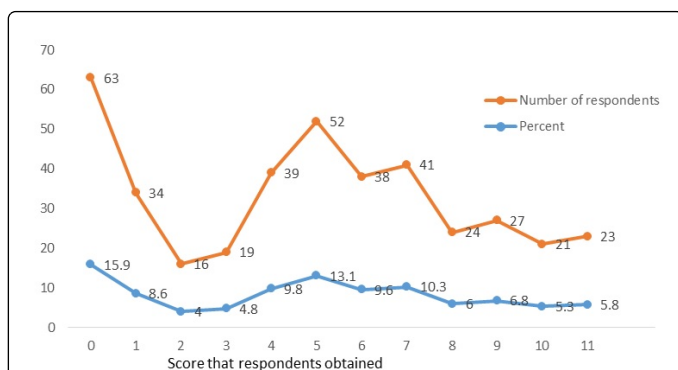


Figure 1: Distribution of study participants by their response to the knowledge question for HPV and its vaccine, female undergraduate medical students, Jimma University, 2016.

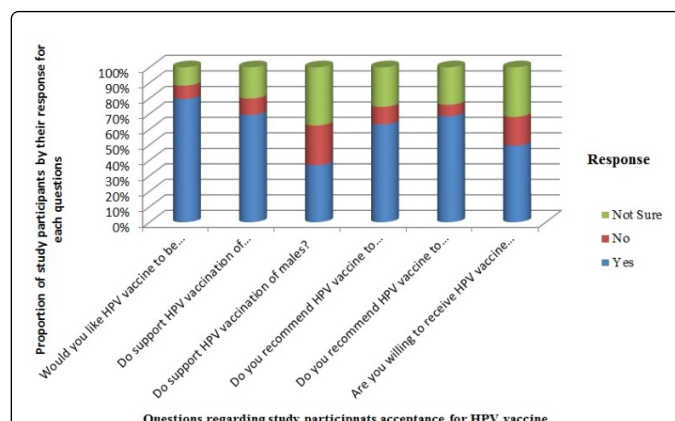


Figure 2: Willingness for HPV vaccine among female undergraduate medical Students, Jimma University, 2016.

The study participants attitude and awareness towards some of the preventive measures of HPV infection was not good, only 154(38.8%) of the study participants “Agree” that “having only one sex partner decreases the risk of acquiring HPV infection” and 125(31.5%) of them being “Dis-agree” that “Condom prevents HPV virus infection equally as it prevents HIV transmission” but the majorities, 231(59.2%) agree that “Education on HPV and cervical cancer better started at primary school”. Similarly their attitude towards the screening for cervical cancer was found to unfavorable among most them; the majorities 229 (57.68%) and 268 (67.51%) of the them claimed either to “Agree” or feel “Neutral” regarding, “Getting Pap test examination is an embarrassment” and “Starting the screening for cervical cancer, implies starting sex” respectively. Almost half of the study participants “Agree” that “Girls should get HPV vaccine before they become sexually active” and 226(57.0%) of the study participants worries that “Communication between children and parents to get HPV vaccination might be a problem in Ethiopian culture” (Table 3).

Acceptability for HPV vaccine

Most 366(92.2%) of the students feel that vaccine for HPV prevention should be availed and provided for free. Two hundred fourteen (53.9%) and 84(21.2%) of the study participants mentioned unawareness about the HPV vaccine and inaccessibility to be a potential barriers against HPV vaccination.

The place for acquiring HPV Two hundred and eighty nine (72.8%) of the study participants wants HPV vaccine to be provided at health facilities while 62(15.6%) of them suggesting its availability at school and only 38(9.6%) of them prefers its provision at home (Table 4).

Most 316(79.6%) of the study participants wants HPV vaccine to be availed in Ethiopia and 275(69.3%) of them supports provision of HPV vaccination for adolescent girls but only 146 (36.8%) of the study participants recommends HPV vaccination for the male. Even if 272 (68.5%) and 250(63%) of the study participants are willing to recommend HPV vaccine for their future clients and colleagues/ friends respectively, only 196(49.4%) of them are willing to receive HPV vaccine for themselves. The proportion of HPV full acceptance rate among the study population is 146(36.8%); (Full acceptance for HPV vaccine defined as “Yes” answer to all questions regarding acceptability for HPV vaccine (Figure 2).

Logistic regression analysis done to assess an association between the socio-demographic characteristics of the study participants with their knowledge level towards HPV and its vaccine showed that; increasing age and academic year have positive association with their knowledge level and those who are ≥ 25 years of age have close to seven fold likely hood of having good knowledge about HPV and its vaccine as compared to those are in the age group of 15–19 years, AOR (6.93) and medical interns are 9 times more likely in having good knowledge towards HPV and its vaccine as compared to pre-medicine students, AOR (9.003), p-value<0.001.

Knowledge items	Respondent with correct answer	
	Number	Percent
HPV is a sexually transmitted infection	240	60.5
HPV is very common worldwide	187	47.1
HPV only infects women	187	47.1
Human Papilloma Virus may cause cervical cancer	257	64.7
There is a vaccine for HPV	213	53.7
HPV may cause cancer in males	107	27.0
HPV vaccine can be offered to female children ≥ 9 years	152	38.3
Complete HPV vaccine requires three injections	109	27.5
HPV vaccine is only for women with > 1 sexual partner	194	48.9
The vaccine for HPV prevents other STIs	170	42.8
The HPV vaccine prevents cervical cancer totally	187	47.1

Table 2: Knowledge of HPV and its vaccine among undergraduate female medical students, Jimma University, 2016.

Attitude towards HPV and vaccine	Respondents level of agreement		
	Disagree	Neutral	Agree
Carcinoma of the cervix is highly prevalent in Ethiopia	66 (16.7%)	87 (21.9%)	244(61.5%)
HPV vaccine will increase the risk of multiple sexual partner behavior among adolescents	114 (28.7%)	155 (39.0%)	128 (32.2%)
Having only one sex partner decreases the risk of acquiring HPV infection	103 (26.0%)	140 (35.3%)	154 (38.8%)
Condom prevents HPV virus equally as it prevents HIV transmission	125 (31.5%)	155 (39.0%)	117 (29.4%)
Education on HPV and cervical cancer better started at primary school.	54 (13.6%)	112 (28.2%)	231(59.2%)
Getting Pap test examination is an embarrassment	168 (42.3%)	152 (38.3%)	77 (17.4%)
Starting the screening for cervical cancer, implies starting sex	129 (32.5%)	127 (32.0%)	141(35.5%)
Girls should get HPV vaccine before they become sexually active.	50 (13.1%)	146 (36.8%)	199 (50.2%)
Communication between children and parents to get HPV vaccination might be a problem in Ethiopian culture	49 (12.3%)	122 (30.7%)	226 (57.0%)

Table 3: Attitude towards HPV and its vaccine among undergraduate female medical students, Jimma University, 2016.

Those who have family history of cervical cancer are 60% less in having good knowledge as compared to those not having family history of cervical cancer.

Those who have health professional family members are about 38% more in having good knowledge as compared to those whose families are not health professionals (Table 5).

There is an association between some socio-demographic characteristics of the study participants with their willingness for HPV vaccine acceptance for self.

The study participants who are in the age 15-19 and 20-24 years are respectively 11.46 times and 17.28 times more likely to be not willing for acceptance of HPV vaccine for self as compared to those who are 25 years or more and this difference is statistically significant at 5% probability level.

Variables		Knowledge of respondents		COR (95% CI)	AOR (95% CI)
		Poor	Good		
Age in year	15-19	103	19	.01 (.002, .06)	.04 (.01, .27)**
	20-24	120	142	.06 (.01,.30)	.04 (.01, .26)**
	≥25	0	13		1
Academic year	Pre-medicine	88	13		1

Similarly there is an association between the study participants level of medical education with willingness for HPV vaccine for self.

All of those who are attending their internship are 100% willing to receive the HPV vaccine for self and comparing the premedical students with the clinical year, those who are in their clinical year are 99.91 times more likely in accepting this vaccine for self which is statistically significant at 1% probability level.

Being a clinical year is strongly favors the acceptance of HPV vaccine for self, AOR (0.06), p- value<0.001. But the association is not significant regarding the family history of cervical cancer and occupation of the parents (Table 6).

Variables		Number	%
Perceived acceptable cost	For free	366	92.2
	≤20 ETB*	18	4.5
	>20 ETB	13	3.3
	Total	397	100
Perceived barrier for not vaccinated	Not aware of the vaccine	214	53.9
	Concern about side effects	63	15.9
	Inaccessibility of the Vaccine	84	21.2
	It is only for sexually active	32	8.1
	Others**	4	1
	Total	397	100.0
Preferred area for receiving HPV vaccine	School	62	15.60
	Home	38	9.57
	Health facility	289	72.80
	Market places	4	1.01
	Religious institution	4	1.01
	Total	397	100.0

Table 4: Acceptability and perception for HPV vaccine, female undergraduate medical students, Jimma University, 2016.

	Pre-clinical year	110	77	8.42 (3.01, 23.23)	10.59 (2.79, 40.10)**
	Clinical year	25	66	9.35 (3.26, 26.81)	12.42 (3.12, 49.34)**
	Internship	0	18	24.00 (6.58, 87.48)	17.30 (3.23, 92.57)**
Family history of cervical cancer	Yes	6	3	1.81 (.44, 7.39)	1.33 (.17, 10.15)
	No	217	171	1	1
Occupation of parents	Health professional	26	13	1.26 (.59, 2.69)	2.69 (1.04, 6.99)*
	Non-health professional	197	161	1	1
Religion	Orthodox	111	104	1	1
	Muslim	53	45	1.22 (.71, 2.12)	1.80 (.88, 3.66)
	Protestant	55	21	.51 (.25, 1.07)	.81 (.30, 2.20)
	Others1	4	4	1.13 (.22, 5.77)	1.89 (.27, 13.07)

*and ** shows significant at 5% and 1% probability level.

Table 5: Association between Socio-demographic characteristics and knowledge of HPV and its vaccine, undergraduate female medical students, Jimma University, 2016.

Variables		Acceptability of HPV vaccine for self		COR(95% CI)	AOR(95% CI)
		Yes (N, %)	No (N, %)		
Age in year	15-19	50 (41.0%)	72 (59.0%)	17.28 (2.18, 137.17)*	4.49 (0.38, 52.75)
	20-24	134 (51.1%)	128 (48.9%)	11.46 (1.47, 89.43)	8.05 (0.71, 91.13)
	≥25	12 (92.3%)	1 (7.7%)	1	
Academic year	Pre-medicine	32 (31.7%)	69 (68.3%)	1	
	Pre-clinical year	70 (37.4%)	117 (62.6%)	0.77(0.46, 1.29)	0.63 (0.36, 1.12)
	Clinical year	76 (83.5%)	15 (16.5%)	0.09 (0.05, 0.18)*	0.06 (0.03, 0.14)*
	Internship	18 (100.0%)	0 (0.0%)	.00 (.00)	.00 (.00)
Family history of cervical cancer	Yes	12 (66.7%)	6 (33.3%)	0.47 (0.17, 1.28)	3.04 (0.56, 16.58)
	No	184 (48.5%)	195 (51.5%)		
Occupation of parents	Health professional	16 (41.0%)	23 (59.0%)	1.45 (0.74, 2.84)	0.99 (0.47, 2.07)
	Non-health professional	180 (50.3%)	178 (49.7%)	1	

*and ** shows significant at 5% and 1% probability level respectively.

Table 6: Association between socio-demographic characteristics and acceptability of HPV vaccine for self among undergraduate female medical students, Jimma University, 2016.

Discussion

Knowledge of the effect of human papilloma virus infection and its preventive measures is very crucial in preventing cervical cancer. This cross-sectional and descriptive study was carried out with the aim of assessing the knowledge, attitude and acceptability towards Human papilloma virus and its vaccine among female undergraduate medical students at Jimma University, South-West Ethiopia. It provide useful

information that might help in the organization of HPV vaccine programs and public health education and policy issues regarding the primary and secondary prevention of cervical cancer.

Even if HPV is known to be the most common STI [26], cervical cancer is caused by HPV [27] and assumed to be imperative for medical students to have adequate knowledge about HPV infection, cervical cancer and HPV vaccine [28-35]; the overall knowledge score was not found to be adequate among the majorities of study

participants. Only 43.80% were found to have adequate knowledge which is lower than the report of study findings done in different countries [22,36-38] which might be because of the difference in the methodology and socio-economic conditions of the study participants and in addition most of the study participants in our study are in their pre-medicine and preclinical year of study at the university [39-41].

Regarding the specific knowledge questions; in this study 240(60.5%) of the study participants knew that “HPV is a sexually transmissible infection” which is higher than of Thai female university students [42] but is lower than of UAE hospital nurses [38] and female tertiary students in the Eastern Cape Province [41] which might be because of similar reasons for this difference as that of the overall knowledge score.

Six out of ten (64.7%) study participants knows the association of HPV infection with cervical cancer similar to the study at UAE hospital nurses [43] but a bit lower than the findings of a study done in Eastern Cape province among female tertiary students [41] and is higher than the result of a study done among Thai female university students [42]. This difference can be explained by the difference in the background of the study participants and the time gap as better attention has been given to cancer these days.

Only one-fourth (27%) of the participants knew the existence a vaccine for the prevention of HPV infection which is much lower than that of Nigeria [32]; Thai female university students [42] and that of adolescents and young adults of the Moroccan Population [43]. The difference might be attributed to the national HPV policy, presence of organized reproductive organ cancer prevention, education, screening, or curative care programs to address this issue.

Increasing age and academic year have positive association with knowledge. Those whose age is 15-19 years have close to 0.04 times likelihood of having good knowledge as compared to those in the age group of ≥ 25 ; OR (0.04) and medical interns are 17.3 times higher in having good knowledge as compared to pre-medicine students; OR (17.3) p -value <0.001 and thus the association is statistically significant. A previous study in Nigeria showed a similar result about the association between knowledge with their age and academic year too [32]. Religion, ethnicity, and marital status are not significantly related to knowledge level. Contrary to the expectation, those who have family history of cervical cancer are not found to have a good knowledge as compared to those not having family history of cervical cancer. Those whose parents is/are health professional are about 2.7 times more in having good knowledge as compared to those whose with non-health professionals. But these associations are not statistically significant. This is as opposed to a research done in Italy on adolescents where family history of cervical cancer and having health professional parents are strongly associated with better knowledge [23]. This might be because those students are not medical students and they may lack the knowledge that can be gained through education and exaggerating the family history and parental occupation components. In addition, it could be because of a poor communication between parents and their children especially in the case of discussing about the cause of illness in the family.

The overall attitude of study participants' towards HPV and its vaccine was found to be unfavorable among the majorities of them. Close to one-third, 128(32.2%) of the study participants think that; “HPV vaccine will increase the risk of multiple sexual partner behavior among adolescents” which may have a negative consequences for HPV vaccine provision in the country. This is higher than the report of

findings of studies done elsewhere [38,42]. This difference might be because of the low knowledge level about HPV and its vaccine among our study participants and in addition this difference probably reflects the attention level given to sexual and reproductive health education for the adolescents and young population in the country.

Generally the overall full acceptance of HPV vaccine (Which is defined as correct answer to all questions regarding acceptability) is low whereby only 146(36.8%) of them were willing to fully accepted the HPV. This is lower than the findings from study done in Eastern Cape Province among female tertiary students. This might be because of the overall low level of knowledge and unfavorable attitude towards HPV and its vaccine and unavailability of the vaccine in the country.

Even if close to 80% of the study participants would like human papilloma virus vaccine to be available in Ethiopia and 70% them supports the vaccination of adolescent girls close to two-third of overall study participants claimed not support vaccination of males. Similarly, inspite of our study participants' willingness to recommend HPV vaccine for their future clients by the majority (68.5%) of them, more than half of the total study participants didn't show willingness to receive HPV vaccine for themselves. This is comparable to the result from Nigeria [32] and significantly low when compared to the study done in UAE where $>80\%$ were ready to take HPV vaccine for themselves [38], that of Malaysian undergraduate medical and pharmacy students, and female tertiary students of Eastern Cape Province [41]. This might be because of the low knowledge level scored among our study participants regarding HPV and its vaccine.

The perception of our study participants' regarding the “availability of HPV vaccine in Ethiopia”, the majorities (close 80%) being claiming to favor or support the availability of HPV in Ethiopia, but more than 90% of them wants the vaccine to be availed and provided for free to those who are illegible. This is comparable to the report of findings from the study in a study in Eastern Cape Province among female tertiary students [41] and that of Thai female university students [42]. But it is high when comparing with the finding from Ghana whereby only 68% the study participants needs it to be free and acceptable cost of 1 United States dollar is mentioned by 32% of them [21], where as in our case only 4.5% of the study participants' claimed an acceptable cost of about 1 USD (20 Eth birr) and far higher than that of the findings of a study done in Saudi Arabia where almost all students have considered some degree of payment to the vaccine [33]. This might be because the difference in the socioeconomic status, knowledge and awareness level about HPV infection (as in our case) and as a result undermining personal potential risk of exposure to and acquisition of the infection for and/or the difference in the health service provision system of the respective countries where by some services like provision other childhood vaccines are usually for free (as in our case).

Conclusion and Recommendation

This study revealed that the knowledge level and attitude of undergraduate female medical students' of Jimma University towards HPV infection and its vaccine is low contrary to the expectation that university students are thought to have an overall good knowledge and especially regarding the knowledge level of medical students towards the health issues like the case of HPV infection, cervical cancer and its prevention methods like HPV vaccine. Their knowledge level is positively associated with the year of study in medicine, most likely because of the clinical exposure and curricula favors more exposure to

the cases as their years of study in university advances as in the clinical years and internship.

Though one-third of the study participants reported to have started experiencing sexual intercourse, the acceptability of HPV vaccine for self was found to be low which line with the overall knowledge level and attitude towards HPV and its vaccine. In general they are at risk of personal exposure and acquisition of HPV infection and its health problems.

Apart from recommending a qualitative study so as to explore for the reasons; an in-depth and wide community based study regarding the parents', adolescents' and the young populations' knowledge of HPV infection, its risks like cervical cancer and the prevention of HPV infection including HPV vaccine will be of valuable importance. The findings from this study also might indicate the importance and urgency of provision of sexual and reproductive health education to the adolescents and young population of the country. It is the believe of the authors that; those who are responsible should think of and incorporate HPV vaccine in the national vaccination policy and avail it across the whole country, incorporation in the curricula and provision of relevant sexual and reproductive health education as of elementary level, the use of mass-medias and enhancing the active efforts of health care providers in this aspect will be of much help in addressing the issue of HPV infection.

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