

Knowledge and Awareness of Cervical Cancer and Human Papilloma Virus (HPV) among Female Students in an Ethiopian University: A Cross Sectional Study

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ABSTRACT

Background: Cervical cancer is causing a huge burden in sub-Saharan Africa. It mainly affects women in their young ages making female university students at risk of cervical cancer. Knowledge and awareness about the cervical cancer and HPV in sub-Saharan Africa including Ethiopia is very poor. **Aims:** We aimed to assess the knowledge and awareness of cervical cancer and HPV in University of Gondar (UOG) medicine and health science female students. **Study design:** A cross-sectional study was done. **Methods:** This study was conducted from April 1 to May 30, 2016 at UOG, College of Medicine and Health Sciences (CMHS), Gondar, Northwest Ethiopia. Undergraduate female students were included in the study. A 14 item paper-based self-administered questionnaire was then provided to each of the participants to measure their level of knowledge and awareness about cervical cancer and HPV. **Results:** A total of 267 female students participated in the study (mean age 20.58 ± 1.22). More than half of the participants (59.6%) did not know the main cause of cervical cancer whereas just about a fifth of them (19.5%) identified HPV as the main cause of cervical cancer. As high as 83.9% of the participants did not know other causes of cervical cancer. Binary logistic analysis revealed that students from midwifery (AOR=14.14, $P<0.05$), anesthesiology (AOR=9.66, $P<0.05$) and medicine (AOR=5.84, $P<0.05$) departments were associated with knowledge of the main

cause of cervical cancer. **Conclusion:** Knowledge about cervical cancer and its causes were found to be inadequate among higher education female students. Hence, awareness about cervical cancer, causes and its prevention, importance of screening and vaccination should be promoted through university's campaign, curricular changes, and community and research projects.

Key words: Cervical cancer, human papilloma virus, females, knowledge, awareness, Ethiopia

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INTRODUCTION

Cervical cancer is one of the most prevalent cancers worldwide. Although the prevalence of cervical cancer has decreased in developed nations over the years, it is still a major cause of cancer in women living in sub-Saharan Africa and some parts of world.^[1] Socio-cultural and socio-economic factors as well as infections, poor nutrition, and lack of screening programs contribute to the higher magnitude of the problem in developing nations as compared to the industrialized countries.^[1,2] Survival from cervical cancer has also been associated with income of a country^[3] In contrast to other cancers, cheaper and effective, prevention and treatment alternatives exist for cervical cancer. Regrettably, access to these interventions is a huge challenge for people living in low and middle income countries (LMICs).^[2,3]

Human Papillomavirus (HPV) has been identified as the necessary cause of cervical cancer. Studies have indicated that cervical cancer will not develop in the absence of HPV infection.^[4] HPV strain types 6, 11, 16, and 18 are responsible to approximately more than 70% of cervical cancer cases. Although bivalent (HPV-16 and HPV-18) and quadrivalent (HPV-16, HPV-18, HPV-6, and HPV-11) vaccines that are effective against these most common HPV strains are available, cost coupled with lack of political will and presence of other competing programs has become a major issue.^[5,6]

Knowledge and awareness about the cervical cancer and HPV in SSA is very poor.^[1] There is a big gap in the knowledge and awareness about HPV and cervical cancer between most women living in developing and developed nations including those who are university students^[5] However, female university students living in LMICs, including SSA have poor knowledge and awareness about cervical cancer, HPV as a causative agent for cervical cancer, and other risk factors.^[7-12]

Similar to other developing countries, cervical cancer accounts for a large proportion of cancer-related morbidity and mortality in Ethiopia. An estimated 21 million women who were 15 years of age and older were at risk of developing cervical cancer in Ethiopia in 2010. Every

year 4648 women are found to have cervical cancer while 3235 women die of this disease, placing it as the most frequent cause of cancer deaths in the country.^[13,14] Cervical cancer mainly affects women in their young ages making female university students at risk of cervical cancer.^[5] Hence, we aim to assess the knowledge and awareness of cervical cancer and HPV in University of Gondar- College of Medicine and Health Science (UOG-CMHS) female students.

MATERIALS AND METHODS

Study setting and population

This study was conducted at UOG-CMHS, Gondar, and Northwest Ethiopia. Undergraduate female students from 11 different health-related departments at CMHS who were willing to participate in the study were given a written informed consent and included in the study. However, those students who didn't consent to participate were excluded from the study.

Study design

A cross-sectional study was conducted from April to May 30, 2016. Study participants received a 16 item paper-based self-administered questionnaire which was divided into 4 sections. Section 1: included questions related to the socio-demographic characteristics. Section 2

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and 3 were concerned with knowledge about cervical cancer and HPV while section 4 was all about tests and vaccination experience.

Ethical consideration

The study was conducted after obtaining ethical clearance from the institutional review board of School of Pharmacy, UOG. Before administering questionnaire, the aim of the study was explained to the study participants and written informed consent was obtained. Confidentiality of the data was maintained in such a way that no name or any other identification of the study participants has never been and will not be revealed and data is presented only in collective form without mentioning individual responses.

Statistical analysis

Statistical Package for Social Sciences (SPSS), version 22 (SPSS Inc., Cary, NC, USA) was used to perform all statistical analyses. Frequencies, means, and percentages were used to present descriptive statistics including the socio-demographic characteristics and causes of cervical cancers as reported by the students. HPV vaccination status, cervical cancer smear test, and Knowledge about HPV are presented with a bar graph and pie charts. Binary logistic regression was performed to identify associations between departments and years of study and awareness about causes of cervical cancer. Then, crude (COR) and adjusted odds ratios (AOR) with the respective 95% confidence intervals (CI) and *p*-values were used to measure the magnitude and statistical significance of the association. A *p*-value of less than 0.05 was considered statistically significant.

RESULTS

Socio-demographic characteristics

A total of 267 female students participated in the study with a mean age 20.58 ± 1.22 , ranging from 18 and 24 years. As nearly half of the college's students are medical students, a higher proportion of students enrolled in the study (41.2%) were medical students. Second year and third year students accounted for 36.3% and 35.6% of the participants, respectively. More than half of students are either currently in a sexual relationship or were in a sexual relationship before [Table 1].

Causes of Cervical Cancer

Participants gave range of answers to questions about the main cause of cervical cancer and other causes. More than half of the participants (59.6%) stated that they did not know the main cause of cervical cancer whereas just about a fifth of them (19.5%) identified HPV as the main cause of cervical cancer [Table 2]. As high as 83.9% of the participants did not give answers to the second question that asked whether they knew other causes of cervical cancer. Binary logistic analysis was performed to identify whether there is association of students' department and year of study to their awareness about the main cause of cervical cancer. For this analysis, students who answered HPV and/or STD are considered to be aware of the cause of cervical cancer and the rest are considered to be unaware. As a result, students from midwifery (AOR=14.14, *P*<0.05), anesthesiology (AOR=9.66, *P*<0.05) and medicine (AOR=5.84, *P*<0.05) departments were associated with knowledge of the main cause of cervical cancer. Furthermore, fifth year students (AOR=16.94, *P*<0.05) and fourth year students (AOR=8.32, *P*<0.05), were found to have better knowledge about the main cause of cervical cancer [Table 3].

Awareness about HPV

About a half (50.6%) of study participants reported to have heard about HPV. Out of these, 90.6% were able to correctly answer what the letters 'HPV' stand for; while only half (50.0%) of them correctly defined HPV. Figure 1 shows students' knowledge about HPV, its transmission and its relation to cervical cancer. Different information sources were

Table 1: Socio-demographic characteristics (N=267)

Variables	Frequency (%)
Age (Mean ± SD)	20.58 ± 1.22
<20	48 (18.0)
20-22	203 (76.0)
>22	16 (16.0)
Department	
Nursing	28 (10.5)
Medical laboratory	5 (1.9)
Environmental and occupational health	6 (2.2)
Physiotherapy	10 (3.7)
Medicine	110 (41.2)
Pharmacy	28 (10.5)
Midwifery	34 (12.7)
Ophthalmology	13 (4.9)
Anesthesiology	13 (4.9)
Public health	16 (6)
Health informatics	4 (1.6)
Year of study	
2 nd year	97 (36.3)
3 rd year	95 (35.6)
4 th year	64 (24.0)
5 th year	11 (4.1)
History of sexual relationship	
Currently in relationship	92 (34.5)
In relationship in the past	58 (21.7)
Never been in relationship	117 (43.8)
Origin	
Urban	223 (83.5)
Rural	44 (16.5)

Table 2: Main causes of cervical cancer as answered by students

Causes mentioned by students.	Frequency (%)
HPV or STDs	64 (24.0)
HPV	52 (19.5)
STDs	12 (4.5)
Sexual behavior	24 (9.0)
Beginning sex at early age	10 (3.8)
Unsafe sex	8 (3.0)
Multiple sexual partners	6 (2.2)
Miscellaneous factors	20(7.4)
Infection (unspecified)	8 (3.0)
Genetic/hereditary	6 (2.2)
Smoking	3 (1.1)
Abortion	2 (0.7)
Early child birth	1 (0.4)
Don't know the answer	159 (59.6)

identified by those who have awareness of HPV. The most common information source mentioned was 'from school/college courses' (71.5%). Other sources of information include health professionals (7.3%), family/friends (7.3%), the internet (5.1%), television/radio (2.9%), and multiple sources (5.9%). Binary logistic analysis showed no significant association between source of information and awareness of HPV. Only a few students had been vaccinated for HPV or take cervical smear test in the past [Figure 2].

DISCUSSION

This is the first study to our knowledge that investigated cervical

Table 3: Multivariate analysis of department and year of study with awareness about causes of cervical cancer

Variable	Aware about causes of cervical cancer		Odds ratio (95% CI)		P- Value
	Yes	No	Crude	Adjusted	
Department					
Nursing	2	26	1.00	1.00	
Medical laboratory	1	4	3.25 (0.24, 44.69)	8.33 (0.55, 125.83)	0.126
Environmental and occupational health					
	0	6	0.00 (0.00, -)	0.00 (0.00, -)	0.999
Physiotherapy	0	10	0.00 (0.00, -)	0.00 (0.00, -)	0.999
Medicine	33	77	5.57 (1.25, 24.84)	5.84 (1.19, 28.57)	0.030*
Pharmacy	7	21	4.33 (0.81, 23.10)	3.02 (0.52, 17.64)	0.221
Midwifery	15	19	10.26 (2.09, 50.31)	14.14 (2.58, 77.69)	0.002*
Ophthalmology	0	13	0.00 (0.00, -)	0.00 (0.00, -)	0.999
Anesthesia	3	10	3.90 (0.57, 26.93)	9.66 (1.26, 74.27)	0.029*
Public health	2	14	1.86 (0.24, 14.64)	3.50 (0.40, 30.90)	0.260
Health informatics	1	3	4.33 (0.28, 63.30)	11.55 (0.70, 189.66)	0.087
Year of study					
2 nd year	14	83	1.00	1.00	
3 rd year	14	81	1.03 (0.46, 2.28)	1.20 (0.50, 2.88)	0.675
4 th year	28	36	4.61 (2.18, 9.78)	8.32 (3.32, 20.86)	0.000*
5 th year	8	3	15.81 (3.74, 66.91)	16.94 (3.67, 78.21)	0.000*

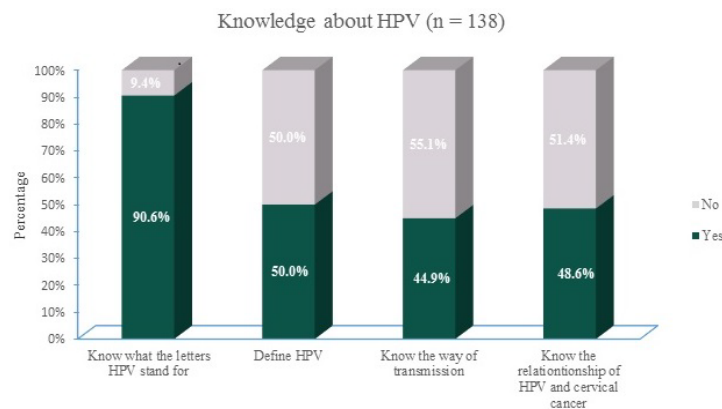


Figure 1: Students' knowledge about HPV

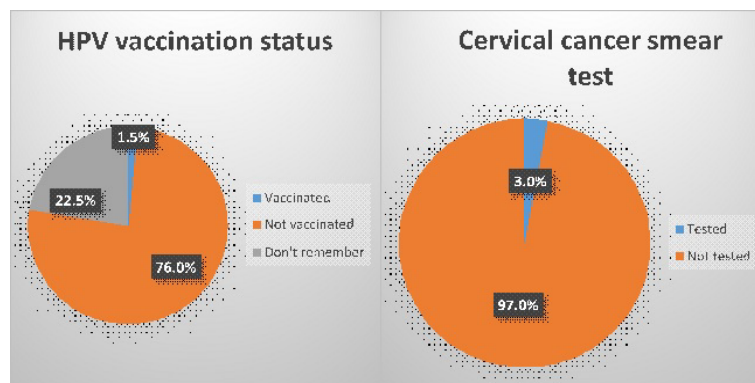


Figure 2: HPV vaccination and cervical cancer smear test status of students

cancer knowledge and awareness among female medical students in Ethiopia. It is becoming important to raise awareness and knowledge of cervical cancer for adopting healthy behavior and preventive measures. Early knowing the causative/risk factors and symptoms particular to cervical cancer can make a lot of difference to prevent it in developing countries like Ethiopia. Several HPV-related cancer studies have reported widespread ignorance among target population regarding HPV infection and vaccination.^[15-19] In this study, only 40% were aware about the primary causes of cervical cancer and only 20% knew

that HPV causes cervical cancer. This results was lower than a recent study conducted on female students (26.5%) in UK^[15] and Lahore students (55%)^[16], but higher than Nigerian female students (17.7%).^[17] The findings from our study suggest that higher education or health specialties does not necessarily seems to have association to identify risk factors for cervical cancer.

In addition, despite being multidisciplinary students, just half (50.6%) of students reported that they heard of HPV. This reflects that UOG-CMHS female students had borderline or poor knowledge regarding

HPV. A similar study conducted in Pakistan also showed that 57% had heard about HPV.^[16] However, in this both studies, health sciences students are very high, but does not demonstrate good knowledge about HPV. In contrast, a study conducted in Malaysian health sciences students showed around 80% of them knew that HPV causes cervical cancer and similarly, in Sherman *et al.* study conducted at Keele University in England reported a higher percentage (75%) of female participants had heard of HPV, but only 27% reported that HPV causes cervical cancer.^[18] This findings suggest that knowledge gaps exists across the health sciences students globally and emphasizes the need of educational intervention to bridge knowledge gaps among health sciences students in Ethiopia. Knowledge of the HPV vaccination revealed that only 1.5% of the study participants reported that they are vaccinated. This is an important aspect because prevention of HPV infections is essential in prevention of cervical cancer. Several developed countries have incorporated the HPV vaccination into their national vaccination program.^[19] Since HPV epidemic spreading throughout the SSA and Ethiopia, the HPV vaccination should be a part of national vaccination and immunization program before many people fall as victims to this deadly virus.

Cytological screening based on Pap smear is important to reduce the incidence and mortality of invasive cervical cancer. Most invasive cancers of the cervix can be prevented if women have Pap tests regularly. In this study, several students reported that they heard about Pap smear, but only 3% of the women took Pap smear test. This is much lower than the findings from South Africa where 18% of the rural women had the test^[20] but consistent with Nigerian study where only 5.2% had the test.^[21] This difference is not surprising because South Africa took Pap smear testing as a national policy and is widely available across all health settings. But in Ethiopia, only some health institutions offering such screening tools. The present study had identified many knowledge gaps that are associated with their health specialty and educational status. There a manifold knowledge and awareness gaps that needed future investigation to assess through educational intervention and implementation of HPV immunization in Ethiopia.

In the current study, knowledge about cervical cancer and its causes were found to be inadequate among higher education female students as majority of the participants (59.6%) did not know the main cause of cervical cancer. Students' department and year of study were also identified as the major factors for female students' knowledge of cervical cancer and HPV. Hence, awareness about cervical cancer, causes and its prevention, importance of screening and vaccination should be promoted through university's campaign, curricular changes, and community and research projects.

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