

Knowledge and Awareness of Cervical Cancer and Human Papillomavirus among Female Students in an Ethiopian University: A Cross-sectional Study

Abstract

Background: Cervical cancer is causing a huge burden in Sub-Saharan Africa (SSA). It mainly affects women in their young ages making female university students at risk of cervical cancer. Knowledge and awareness about cervical cancer and human papillomavirus (HPV) in SSA including Ethiopia is very poor. We aimed to assess the knowledge and awareness of cervical cancer and HPV in University of Gondar (UOG) medicine and health science female students. 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, Gondar, Northwest Ethiopia. Undergraduate female students were included in the study. A 14-item 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 (adjusted odds ratios [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. **Conclusions:** 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.

Keywords: Awareness, cervical cancer, Ethiopia, females, human papillomavirus, knowledge

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 (SSA) and some parts of the world.^[1] Sociocultural and socioeconomic 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 the presence of other competing programs has become a major issue.^[5,6]

Knowledge and awareness about cervical cancer and HPV in SSA is very poor.^[1] There is a big gap in the knowledge and

Zelalem Tilahun Tesfaye¹, Akshaya Srikanth Bhagavathula², Eyob Alemayehu Gebreyohannes¹, Henok Getachew Tegegn^{1,3}

¹Department of Clinical Pharmacy, University of Gondar, Gondar, Amhara, Ethiopia, ²Department of Internal Medicine, College of Medicine and Health Sciences, UAE University, Al Ain, UAE, ³Department of Pharmacy, University of New England, Armidale NSW 2351, Australia

Address for correspondence:
Dr. Akshaya Srikanth Bhagavathula,
Department of Internal Medicine, College of Medicine and Health Sciences, UAE University, Al Ain, UAE.
E-mail: akshaypharmd@gmail.com

Access this article online

Website:
www.ijpvmjournal.net/www.ijpvm.net

DOI:
10.4103/ijpvm.IJPVM_181_17

Quick Response Code:



This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

How to cite this article: Tesfaye ZT, Bhagavathula AS, Gebreyohannes EA, Tegegn HG. Knowledge and awareness of cervical cancer and human papillomavirus among female students in an Ethiopian University: A cross-sectional study. *Int J Prev Med* 2019;10:198.

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 among female students in a University in Ethiopia.

Methods

Study setting and population

This study was conducted at University of Gondar, College of Medicine and Health Sciences (UOG-CMHS), Gondar, Northwest Ethiopia. Undergraduate female students between ages of 18 years and above, 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. Students were approached on campus and asked if they would like to take part in a survey. However, those students who did not willing to participate in the study or to provide consent to participate were excluded from the study.

Study design

A cross-sectional study was conducted from April to May 2016. A 16-item self-administered questionnaire was developed from previous literature.^[7-12,15-19] The questionnaire was reviewed by clinicians and health educators for content, readability, and comprehensiveness. The reliability of the questionnaire was evaluated by test-retest method using a lay sample from outside the study population. The study questionnaire was pilot tested among 20 randomly selected female students and 10 faculties in the University. These participants were excluded from the final analysis.

The study questionnaire was divided into 4 sections. Section 1 constitutes 6 questions related to their sociodemographic features, educational details, and history of sexual relationship. Section 2 contains open-ended questions asking participants about their knowledge of cause of cervical cancer. In detail, the questions asked specifically about what the participants considered to be the main

causes of cervical cancer. In section 3, participants were asked if they had heard of HPV. If they responded “yes” or “no,” they were instructed to continue answering all subsequent questions. We included close-ended questions like what the letter HPV stands for, what is HPV is, how HPV is contracted, and what the relationship between HPV and cervical cancer. Section 4 contains two open-ended questions, asking about for HPV vaccination and cervical cancer smear test status among student participants.

Ethical consideration

This 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 are presented only in collective form without mentioning individual responses.

Statistical analysis

Statistical Package for the 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 sociodemographic 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 odds ratios and adjusted odds ratios (AOR) with the respective 95% confidence intervals and *P* values were used to measure the magnitude and statistical significance of the association. The *P* < 0.05 was considered statistically significant.

Results

Sociodemographic characteristics

A total of 267 female students participated in the study with a mean age 20.58 ± 1.22 , ranging from 18 to 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 the 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.

Table 1: Sociodemographic 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)

SD=Standard deviation

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 childbirth	1 (0.4)
Don't know the answer	159 (59.6)

STDs=Sexually transmitted diseases, HPV=Human papillomavirus

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 sexually transmitted disease 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, 5th year students (AOR = 16.94, $P < 0.05$) and 4th 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 human papillomavirus

About a half (50.6%) of the 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 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 the best of our knowledge that investigated cervical 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.^[15-18,20] In this study, only 40% were aware about the primary causes of cervical cancer, and only 20% knew that HPV causes cervical cancer. This result was lower than a recent study conducted on female students (26.5%) in the 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 do not necessarily seem to have association to identify risk factors for cervical cancer.

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

Variable	Aware about causes of cervical cancer		OR (95% CI)		P
	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 ^{NS})	0.00 (0.00 ^{NS})	0.999 ^{NS}
Physiotherapy	0	10	0.00 (0.00 ^{NS})	0.00 (0.00 ^{NS})	0.999 ^{NS}
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 ^{NS})	0.00 (0.00 ^{NS})	0.999 ^{NS}
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)	<0.001*
5 th year	8	3	15.81 (3.74-66.91)	16.94 (3.67-78.21)	<0.001*

OR=Odds ratio, CI=Confidence interval. *P<0.05, NS: Not significant

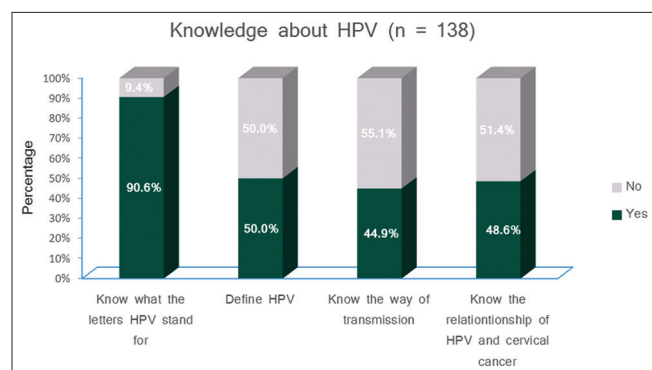


Figure 1: Students' knowledge about human papillomavirus

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 do 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.^[15] Similar findings were noticed in other research works.^[16-19] These findings suggest that knowledge gaps exist across the health sciences students globally and emphasizes the need of educational intervention to bridge knowledge gaps among health sciences students in Ethiopia.

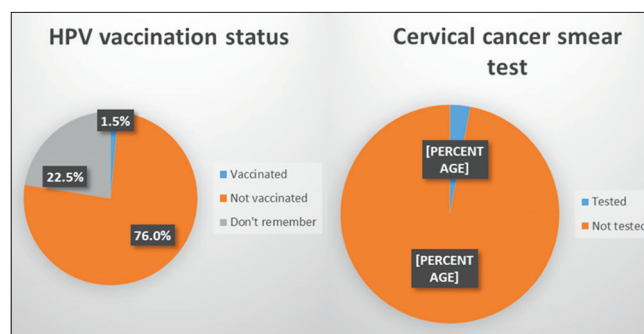


Figure 2: Human papillomavirus vaccination and cervical cancer smear test status of students

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.^[20] 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,^[21] but consistent with Nigerian study where only 5.2% had the test.^[19] 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 are offering such screening tools. The present study had identified many knowledge gaps that are associated with their health specialty and educational status. There are manifold knowledge and awareness gaps that needed the future investigation to assess through educational intervention and implementation of HPV immunization in Ethiopia.

Conclusions

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.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

Received: 15 Apr 17 **Accepted:** 12 Jan 18

Published: 06 Nov 19

References

1. Anorlu RI. Cervical cancer: The Sub-Saharan African perspective. *Reprod Health Matters* 2008;16:41-9.
2. Denny L. Review: The prevention of cervical cancer in developing countries. *BJOG* 2005;112:1204-12.
3. Farmer P, Frenk J, Knaul FM, Shulman LN, Alleyne G, Armstrong L, *et al.* Expansion of cancer care and control in countries of low and middle income: A call to action. *Lancet* 2010;376:1186-93.
4. Bosch FX, Lorincz A, Muñoz N, Meijer CJ, Shah KV. The causal relation between human papillomavirus and cervical cancer. *J Clin Pathol* 2002;55:244-65.
5. Agosti JM, Goldie SJ. Introducing HPV vaccine in developing countries – Key challenges and issues. *N Engl J Med* 2007;356:1908-10.
6. Garland SM, Hernandez-Avila M, Wheeler CM, Perez G, Harper DM, Leodolter S, *et al.* Quadrivalent vaccine against human papillomavirus to prevent anogenital diseases. *N Engl J Med* 2007;356:1928-43.
7. Al-Darwish AA, Al-Naim AF, Al-Mulhim KS, Al-Otaibi NK, Morsi MS, Aleem AM, *et al.* Knowledge about cervical cancer early warning signs and symptoms, risk factors and vaccination among students at a medical school in Al-Ahsa, Kingdom of Saudi Arabia. *Asian Pac J Cancer Prev* 2014;15:2529-32.
8. Chekuri A, Bassaw B, Affan AM, Habet G, Mungruue K. Knowledge, attitudes, practice on human papilloma virus and cervical cancer among Trinidadian women. *J Obstet Gynaecol* 2012;32:691-4.
9. Genc RE, Sarican ES, Turgay AS, Icke S, Sari D, Saydam BK, *et al.* Determination of knowledge of Turkish midwifery students about human papilloma virus infection and its vaccines. *Asian Pac J Cancer Prev* 2013;14:6775-8.
10. Ghojazadeh M, Azar ZF, Saleh P, Naghavi-Behzad M, Azar NG. Knowledge and attitude of Iranian university students toward human papilloma virus. *Asian Pac J Cancer Prev* 2012;13:6115-9.
11. Iliyasu Z, Abubakar IS, Aliyu MH, Galadanci HS. Cervical cancer risk perception and predictors of human papilloma virus vaccine acceptance among female university students in Northern Nigeria. *J Obstet Gynaecol* 2010;30:857-62.
12. Jelastopulu E, Fafiora E, Plota A, Babalis V, Bartsokas C, Poulas K, *et al.* Knowledge, behaviours and attitudes regarding HPV infection and its prevention in female students in West Greece. *Eur Rev Med Pharmacol Sci* 2016;20:2622-9.
13. Global Burden of Disease Cancer Collaboration, Fitzmaurice C, Dicker D, Pain A, Hamavid H, Moradi-Lakeh M, *et al.* The global burden of cancer 2013. *JAMA Oncol* 2015;1:505-27.
14. Gebremariam TT. Human papillomavirus related cervical cancer and anticipated vaccination challenges in Ethiopia. *Int J Health Sci (Qassim)* 2016;10:137-143.
15. Sherman SM, Nailor E, Minshall C, Coombes R, Cooper J, Redman CW, *et al.* Awareness and knowledge of HPV and cervical cancer in female students: A survey (with a cautionary note). *J Obstet Gynaecol* 2016;36:76-80.
16. Khan TM, Buksh MA, Rehman IU, Saleem A. Knowledge, attitudes, and perception towards human papillomavirus among university students in Pakistan. *Papillomavirus Res* 2016;2:122-7.
17. Makwe CC, Anorlu RI, Odeyemi KA. Human papillomavirus (HPV) infection and vaccines: Knowledge, attitude and perception among female students at the University of Lagos, Lagos, Nigeria. *J Epidemiol Glob Health* 2012;2:199-206.
18. Rajiah K, Maharajan MK, Chin NS, Num KS. Awareness and acceptance of human papillomavirus vaccination among health sciences students in Malaysia. *Virusdisease* 2015;26:297-303.
19. Ogunbode OO, Ayinde OA. Awareness of cervical cancer and screening in a Nigerian female market population. *Ann Afr Med* 2005;4:160.
20. Cervical Cancer Action. Global Progress in HPV Vaccination; 2015. Available from: <http://www.cervicalcanceraction.org/comments/comments3.php>. [Last accessed on 2016 Dec 26].
21. Hoque M, Hoque E, Kader SB. Evaluation of cervical cancer screening program at a rural community of South Africa. *East Afr J Public Health* 2008;5:111-6.