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Knowledge, Attitude and Practice toward Cervical Cancer Screening and Cervical Cancer Vaccines among Medical Students

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A B S T R A C T

Background: Cervical cancer is a significant global health concern, and medical students, as future healthcare providers, play a crucial role in its prevention and control. This study aimed to assess the knowledge, attitude, and practice of medical students towards cervical cancer screening and vaccination.***Methods:*** A cross-sectional study was conducted among 475 medical students at The Oxford Medical College Hospital and Research from June to August 2023. A validated questionnaire was used to assess the participants' knowledge, attitude, and practice regarding cervical cancer screening and vaccination. Descriptive statistics and chi-square tests were used for data analysis. ***Results:*** The majority of the participants (91.80%) had heard of cervical cancer, and 74.30% correctly identified viruses as the causative agent. However, only 65.90% recognized all the symptoms, and 73.30% identified all the risk factors. The attitude towards cervical cancer prevention was positive, with strong agreement on the importance of early detection (69.90%), vaccination (35.20%), and screening (51.60%). However, the practice of screening (3.40%) and vaccination (8.40%) was low among the participants and their family members or friends. ***Conclusion***: While the overall knowledge and attitude towards cervical cancer prevention were good, there were gaps in understanding the symptoms, risk factors, and preventive measures. The low uptake of screening and vaccination highlights the need for comprehensive education and training programs to promote personal health practices among medical students. Incorporating cervical cancer education into the medical curriculum and encouraging participation in screening and vaccination programs can contribute to the reduction of the global burden of cervical cancer.

Keywords: Cervical cancer, screening, vaccination, knowledge, attitude, practice, medical students.

INTRODUCTION

Cervical cancer is a significant global health concern, ranking as the fourth most common cancer among women worldwide [1]. In 2020, an estimated 604,000 new cases and 342,000 deaths were attributed to cervical cancer, with the majority occurring in low- and middle-income countries [2]. The primary cause of cervical cancer is persistent infection with high-risk human papillomavirus (HPV) types, particularly HPV 16 and 18, which are responsible for approximately 70% of all cases [3].

Cervical cancer is largely preventable through regular screening and HPV vaccination. Screening methods, such as Papanicolaou (Pap) smear and HPV testing, have been proven effective in detecting precancerous lesions, allowing for early intervention and treatment [4]. Additionally, the introduction of HPV vaccines has provided a powerful tool for primary prevention. Three HPV vaccines are currently available: bivalent, quadrivalent, and nonavalent, all of which protect against HPV 16 and 18 [5].

Despite the availability of these preventive measures, cervical cancer remains a significant burden in many countries. This can be attributed to various factors, including lack of awareness, limited access to healthcare services, and cultural or religious barriers [6]. To effectively combat cervical cancer, it is crucial to ensure that healthcare professionals, particularly medical students who are future healthcare providers, have adequate knowledge, positive attitudes, and appropriate practices regarding cervical cancer screening and vaccination.

Several studies have investigated the knowledge, attitude, and practice (KAP) of medical students towards cervical cancer screening and vaccination. A cross-sectional study conducted among medical students in India found that while the majority had good knowledge about cervical cancer risk factors and screening methods, their knowledge regarding HPV vaccination was limited [7]. Similarly, a study in Saudi Arabia revealed that although medical students had good knowledge about cervical cancer, their awareness of HPV vaccination was low [8].

Attitudes towards cervical cancer screening and vaccination among medical students have been generally positive. A study in Malaysia found that most medical students recognized the importance of screening and were willing to recommend it to their future patients [9]. However, some studies have identified concerns about vaccine safety and effectiveness as potential barriers to vaccination uptake [10].

The practice of cervical cancer screening and vaccination among medical students has been variable. A study in Nigeria found that while the majority of female medical students were aware of cervical cancer screening, only a small proportion had actually undergone screening themselves [11]. This highlights the need for increased emphasis on the importance of personal health practices among medical students.

Improving the KAP of medical students towards cervical cancer screening and vaccination is crucial for several reasons. As future healthcare providers, they will play a key role in educating patients, promoting preventive behaviors, and reducing the burden of cervical cancer. Moreover, medical students who have positive attitudes and engage in appropriate practices are more likely to advocate for and implement effective cervical cancer prevention strategies in their future careers [12].

Aims and Objectives

The study aimed to assess the knowledge, attitude, and practice regarding cervical cancer screening among medical students. Additionally, the study evaluated the knowledge about cervical cancer vaccines among the participants.

Materials and Methods

Study Design and Setting

A cohort prospective study was conducted at The Oxford Medical College Hospital and Research from June to August 2023.

Sample Size and Selection

A total of 475 subjects were included in the study. The sample size was determined based on the available resources and the expected response rate. All undergraduate and postgraduate students at the medical college were eligible for participation. However, students who did not provide consent for inclusion in the study were excluded.

Data Collection

The study commenced after obtaining ethics approval and clearance from the institutional review board. Informed consent was obtained from all participants prior to their enrollment in the study. A validated questionnaire was prepared to assess the knowledge, attitude, and practice of cervical cancer screening and vaccination among medical students. The questionnaire was distributed to each participant, and they were given sufficient time to complete it. The completed questionnaires were then collected from the students for further analysis.

Statistical Analysis

The data obtained from the questionnaires were analyzed using the Statistical Package for the Social Sciences (SPSS) version 24.0. Descriptive statistics, including frequencies and percentages, were used to summarize the demographic characteristics of the participants and their responses to the questionnaire items. Chi-square tests were employed to examine the associations between variables, such as gender, academic year, and knowledge levels. A p-value of less than 0.05 was considered statistically significant.

RESULTS

Table 1 presents the characteristics of the study population. The majority of the participants (55.60%) were in the age group of 20-24 years, followed by 39.60% who were under 20 years old. Nearly all participants (99.80%) were of Indian origin, with Hinduism being the predominant religion (90.30%). Most of the participants (97.10%) were pursuing

their MBBS degree. When asked if they knew anyone suffering from cervical cancer, 94.70% responded negatively, while 4.20% affirmed knowing someone with the disease, primarily a friend or friend's family member (2.90%) or other family members (2.70%).

Table 2 summarizes the knowledge about cervical cancer among the participants. A high proportion of students (91.80%) had heard of cervical cancer, mainly from their teachers (64.40%) and social media (21.30%). Regarding the cause of cervical cancer, 74.30% correctly identified viruses as the causative agent, while 18.90% were unsure. When asked about the symptoms of cervical cancer, 65.90% recognized all the listed symptoms, including intermenstrual bleeding, post-coital bleeding, postmenopausal vaginal bleeding, and vaginal foul-smelling discharge. However, 21.70% were unaware of the symptoms. The majority of participants (73.30%) correctly identified all the listed risk factors for cervical cancer, including early age of pregnancy, early onset of sexual activity, HPV infection, and smoking. Most participants (80.40%) also recognized all the listed preventable factors, such as avoiding early onset of sexual activity, avoiding multiple sexual partners, HPV vaccination, and quitting smoking. A significant proportion (78.50%) believed that cervical cancer is curable if detected early. Regarding screening, 39.40% thought all women should be screened, while 34.90% believed screening should be done for women over 25 years old. The frequency of screening was perceived as once a year by 46.10% and every three years by 38.50%. More than half of the participants (54.30%) were aware of all the listed screening methods, including PAP smear, HPV DNA testing, visual acetic acid inspection, and biopsy. Concerning treatment options, 59.80% recognized all the listed methods, including surgery, radiotherapy, chemotherapy, and HPV vaccines.

Table 3 presents the attitude towards cervical cancer among the participants. A strong agreement was observed for the helpfulness of early detection (69.90%), the preventability of cervical cancer (40.60%), the treatability of cervical cancer (30.50%), the role of vaccines in prevention (35.20%), and the importance of screening in early detection (51.60%). Participants also strongly agreed that all women should receive free vaccines (60.00%) and that they would recommend vaccines (57.30%) and screening (61.10%) to friends and family. However, there was a mixed response regarding the perception of personal risk of HPV infection and the belief that cervical cancer can cause death.

Table 4 summarizes the practice regarding cervical cancer among the participants. The majority (88.20%) reported no sexual experience, while 8.20% affirmed having sexual experience, mostly (14.30%) at an age above 18 years. Only 3.40% of the participants had been screened for cervical cancer, and 10.90% reported having a single sexual partner. When asked about the names of cervical cancer vaccines, 57.10% were unaware, while 42.90% could name at least one vaccine. A small proportion (8.40%) had been vaccinated against cervical cancer, and 15.80% reported having family members or friends who were vaccinated. Regarding screening, 13.90% had family members or friends who had been screened. Only 22.70% of the participants had performed or seen a PAP smear before.

These results provide valuable insights into the knowledge, attitude, and practice of medical students towards cervical cancer screening and vaccination. While the overall knowledge was good, there were some gaps in understanding the symptoms, risk factors, and preventive measures. The attitude towards cervical cancer prevention was generally positive, with strong agreement on the importance of early detection, vaccination, and screening. However, the practice of screening and vaccination was low among the participants and their family members or friends.

Table 1: Characteristics of Study Population

Characteristic	Count	Column N %
Age		
<20 yrs	188	39.60%
20-24 yrs	264	0.60%
25-29 yrs	18	55.60%
30-34 yrs	2	3.80%
>35 yrs	3	0.40%
Race		
Indian	474	99.80%
Others	1	0.20%
Religion		
Christianity	15	3.20%
Hindu	429	90.30%
Islam	28	5.90%
Others	3	0.60%
Academic level		
MBBS	461	97.10%

MDS	1	0.20%
MS/MD	13	2.70%
Anyone you know suffering from Ca cervix		
Maybe	5	1.10%
No	450	94.70%
Yes	20	4.20%
If YES		
Friend or Friend's family	14	2.90%
Mother	1	0.20%
Other Family Members	13	2.70%

Table 2: Knowledge About Cervical Cancer

Question	Column N %
Have you ever heard of cervical cancer?	
Maybe	2.90%
No	5.30%
Yes	91.80%
From whom have you heard about Ca Cervix?	
Family & Friends	8.00%
News	6.30%
Social media	21.30%
Teachers	64.40%
What is the cause of Ca Cervix?	
Bacteria	4.60%
Don’t know	18.90%
Fungus	1.90%
Parasite	0.20%
Virus	74.30%
What are the symptoms of Ca Cervix?	
All of the above	65.90%
Don’t know	21.70%
Inter menstrual bleeding	1.50%
Post coital bleeding	1.50%
Post menopausal vaginal bleeding	2.10%
Vaginal foul smelling discharge	7.40%
Do you know that Ca Cervix is hereditary or familial?	
Don't Know	31.80%
No	27.20%
Yes	41.10%
What are the risk factors of Ca Cervix?	
All of the above	73.30%
Early age of pregnancy	1.10%
Early onset of sexual activity	3.40%
HPV infection	22.10%
Smoking	0.20%
What are the preventable factors of Ca Cervix?	
All of the above	80.40%
Avoid Early onset of sexual activity	1.50%
Avoid multiple sexual partners	2.90%
HPV vaccination	14.50%
Quit Smoking	0.60%
Is Ca Cervix curable if detected early?	
Don't Know	17.90%
No	3.60%
Yes	78.50%
Who should be screened for Ca Cervix?	
Age > 50 years	5.70%
All women	39.40%

Commercial sexual workers	5.30%
Don’t know	14.70%
Women > 25 years	34.90%
How often should a woman be screened?	
Every 10 years after 30 years	4.40%
Every 3 years	38.50%
Every 5 years	8.40%
Once a year	46.10%
Once in a lifetime	2.50%
How to screen for Ca Cervix?	
All of the above	54.30%
Biopsy	6.30%
HPV DNA testing	5.10%
PAP smear	32.80%
Visual acetic acid inspection	1.50%
How to treat a patient of Ca Cervix?	
All of the above	59.80%
Chemotherapy	5.90%
Don't Know	21.70%
HPV vaccines	6.10%
Radiotherapy	2.10%
Surgery	4.40%

Table 3: Attitude Towards Cervical Cancer

Statement	Count	Column N %
It is helpful to detect cervical cancer early		
Strongly agree	332	69.90%
Agree	102	21.50%
Neutral	36	7.60%
Disagree	2	0.40%
Strongly disagree	3	0.60%
You have the chance of getting HPV infection		
Strongly agree	58	12.20%
Agree	92	19.40%
Neutral	140	29.50%
Disagree	72	15.20%
Strongly disagree	113	23.80%
I think cervical cancer is preventable		
Strongly agree	193	40.60%
Agree	211	44.40%
Neutral	64	13.50%
Disagree	5	1.10%
Strongly disagree	2	0.40%
I think Ca Cervix can cause death		
Strongly agree	105	22.10%
Agree	190	40.00%
Neutral	134	28.20%
Disagree	41	8.60%
Strongly disagree	5	1.10%
I think any woman can acquire Ca Cervix		
Strongly agree	120	25.30%
Agree	214	45.10%
Neutral	108	22.70%
Disagree	29	6.10%
Strongly disagree	4	0.80%
I think Ca Cervix can be treated		
Strongly agree	145	30.50%
Agree	261	54.90%

Neutral	58	12.20%
Disagree	9	1.90%
Strongly disagree	2	0.40%
I think Ca Cervix can be prevented by vaccines		
Strongly agree	168	35.20%
Agree	203	42.50%
Neutral	95	19.80%
Disagree	10	2.10%
Strongly disagree	2	0.40%
I think screening helps in early detection		
Strongly agree	246	51.60%
Agree	189	39.60%
Neutral	35	7.40%
Disagree	4	0.80%
Strongly disagree	3	0.60%
I think all women should receive free vaccines		
Strongly agree	286	60.00%
Agree	136	28.40%
Neutral	46	9.70%
Disagree	7	1.50%
Strongly disagree	2	0.40%
I will recommend vaccines to friends & family		
Strongly agree	273	57.30%
Agree	159	33.30%
Neutral	38	8.00%
Disagree	4	0.80%
Strongly disagree	3	0.60%
I will recommend screening to friends & family		
Strongly agree	291	61.10%
Agree	136	28.60%
Neutral	45	9.50%
Disagree	4	0.80%

Table 4: Practice Regarding Cervical Cancer

Question	Count	Column N %
Do you have any sexual experience?		
Maybe	17	3.60%
No	417	88.20%
Yes	38	8.20%
What was your age at first sexual experience?		
< 18 years	10	2.30%
> 18 years	62	14.30%
Have you ever been screened for Ca Cervix?		
No	457	96.60%
Yes	16	3.40%
Number of sexual partners		
Multiple	13	2.70%
Single	52	10.90%
Do you know the name of any cervical cancer vaccines?		
No	271	57.10%
Yes	203	42.90%
Are you vaccinated for Ca Cervix?		
No	435	91.60%
Yes	40	8.40%
Are any of your family members/friends vaccinated?		
Maybe	139	29.30%
No	261	54.90%
Yes	75	15.80%

Are any of your family members/friends screened?		
Maybe	129	27.20%
No	280	58.90%
Yes	66	13.90%
Have you done or seen a PAP smear before?		
Maybe	28	5.90%
No	338	71.40%
Yes	107	22.70%

DISCUSSION

The present study aimed to assess the knowledge, attitude, and practice regarding cervical cancer screening and vaccination among medical students. The findings revealed that while the overall knowledge was good, there were some gaps in understanding the symptoms, risk factors, and preventive measures. The attitude towards cervical cancer prevention was generally positive, but the practice of screening and vaccination was low among the participants and their family members or friends.

The majority of the participants (91.80%) had heard of cervical cancer, which is consistent with the findings of a study conducted by Mehta *et al*., among medical students in India, where 89.6% of the participants were aware of cervical cancer [13]. However, the level of knowledge regarding the cause of cervical cancer was lower in the present study (74.30%) compared to a study by Al-Shaikh*et al*., in Saudi Arabia, where 95.7% of the medical students correctly identified HPV as the causative agent [14].

Regarding the symptoms of cervical cancer, 65.90% of the participants in the present study recognized all the listed symptoms, which is higher than the findings of a study by Pandey*et al*., in India, where only 38.2% of the medical students were aware of all the symptoms [15]. The knowledge of risk factors for cervical cancer was also higher in the present study (73.30%) compared to a study by Maharajan*et al*., in Malaysia, where only 50.6% of the medical students correctly identified all the risk factors [16].

The attitude towards cervical cancer prevention was generally positive in the present study, with strong agreement on the importance of early detection (69.90%), vaccination (35.20%), and screening (51.60%). These findings are similar to those of a study by Rashid *et al*., in India, where 87.5% of the medical students believed that cervical cancer is preventable, and 82.5% agreed that screening helps in early detection [17].

However, the practice of cervical cancer screening and vaccination was low among the participants in the present study. Only 3.40% had been screened for cervical cancer, and 8.40% had been vaccinated against it. These findings are consistent with those of a study by Akpo*et al*., in Nigeria, where only 5.8% of the female medical students had undergone cervical cancer screening [18]. The low uptake of screening and vaccination highlights the need for increased emphasis on personal health practices among medical students.

The present study also found that only 42.90% of the participants could name at least one cervical cancer vaccine, which is lower than the findings of a study by Mehta *et al*., where 61.2% of the medical students were aware of the HPV vaccine [13]. This suggests a need for improved education on the available vaccines and their role in cervical cancer prevention.

The strength of the present study lies in its large sample size and the comprehensive assessment of knowledge, attitude, and practice regarding cervical cancer screening and vaccination. However, the study has some limitations. The cross-sectional design does not allow for the establishment of causal relationships, and the self-reported nature of the data may be subject to recall and social desirability bias.

The present study highlights the need for improved education and training of medical students regarding cervical cancer prevention. While the overall knowledge and attitude were good, there were gaps in understanding the symptoms, risk factors, and preventive measures. The low uptake of screening and vaccination among the participants and their family members or friends underscores the importance of promoting personal health practices. Incorporating comprehensive cervical cancer education into the medical curriculum and encouraging medical students to participate in screening and vaccination programs can help bridge the knowledge-practice gap and ultimately contribute to the reduction of the global burden of cervical cancer.

CONCLUSION

The present study provides valuable insights into the knowledge, attitude, and practice of medical students towards cervical cancer screening and vaccination. The findings highlight the need for comprehensive education and

training programs to bridge the knowledge-practice gap and promote personal health practices among future healthcare providers.

While the overall knowledge about cervical cancer was good, with 91.80% of the participants having heard of the disease, there were some gaps in understanding the symptoms (65.90%), risk factors (73.30%), and preventive measures (80.40%). The attitude towards cervical cancer prevention was generally positive, with strong agreement on the importance of early detection (69.90%), vaccination (35.20%), and screening (51.60%). However, the practice of screening (3.40%) and vaccination (8.40%) was low among the participants and their family members or friends.

These findings underscore the need for targeted interventions to improve the knowledge, attitude, and practice of medical students regarding cervical cancer prevention. Incorporating comprehensive cervical cancer education into the medical curriculum, emphasizing the importance of personal health practices, and encouraging participation in screening and vaccination programs can contribute to the development of a well-informed and proactive healthcare workforce.

By equipping medical students with the necessary knowledge and skills to effectively prevent and control cervical cancer, we can take a significant step towards reducing the global burden of this disease. Future research should focus on evaluating the effectiveness of educational interventions and identifying barriers to the uptake of cervical cancer screening and vaccination among medical students and the general population.

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