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Knowledge, attitude and practice regarding cervical cancer and its prevention among third and final year medical undergraduates

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ABSTRACT

Background: Cervical cancer is a gynecological malignancy that can be prevented, but the utilization of screening is just 2.6%–5% in India. Healthcare providers play a vital role in raising awareness and educating the public about screening and vaccination in a highly populated developing country like India.

Material and Methods: 153 third- and final-year MBBS students were tested on their knowledge, attitude, and practice using a prevalidated questionnaire in a Medical College in southern part of Karnataka, India. There were 36 knowledge, 12 attitude and 11 practice related questions. The knowledge and practice levels of the participants were grouped into good, fair, and poor bases on bloom's cut off points. A Likert's scale with 4 points was employed to evaluate the attitude of the participants.

Results: Analyses of knowledge showed that majority of students recognized the risk factors and symptoms associated with carcinoma of cervix. A considerable lack of knowledge was observed on the treatment of cervical cancer but a significant portion of students knew about prevention. A positive attitude was observed on all aspects of cervical cancer and its prevention. When practice regarding cervical cancer was assessed, it was noticed that only 27.8% of the participants were given information on HPV vaccine in their schools, and an even smaller portion (10%) have been vaccinated for HPV.

Conclusion: This study demonstrates a good knowledge and positive attitude about carcinoma of cervix and its prevention amongst the medical students which plays a key role in the campaign to prevent cervical malignancy. Poor practice seen in this study emphasizes

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the need to translate the awareness to practice. Easier availability of HPV testing and better distribution of HPV vaccine is paramount to successfully prevent cervical cancer in the future.

KEYWORDS: Cervix, Screening, HPV testing, Vaccination, MBBS students

INTRODUCTON:

Carcinoma of the cervix is the 4th and 2nd most common cancer in females in the world and India, respectively.[1,2] In Kolar, the prevalence of Cervical Cancer was reported as 17.55% of total female cancers.[3] 80% of the newly diagnosed cases are from developing countries and most of them were never screened for the disease.[4] There is enough data to conclude that screening lowers the number of carcinoma cervix cases and, consequently, lowers the number of cancer-related fatalities.[2] Utilization of screening is just 2.6%–5% in India.[4]

Cervical cancer in India is usually diagnosed after development of symptoms or during opportunistic screening. Cervical cancer symptoms, such as irregular vaginal bleeding, foul smell, or blood-stained vaginal discharge, generally develop only after the disease has advanced.[4]

Some of the known risk factors of cervical malignancies are smoking, early-onset of sexual activities-infection with human immunodeficiency virus, multiple sexual partners, high parity, prolonged use of oral contraceptives, sexually transmitted diseases, insertion of herbs in vagina and genetic predisposition.[4,5,6] Human papillomavirus (HPV) has been identified in approximately in 99.7% of cervical cancers.[4] Worldwide, high risk HPVs (HPV16 and HPV18) account for over 70% of instances of cervical malignancy.[6] HPV vaccine can be used to prevent cervical cancer.[6,7]

Precancerous cervical lesions take more than 10 years to progress to malignancy. These lesions can hence be detected by cervical cancer screening in otherwise healthy women before it progresses to carcinoma. Screening and removing these precancerous lesions are the most important step in preventing cervical cancer.[5,7]

Cervical cancer mortality and incidence in developed countries has been reduced through organized screening programs and early intervention.[8] It is a preventable gynecological malignancy and in a highly populated developing country such as India, detection and prevention of cervical malignancy is vital.[5,6] In India, screening for cervical carcinoma and its precursors can be conveniently and efficiently performed by primary care physicians who local women would trust to visit for screening even when not symptomatic.[4] Healthcare providers are also crucial in raising awareness and educating the public on risk factors and prevention of the disease.[8] Hence medical students should have adequate knowledge and a positive attitude to prevent cervical malignancy.

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MATERIALS AND METHODS:

A questionnaire based cross sectional study was done in a Medical College in southern part of Karnataka, India. The participants were from the 2019 (Final year) and 2020 (third year) batch undergraduate medical students at the same institute.

Sample size for the study was estimated based on a review article among Indian medical professionals, which showed an overall knowledge of 75.15% on cervical cancer among the medical professionals.[8] An absolute error of 7% with 95% confidence interval was considered and a sample size of 147 students including both third and final year undergraduates was calculated.

Knowledge, attitude and practice of the participants about cervical carcinoma and its prevention was assessed using a prevalidated questionnaire.

There were 36 knowledge related questions. It consisted of 33 Yes/No questions and 3 multiple choice questions (MCQ). Each correct and wrong response was given a score of 1 and 0 respectively. A participant would hence get a maximum and minimum score of 36 and 0 respectively. Bloom's cut off points were utilized to categorize knowledge of the participants into good, fair, and moderate (Table1).

Table 1: Knowledge score

CATEGORY	SCORE
GOOD	29-36
FAIR	21-28
POOR	0-20

The attitude of the participants was determined by a Likert's scale having 4 points. The questionnaire consisted of 12 statements with responses comprising of strongly agree, agree, disagree, and strongly disagree. Participant who responded with a positive attitude in 6 or more statements were considered as having a positive attitude towards prevention of cervical malignancy.

The practice of the participants was assessed using six MCQ questions and five Yes/ No questions with a score of 1 or 0 for correct and wrong responses respectively (Table 4). Similar to knowledge levels, practice levels were categorized into good, fair and moderate using Bloom's cut off points (Table 2).

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Table 2: Practice score

CATEGORY	SCORE
GOOD	29-36
FAIR	21-28
POOR	0-20

All the data were input into Microsoft Excel sheets, and SPSS software version -2024 was used for the statistical analysis. Data was analyzed by frequency and percentage. A statistically significant result was defined as a p value less than 0.05.

RESULTS:

153 students pursuing MBBS in a Medical College were assessed using the questionnaire. Among these participants 75 students were from third year and 78 participants were from final year. Their age varied from 20-28 years of age with majority of the participants at 22

years of age.

Knowledge about cervical cancer and its prevention (Table 3)

It was observed that when knowledge of the students on cervical cancer was analyzed, majority of students had good knowledge about the risk factors and symptoms related to cervical cancer. While 96.7% students were aware of the association of causation of cervical

cancer and HPV, only 63.3% students knew that HPV is a double stranded deoxyribonucleic acid (DNA).

A considerable lack of knowledge was seen on the treatment of cervical cancer at early and advanced stages. But a significant portion of students knew about prevention of cervical cancer using programmed screening and HPV vaccination.

Attitude about cervical cancer and its prevention (Table 4)

The attitude of the students on carcinoma cervix and its prevention was positive on all aspects. 79.6% of students, strongly agree that cervical cancer can be prevented. When asked if they considered, pap smear examination an unnecessary, painful procedure, majority of them was in strong disagreement. But most of them are of the opinion that a female doctor might be preferred by the students while doing the examination.

A strongly positive attitude towards HPV vaccination was observed among the students. A good amount of the participants also realize that safe sexual practices can go a long way in preventing cervical cancer.

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Table 3: Knowledge about cervical cancer and its prevention

Questionnaire for assessing knowledge about cervical cancer	Correct Response Frequency (%)	Questionnaire for assessing knowledge about cervical cancer	Correct Response Frequency (%)
Are the following risk factor associated with cervical cancer:		**Are the following screening methods used for cervical cancer:**	
K1) Young age at onset of sexual intercourse	90.8	K25) Pap smear	98
K2) Multiple sexual partners	93.5	K26) VIA/ VILI	80.3
K3) Multiparity	86.3	K27) LBC	80.3
K4) High-fat diet	81.8	K28) HPV Testing	96.7
K5) Smoking	87.3	K29) No screening method available	92.7
K6) IUD use	36.4		
K7) OCP use	51	**Are following methods of Prevention used for cervical cancer:**	
K8) Viral infection	90.9		
K9) Bacterial infection	75.7	K30) Programmed screening	96.7
K10) Fungal infection	75		
K11) Poor Genital hygiene	94.8	K31) HPV Vaccination	97.4
K12) Exercise	87	K32) Any Surgery	68.4
Do the following cause cervical cancer:		**Is the following about treatment of cervical cancer correct:**	
K13) Genetic predisposition	94.1	K33) Diagnosing the disease at an early stage makes a difference in the prognosis	96.7
K14) HPV	96.7		
K15) HCV	75.7		
K16) HBV	75.7		
K17) Klebsiella	78.9	K34) Frequency of distant metastasis has no direct correlation with stage of disease	74.2
K18) Candida	75.5		
Is following Signs and symptoms associated with cervical cancer			
K19) Foul smelling discharge P/V	92.8	**K35) Early stage treatment of cervical cancer is:**	
K20) Irregular vaginal bleeding	94.7	a) Surgical treatment	16.4
K21) Post-menopausal bleeding P/V	93.4	b) Treatment with a combination of radiotherapy and chemotherapy	63.8
K22) Post coital bleeding	92.1		
K23) Itching in the genital region	88.2	c) Any one of the above	13.8
		d) Both	5.9
K24) HPV is a		**K36) Advanced tumors of the cervix are treated by:**	
a) Single stranded RNA	13.3	a) Surgical treatment	13.9
b) Double stranded RNA	12.7	b) Treatment with a combination of radiotherapy and chemotherapy	6.3
c) Single stranded DNA	2.7	c) Any one of the above	9.3
d) Double stranded DNA	63.3	d) Both	67.5

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Table 4: Statements to assess the attitude about cervical cancer and its prevention

Statements	Strongly Agree (%)	Agree (%)	Disagree (%)	Strongly Disagree (%)
A1) Any woman can develop cervical cancer	75.5	17.9	5.3	1.3
A2) Cervical cancer can be prevented	79.6	15.8	3.9	0.7
A3) Pap smear/VIA is an unnecessary, painful procedure?	4.6	7.2	10.5	77.6
A4) HPV testing is not a cost-effective procedure	3.3	16.4	17.1	63.2
A5) Patients are apprehensive that screening test will reveal cervical cancer	13.2	33.1	45	8.6
A6) Women prefer female doctor for pap test/ VIA	50.7	46.7	1.3	1.3
A7) HPV vaccine is a hoax	6.6	9.3	13.9	70.2
A8) HPV vaccine has too many side effects?	3.4	10.1	22.3	64.2
A9) HPV vaccination for adolescent boys and girls should be part of national immunization schedule	76.3	18.4	3.3	2
A10) Safe sexual practices can prevent cervical cancer	82.2	13.8	2.6	1.3
A11) Screening at regular intervals is inconvenient and not necessary.	5.9	8.6	11.2	74.3
A12) Early detection methods have no effect on treatment	4.6	7.9	7.9	79.6

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Table 5: Practice about cervical cancer and its prevention

Questionnaire to assess Practice of cervical cancer	Response Frequency (%)
P1) Have you observed pap smear being performed?	Yes- 71.7
	No- 28.3
P2) Have you taken a sample for pap smear examination?	Yes- 8.6
	No- 91.4
P3) Have you observed VIA/VILI being performed?	Yes- 8.6
	No- 91.4
P4) Preferred screening test for cervical cancer	
a) VIA/VILI	3.9
b) PAP smear testing	38.8
c) HPV test	3.9
d) Combination of pap and HPV	**53.3**
P5) Age at which screening should be started	
a) From birth	1.3
b) From puberty	24.3
c) From 20-30 years	**72.4**
d) From menopause	0
e) Not Sure	2
P6) How often should you get screening test done when it is a combination of pap smear and HPV testing	
a) Monthly	2.6
b) Yearly	19.9
c) Every 3 years	23.8
d) Every 5 years	**41.7**
e) Every 10 years	6
f) Not Sure	6
P7) CERVAVAC which is the first vaccine developed in India to prevent carcinoma cervix, protects against:	
a) HPV 16,18,31,33	49.3
b) HPV 6,11,16,18	**19.3**
c) HPV 6,11, 31, 33	9.3
d) Never heard of CERVAVAC	22

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Table 5(cont.): Practice about cervical cancer and its prevention

Questionnaire to assess Practice of cervical cancer	**Response Frequency (%)**
P8) The Gardasil vaccine distributed in the USA can protect against how many types of HPV?	
a) 4	5.3
b) 6	7.9
c) 9	**46.4**
d) 13	7.3
e) Not sure	33.1
P9) Did your school give any information about the HPV vaccine/ an opportunity to get the HPV vaccine	Yes- 27.8
	No- 72.2
P10) Have you taken the HPV vaccine	Yes- 10
	No- 90
P11) Which of the following would you use as a contraceptive to prevent cervical cancer	
a) OCP	5.3
b) Condom	**88.7**
c) Coitus interruptus	2.6
d) Calendar method	0.7
e) Implants/ Injections/ Patch	2.6

Practice about cervical cancer and its prevention (Table 5)

When practice regarding cervical cancer was assessed, it was noticed that while 109 students had observed pap smear being performed, only 13 respondents had taken a sample for pap smear examination. A very small portion of students (8.6%) have observed Visual Inspection with acetic acid (VIA) and with Lugol's iodine (VILI) being performed. While 53.3% of students are aware that a combination of pap and HPV testing is the preferred screening test, 38.8% students consider PAP smear the preferred test.

When asked about CERVAVAC, about 22% had never heard about it and only 19.3% were aware of the correct action of it. Similarly, only 46.4% of students knew about Gardasil vaccine. Only 27.8% of the participants were given information on HPV vaccine in their schools, and an even smaller portion (10%) have been vaccinated for HPV.

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Knowledge and practice levels among third year and final year:

The consolidated score of both knowledge (Table 6) and practice levels (Table 7) of all the participants were tabulated.

It was observed that majority (75.6%) of final years had good knowledge while third years had mostly good (44.6%) and fair (47.3%) knowledge. On further analysis knowledge among final year students were at a significantly ($p<0.05$) higher level than third year students.

Table 6: Knowledge levels of third and final year categorized into good, fair and poor

Knowledge levels	**Third year (n=74)**	**Final year (n=78)**	**p value**
GOOD	33 (44.6%)	59 (75.6%)	0.0006
FAIR	35 (47.3%)	14 (18%)	
POOR	6 (8.1%)	5 (6.4%)	

Practice levels in third and final year students were both at a lower level, with 89% of third years and 41% of final years falling in the poor category and 0 students of both batches having a good score. It was also observed that practice scores were significantly ($p<0.05$) poorer in third year students.

Table 7: Practice levels of third and final year categorized into good, fair and poor

Practice levels	**Third year (n=74)**	**Final year (n=78)**	**p value**
GOOD	0	0	2E-11
FAIR	8 (11%)	46 (59%)	
POOR	66 (89%)	32 (41%)	

When all the scores were considered, it was noticed that while all the participants showed a positive attitude, both third and final year students scored markedly more in knowledge levels than practice levels.

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DISCUSSION:

Cervical cancer is a malignancy that can be prevented with programmed screening and HPV vaccination and yet among females in India, cancer of the cervix is the 2nd common malignancy. Healthcare professionals must take the lead in increasing awareness and spreading resources in our country. Knowledge, attitude and practice about cervical cancer and its prevention among third and final year MBBS students was explored in this study. These students are the future healthcare providers and are at a point where they are imbibing most information for their profession.

Our study showed good knowledge and positive attitude towards cervical malignancy and its prevention but poor practice. Similar results were observed among medical students in Zambia.[5] This shows a gap in translating knowledge to practice, which might be the case in our country and globally. While awareness is being spread, the resources are not as easily available. This can be particularly seen in our study when we observe that 97.4% participants are aware that HPV vaccination plays a role in preventing cervical cancer but only 10% are vaccinated against HPV. In comparison, a study done on healthcare professionals in Chennai by Chellapandian P et al showed that 24% of the subjects were vaccinated.[9]

It was our observation that knowledge on risk factors, symptoms, screening, and prevention was much better than treatment. This could be attributed to the fact that the subjects are still students who haven't started practicing yet. A review by Chawla B et al on health professionals in India also showed adequate knowledge about signs and symptoms, risk factors, and screening of cervical cancer in India.[8] A good knowledge on risk factors and screening can go a long way in reducing the incidence of cervical malignancy in the country. So, our study shows good awareness that when implemented on a long run can bring about positive change.

The participants also showed positive attitude towards prevention of cervical cancer using screening tests and HPV vaccination which was similar to the results by Chawla B et al. But on the other hand, it is strongly believed by the participants in our study that women would prefer a female doctor to do PAP smear examination. This can be due to the conservative nature of our country and could be a hindrance in rural areas where female doctors might not be available. While the conservative nature of our country can be blamed for this preference, a more open attitude was observed in the approach to safe sexual practices. About 88.7% of the participants are conscious of using condoms to prevent HPV transmission, which can be due to social demographics of our participants like young age and education.

In practice, many participants (38.8%) still considered PAP smear testing as the best screening method even though a combination of PAP and HPV testing is more effective. This can be attributed to the unavailability of HPV testing in most of the institutes, even in urban settings. And while India has developed HPV vaccine, CERVAVAC, 22% of medical students in our study have not heard about it. A more thorough job in distributing the vaccine to the whole country including the remote and rural parts of our country is pertinent.

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Our study was unique in that, it did a comparison of third year and final year students, and observed better knowledge and practice in final year students. This can be due to more intense training in Obstetrics and Gynecology that a final year student will undergo.

The limitations of the study were, the study was conducted on medical students who cannot be considered as representatives of healthcare providers or of the general public. Thus, the present information cannot be extrapolated to general population. A comparison study of the knowledge, attitude, and practice among MBBS students, general public and practicing doctors can be considered to see for the gap in knowledge, attitude and practice of different groups.

CONCLUSION:

This study demonstrates a good knowledge and positive attitude towards cervical malignancy and its prevention, which plays a key role in the fight against cervical cancer, but it is important to translate the awareness to practice. Easier availability of HPV testing and better distribution of HPV vaccine is paramount to successfully prevent cervical cancer in the future.

The high awareness about cervical cancer and importance of screening among medical students must be dispersed to the general public and a more comfortable discourse on sexually transmitted diseases and high incidence of cervical cancer is of the essence to get the desired results.

TAKE HOME MESSAGE:

The developed world has made big strides towards the goal of eliminating cervical cancer while the developing nations are still miles behind. Understanding the areas where India is lagging when it comes to screening programs and HPV vaccination will help close this gap.

List of abbreviations

HPV - Human papillomavirus

MCQ - multiple choice questions

DNA – deoxyribonucleic acid

VIA/VILI -Visual Inspection with acetic acid (VIA) and with Lugol’s iodine (VILI)

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Statements & Declarations

Ethics approval

"This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Ethics Committee of University Sri Devaraj Urs Academy Of Higher Education and Research (Date 28.11.2023/No SDUMC/KLR/IEC/444/2023-24)."

Consent to participate

"Informed consent was obtained from all individual participants included in the study.

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