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Original Research Article

A cross-sectional study to assess the knowledge, attitudes, and practices of cervical cancer screening/pap smear among health care professionals in a tertiary care hospital in north India

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ABSTRACT

Background: Cervical cancer is one of the most easily preventable and curable cancers among females. It imposes a high burden on developing countries, and with the use of screening methods, higher detection rates can be assured. Aims and objectives were to evaluate the knowledge, attitudes, and practices (KAPs) among health care professionals including doctors, nurses, and laboratory technicians regarding a very simple test for cervical cancer screening (i.e., Pap smear)
Methods: This was a descriptive cross-sectional study that was conducted on 200 female health care workers in University College of Medical Sciences and Guru Teg Bahadur Hospital, Delhi from August 2018 to July 2022. A pretested, self-administered questionnaire was used on health care professionals working in various departments. This questionnaire collected information on sociodemographic data, knowledge regarding cervical cancer screening, Pap smear, and HPV vaccination, and attitudes of participants toward a Pap smear and HPV vaccination.
Results: A total of 200 health care workers participated and knowledge among doctors and paramedical staff was compared but only 24.05% of the doctors and 26.44% of the paramedical staff had ever undergone a Pap smear screening, which was statistically insignificant (p=0.7). Awareness about the cervical cancer prevention vaccine was found more among doctors (n=78, 98.7%) than paramedical staff (n=77, 63.63%), and this was found to be statistically significant (p=0.001) Also, data among participants from a gynecology department (GD) versus other departments was compared, and awareness regarding HPV vaccine was much higher in the other-than-gynecology department (OTGD) group (84.29%) versus the GD group (59.54%), and this was statistically significant (p<0.001).
Conclusions: Health care workers play an essential role in the community to spread awareness, but there is a need for a change in attitude about the disease and its screening. We can utilize this knowledge in filling the critical gaps in the community regarding awareness, screening, and prevention of the disease.

Keywords: Cervical cancer, HPV, Knowledge, Screening, Vaccination

INTRODUCTION

GLOBOCAN 2020 concluded that cervical cancer is the third most common cancer in women worldwide, with an estimated 604,127 (3.1%) new cases and 341,831 (3.3%) deaths in 2020.[1] Approximately 90% of these cases were in low- and middle-income countries. According to GLOBOCAN 2020 in India, cervical cancer is the third most common cancer, with 123,907 new cases (18.3%) and 77,348 cervical cancer deaths.[2] Also, Indian females

face the highest age-standardized incidence rate of 18.0 compared to Southern Asia overall, with a rate of 15.5, and a world age-standardized rate of 13.3 per 100,000 women annually.[3]

Cervical cancer is one of the most common causes of cancer-related deaths in India, with a 2.5% cumulative lifetime risk and 1.4% cumulative death risk.[4] According to the National Institute of Cancer Prevention and Research, one woman dies of cervical cancer every eight minutes in India, and the average five-year survival rate is 48.7%.[5,6] The length of survival depends on the stage of presentation.

Cervical cancer has a long precancerous phase, in which it can be detected and treated in the early stages. Because of a lack of knowledge about screening, prevention, and warning signs, many women are unaware of this. The disease can occur even in asymptomatic patients; hence, awareness about screening and proper knowledge and attitude can prevent this dreadful disease. There are various risk factors for cervical cancer, among which are persistent infection with high-risk human Papillomavirus (HPV 16,18) as the most common cause.[7] Other epidemiological risk factors are marriage at an early age, multiple sexual partners, multiple pregnancies, poor genital hygiene, other STDs, malnutrition, smoking, and lack of awareness.[8]

Various methods, such as the Papanicolaou (Pap) smear, visual inspection with acetic acid (VIA), HPV testing, and colposcopy are available for screening of cervical cancer. Various studies showed that screening with a Pap smear and VIA led to a significant reduction in cancer-related mortality in developed and developing countries.[9] Unfortunately, detection by screening in India is often opportunistic and usually only after developing symptoms.

The estimated coverage of cervical cancer screening practices in India is only around 2.6%. This is quite low in comparison with 82% coverage in the past three years in developed countries among reproductive-age females.[10]

Studies document that health care professionals play a major role in enlightening the public on the availability and need for cervical cancer screening services. Their attitude is often crucial in gaining women's confidence and motivating them to undergo testing. It is therefore relevant to appraise the perception and utilization of cervical cancer screening services in health care professionals.

Aims and objectives

The present study aims to assess the knowledge, attitudes, and practices (KAPs) among health care professionals, including doctors, nurses, and paramedical staff working in various departments of a tertiary care center attached to a medical college, regarding a very simple but highly effective test for cervical cancer screening- the Pap smear.

Primary objective

To evaluate the KAPs among health care professionals, including doctors, nurses, and laboratory technicians, regarding a very simple test for cervical cancer screening- the Pap smear.

Secondary objective

To compare KAPs for cervical cancer screening among doctors and paramedical staff. To compare KAPs for cervical cancer screening among staff members of gynecology departments and other medical departments.

METHODS

This was a descriptive cross-sectional study that was conducted in University College of Medical Sciences and Guru Teg Bahadur Hospital, Delhi from August 2018 to July 2022. Our study included female doctors, nursing staff, and paramedical staff above the age of 21. A list of all female doctors and nurses employed at the institution during the period of study and the necessary permission to conduct the study were obtained from the concerned authorities. Informed consent was taken from the study subjects after explaining the need for the study.

Sample size

A total of 200 female health care workers were taken as sample size based on a study done by Mutyaba et al, which showed the proportion of nurses having had a Pap smear as a screening procedure was 47%.[11] The findings from the above article have been utilized for estimating the sample size for the study. With a relative precision of 17% and a 95% confidence interval, the number required was estimated to be 150. However, making an allowance for a response rate of 80%, it was rounded up to 200.

A pretested, self-administered questionnaire was used in our study (Tables 2 and 3). The questionnaire consisted of information on sociodemographic data, knowledge regarding cervical cancer screening, Pap smear, and HPV vaccination, and attitudes of participants about a Pap smear and HPV vaccination. The questionnaire content was designed by two experts and validated by three other experts within the department. A pilot study was conducted on 10% of our sample size (i.e., 20 participants). The average time to complete the questionnaire was 15-20 minutes. The questionnaire consisted of yes/no, true/false, and multiple-choice questions, and the responses were calculated in percentages. The data collection was performed by health care professionals working in various departments in a tertiary care center attached to a medical college.

Informed consent was taken from each participant explaining the objectives of the study. They were assured that the data collected would remain anonymous to ensure confidentiality. Participants included doctors, nurses, and

laboratory technicians posted in various departments in the hospital and the college. The participants were provided detailed explanations about the study beforehand and were asked to complete the questionnaires at a time convenient to them. The participants who had not undergone a Pap smear in the last three years were invited to get one done, the timing for which was given to them.

Statistical analysis

The data obtained was entered into an Excel sheet and analyzed using Statistical Package for Social Sciences, version 26.0. Descriptive statistics, such as frequency, mean, and standard deviation was employed to summarize quantitative data, including age, years of marriage, and years of work experience. A chi-square test was employed to compare the different groups. The statistical significance level was fixed at p=0.05.

RESULTS

In our study, 200 health care workers participated, with a mean age of 38.12 years. Among the study population, 79 (39.5%) were doctors and 121 (60.5%) were paramedical staff members, including nurses and laboratory and occupational therapy technicians. Nearly all the participants were married (194, 97%). The mean age of the participants was 38.12 years (SD ±9.50) and the average age at marriage was 26.28 years (SD ±3.02). The sociodemographic details of the respondents are shown in Table 1.

Table 1: Sociodemographic characteristics of the study participants.

Characteristics		Total	Percent
Profession	Doctors	79	39.5
	Paramedical staff	121	60.5
Marital status	Married	194	97
	Unmarried	6	3
Mean age		38.12±9.50 years	
Average age at marriage		26.28±3.02 years	

Knowledge attributes of the participants

Almost all the participants (n=198, 99%) were aware that cervical cancer is preventable and nearly the same number (n=193, 96.5%) knew the risk factors associated with it.

Nearly all the participants (n=194, 97%) were aware of the Pap smear as a screening tool. Other screening methods, such as HPV testing (n=92, 46%), colposcopy (n=41, 20.5%), VILI (n=38, 19%), and VIA (n=23, 11.5%) were also chosen. A small number of participants (n=6, 3%) were not aware of any of the above.

Less than half of the participants (n=96, 48%) had correct knowledge regarding the recommended frequency of scheduling a Pap smear. In addition, 149 (74.5%) of the participants were aware of an available vaccine for cervical cancer (Table 2).

Table 2: Knowledge regarding cervical cancer and screening methods.

Question	Response	Number	Percent
Is cervical cancer preventable?	Yes	198	99
	No	2	1
Do you know the risk factors for cervical cancer?	Yes	193	96.5
	No	7	3.5
What are the risk factors?	Early onset of sexual activity	88	44
	Multiple sexual partners	73	36.5
	Multiparity	31	15.5
	Cigarette smoking	49	24.5
	HPV infection	106	53
What are the warning signs?	Postmenopausal bleeding	48	24
	Postcoital bleeding	71	35.5
	Foul-smelling discharge	62	31
	Irregular menstrua bleeding	118	59
	Don’t know	5	2.5
Is a Pap smear a screening method?	Yes	194	97
	No	6	3
What is the recommended frequency for undergoing a Pap smear?	Once/year	62	31
	Once/2 years	25	12.5
	Once/3 years	96	48
	Once/5 years	15	7.5
	Only once	2	1
Are you aware of any other screening methods for cervical cancer?	HPV testing	92	46
	Colposcopy	41	20.5
	VIA	23	11.5
	VILI	38	19
	Don’t know	6	3
When should the screening begin?	>21 years	76	38
	>31 years	92	46
	After marriage	32	16
Awareness regarding the vaccine?	Yes	149	74.5
	No	51	25.5
Who told you about the vaccine?	Health professional	181	90.5
	Print media	8	4
	Peers	7	3.5
	Social media	4	2

Nearly one-third of the participants (n=76, 38%) had the correct knowledge about the recommended age for undergoing a Pap smear (21 years and above).

Attitudes and practices regarding cervical cancer and screening methods

Despite having good knowledge regarding various cervical cancer screening methods, the majority of participants (n=149, 74.5%) had not undergone any screening tests (Table 3). It was observed that the most common reason for this was their perception of an absence of high-risk behaviour (n=62, 41.6%).

KAPs among doctors (n=79) and paramedical staff (n=121) were also compared (Table 4). All the doctors who participated (n=79) were aware of the Pap smear as a screening tool, while among the paramedical staff, 115 (95%) were aware of this test, which was clinically insignificant (p=0.16). Among all the doctors, only 19 (24.05%) and 32 (26.45%) paramedical staff had undergone Pap smear testing, which gave comparable p-values of 0.7. There was no statistical significance among doctors who had undergone a Pap smear as a screening test (n=7, 8.86%) and paramedical staff (n=13, 10.74%).

The perception of a lack of high-risk behaviour was again the most common reason cited by the participants in both groups for not undergoing a Pap smear (48.33% doctors versus 46.06% paramedical staff), and this difference was statistically significant (p=0.004).

Awareness about the cervical cancer prevention vaccine was found more among doctors (n=78, 98.7%) than paramedical staff (n=77, 63.63%), and this was found to be statistically significant (p=0.001). But only 9 (11.3%) doctors and 13 (10.74%) paramedical staff had their daughters vaccinated for the same, and this was statistically insignificant (p=0.18).

We also compared KAPs about cervical cancer screening between participants posted in gynecology departments (GD) and those from other-than-gynecology departments (OTGD) as a whole (Table 5), which included both doctors and paramedical staff. All the participants from the GD group (n=79, 100%) and nearly all from the OTGD group (n=117, 99.69%) were aware of Pap smear testing as a screening method for cervical cancer, which was statistically insignificant (p=0.36).

Table 3: Attitude and practices regarding cervical cancer and screening methods.

Question	Response	Numbers	Percent
Have you undergone a Pap smear test?	Yes	51	25.5
	No	149	74.5
Why was a Pap smear done?	For screening	28	14
	For symptoms	23	11.5
If done for symptoms, what symptom(s) did you have?	Postmenopausal bleeding	1	4.3
	Postcoital bleeding	3	13.04
	Excessive foul-smelling discharge	4	17.3
	Irregular menstrual bleeding	15	65.2
Why was a Pap smear never done?	Unaware	6	4.02
	Lack of time	28	18.79
	Fear of per speculum examination	19	12.7
	Never thought of it	34	22.8
	No high-risk behaviour	62	41.6
Were there any other screening tests done?	Yes	25	12.5
	No	175	87.5
If yes, which other screening tests were done?	HPV testing	21	10.5
	Colposcopy	4	2
Have you recommended Pap smear testing to your friends or relatives?	Yes	104	52
Are your daughters vaccinated against HPV?	Yes	22	11
	No	94	47
	N/A	84	42
Do you want to undergo a Pap smear now?	Yes	107	53.5

Table 4: Comparison of KAPs for cervical cancer screening among doctors and paramedical staff.

Question	Response	Frequency (%) among doctors	Frequency (%) among paramedical staff	P value (Chi-square test)
	Yes	79 (100)	115 (95)	0.16

Continued.

Question	Response	Frequency (%) among doctors	Frequency (%) among paramedical staff	P value (Chi-square test)
Is the Pap smear a screening method?	No	0 (0)	6 (4.9)	
Have you undergone a Pap smear?	Yes	19 (24.05)	32 (26.45)	0.70
	No	60 (75.94)	89 (73.56)	
Why was a Pap smear done?	For screening	7 (8.86)	13 (10.74)	0.78
	For symptoms	12 (15.18)	19 (15.70)	
If done for symptoms, what were the symptoms?	Postmenopausal bleeding	0 (0)	1 (5.2)	0.99
	Postcoital bleeding	2 (16.6)	2 (10.5)	
	Excessive foul-smelling discharge	3 (25)	5 (26.31)	
	Irregular menstrual bleeding	7 (47.3)	11 (57.8)	
Why was a Pap smear never done?	Unaware	2 (3.33)	4 (4.49)	0.004*
	Lack of time	14 (23.33)	16 (17.9)	
	Fear of per speculum examination	13 (21.6)	7 (7.8)	
	Never thought of it	2 (3.3)	21 (23.59)	
	No high-risk behaviour	29 (48.33)	41 (46.06)	
Awareness of the vaccine	Yes	78 (98.7)	77 (63.63)	<0.001*
	No	1 (1.2)	44 (36.36)	
Are your daughters vaccinated against HPV?	Yes	9 (11.3)	13 (10.74)	0.18
	No	31 (39.2)	63 (52)	
	N/A	39 (49.36)	45 (37.19)	

*p value <0.05 is considered significant.

Table 5: Comparison of KAPs for cervical cancer screening among gynecology department (GD) and other-than-gynecology department (OTGD) participants.

Question	Response	Frequency (%)		P value (Chi-square test)
		Gynecology department (GD)	Other-than-gynecology department (OTGD)	
Is the Pap smear a screening method?	Yes	79 (100)	117 (99.69)	0.36
	No	0 (0)	4 (3.30)	
Have you undergone a Pap smear?	Yes	22 (27.8)	29 (23.96)	0.53
	No	57 (72.15)	92 (76.03)	
Why was a Pap smear done?	For screening	12 (54.54)	16 (55.17)	0.96
	For symptoms	10 (45.45)	13 (44.82)	
If done for symptoms, what were the symptoms?	Postmenopausal bleeding	0 (0)	1 (7.69)	0.25
	Postcoital bleeding	1 (10)	3 (23.07)	
	Excessive foul-smelling discharge	3 (30)	1 (7.69)	
	Irregular menstrual bleeding	6 (60)	8 (61.53)	
Why was a Pap smear never done?	Unaware	1 (1.75)	6 (6.52)	0.02*
	Lack of time	12 (21.05)	14 (15.21)	
	Fear of per speculum examination	13 (22.80)	6 (6.52)	
	Never thought of it	11 (19.29)	23 (25)	
	No high-risk behaviour	20 (35.08)	43 (46.73)	
Awareness regarding the vaccine	Yes	47 (59.54)	102 (84.29)	<0.001*
	No	32 (40.50)	19 (15.7)	
Are your daughters vaccinated against HPV?	Yes	7 (8.86)	15 (12.39)	0.015*
	No	29 (36.70)	65 (53.71)	
	N/A	43 (54.43)	41 (33.88)	

*p value <0.05 is considered significant.

From the GD group, 27.8% of the participants underwent Pap smear testing, compared to 23.96% of participants from the OTGD group. The reasons for not undergoing a Pap smear in these two groups were found to be statistically significant (p=0.02), in which a perception of the absence of high-risk behaviour was found to be the most common reason in both groups. Surprisingly, awareness regarding the HPV vaccine was much higher in the OTGD group (84.29%) versus the GD group (59.54%), which was statistically significant (p<0.001). Also, a higher percentage of the OTGD group (12.39%) had their daughters vaccinated against HPV compared to the GD group (8.86%), which was statistically significant (p=0.15).

DISCUSSION

This study was conducted to assess KAPs among health care workers regarding cervical cancer screening in a tertiary care hospital in Delhi, India. Many studies conducted in developing countries have shed light on the level of understanding and knowledge of the population, which could provide useful information to health care systems to develop appropriate educational strategies. We observed that knowledge regarding cervical cancer screening via a Pap smear was higher in our study participants, which included both medical and paramedical staff (97%), in comparison to an Indian study conducted by Thippeveeranna et al, in which 88.8% of the respondents (nursing staff) were aware of cervical cancer screening.[12] In a Nigerian study conducted by Addah et al among female health care workers, 92.2% of the respondents were aware of the Pap smear as a cervical cancer screening tool.[13] In our study, we found that 97.5% of subjects were aware of one or more symptoms of cervical cancer, while 2.5% were unaware.

In our study, 74.5% of the participants had never received any cervical cancer screening, which is comparable to another Indian study conducted by Swapnajaswanth et al, where 73.6% of the study subjects never had a Pap smear.[14] In our study, the most common reason for not undergoing this test was that participants thought they did not need to because they did not engage in any high-risk behavior (41.6%), while another 22.8% of participants never thought of getting it done. In the study by Swapnajaswanth et al, the absence of symptoms was the reason for not getting a Pap smear screening.[14]

We compared the knowledge about the Pap smear as a screening method among doctors and paramedical staff. There was no statistically significant difference in the knowledge about Pap smears among doctors and paramedical staff. We observed a statistically significant (p=0.004) difference among both groups as to why a Pap smear was never done. We also observed a statistically significant (p=0.004) difference among participants from the GD and OTGD groups as to why a Pap smear was never done (p=0.02). In both groups, the majority of participants never underwent a Pap smear screening because they believed they had no high-risk behavior. However, an Ethiopian study by Almaz et al found that the reason for not getting a Pap smear was a lack of information/knowledge regarding cervical cancer and its screening methods.[15] Divya et al noted that only 8% of the study subjects underwent Pap smear screening, reflecting a major gap between perception and practice.[16]

Awareness about the HPV vaccination in health care professionals has not been studied in the recent past. The majority of our study participants (74.5%) were aware of the HPV vaccine for cervical cancer prevention, but only 11% of participants had had their daughters vaccinated against HPV. We noted a statistically significant difference in knowledge about the HPV vaccine among doctors and paramedical staff (p<0.001). We also noted a statistically significant difference in knowledge about the HPV vaccine among participants from the GD group versus those from the OTGD group (p=0.015). Surprisingly, awareness about the HPV vaccination was found higher in participants working in the OTGD group; this group also had a higher percentage of daughters who had the HPV vaccination. For effective screening and prevention, it is of utmost importance to understand the KPBs of the population, including health care staff, as they constitute an important part in sharing health-related information.

A Pap smear is one of the most common screening methods carried out in outpatient care settings. Despite having adequate knowledge about this screening tool, when it comes to implementation, we found that there is a big lacuna in attitude and practice among health care workers. Thus, more emphasis on changing our attitude toward cervical cancer screening is required among our health care workers.

Various reasons for a lack of implementation of HPV vaccination in India are socioeconomic differences, higher costs, lack of awareness, fear of side effects, lack of access, and ongoing cancer burdens. Thus, introducing this vaccination in an immunization schedule or in health programs, educating the younger generation, and increasing acceptance among health care workers may improve the detection rate and further reduce the cancer burden. An economical, quadrivalent Indian vaccine ‘Cervavac’ is soon going to be launched that is effective against four HPV variants and will be of great assistance to the Indian population.

There are few limitations. Our study was conducted in a single hospital setting with a small sample size. Similar studies with a larger study population are required to determine knowledge gaps.

CONCLUSION

Our study emphasized that there is a big lacuna in practicing cervical cancer screening and prevention methods among health care workers despite having good

knowledge. However, through health education and encouragement, participants were motivated to undergo Pap smear screening. Hence, by replicating this knowledge and practice on a larger scale, we will be able to cover a large number of populations to undergo cervical cancer screening and thereby reduce the healthcare burden of our country.

Pap smear being a very simple and accessible tool for cervical cancer screening can help in early detection of cervical cancer and if accepted and propagated by health care workers on a larger scale can reduce cervical cancer burden on a larger scale. It is of utmost importance to narrow the gap between knowledge and practice, especially among health care workers, as they are the motivators for patients to undergo cervical cancer screening.

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