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Original Research Article

Knowledge, attitude and practices towards cervical cancer screening and HPV vaccination in health care professionals and support staff in a tertiary level hospital in South India: a cross-sectional study

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ABSTRACT

Background: Cervical cancer remains a public health problem inspite of advances in screening methods and existence of prophylactic vaccination. In low and middle-income countries without a robust screening programme, health care workers in hospital setting are the first contact person for women seeking health care. Hence, they play a pivotal role in changing attitudes and practices of women.
Methods: Cross-sectional study done to assess knowledge, attitude and practices regarding cervical cancer, screening methods and HPV vaccination among female employees in a tertiary care hospital. Results were analyzed in two groups–medical and nonmedical.
Results: 46% participants identified HPV as causative organism. 8.2% participants considered themselves at risk of disease. 67.6% of participants opined that cancer cervix is preventable. 54% of participants were aware of Pap smear and 42.5% were aware of HPV vaccine. 10.9 % participants had Pap smear test. 7.6% of participants have been vaccinated, 10.5% have vaccinated their girl child against HPV. Difference in awareness and attitude towards screening methods and vaccination between two groups was significant but there was no significant difference in practice between the groups. Barriers for vaccination elicited were 13.8% were not sure of complications, 13.6% said not essential, 7.9% said it was too expensive and 2.8% were not sure of its efficacy.
Conclusion: Improving practice among health workers enables them to be effective communicators to woman seeking health care. Continuing education programs can serve to fill knowledge gaps found in this study.

Keywords: Cancer cervix, Pap smear, HPV vaccine, Screening methods

INTRODUCTION

Cervical cancer is the fourth most common cancer in women worldwide. 660 000 new cases of cancer cervix and 350 000 deaths from cancer cervix are reported in 2022.[1] More than 90% of deaths occur in low- and middle-income countries. Highest incidence of cervical cancer and mortality are in Africa, Central America and South-East Asia. Cervical cancer affects younger women disproportionately. 20% of children who lose their mother to cancer do so due to cervical cancer.[2] Prophylactic vaccination against HPV, effective screening programmes and treatment of pre-cancerous lesions are economical and effective strategies to prevent cervical cancer. World Health Organization (WHO) targets to achieve HPV vaccination coverage for at least 90% of girls under 15 years, 70% of women to be screened using a high-performance test by 35 yrs and again by the age of 45

years. 90% of women with pre-cancerous lesions should be treated and 90% of women with invasive cancer should be managed.[3] In India, situation remains concerning, with 45,300 deaths from cervical cancer in 2019 and crude cervical cancer incidence at 18.7 per100, 000 women in 2020.[4] As of 2019. fewer than 1 in 10 women were screened for cervical cancer in the previous five years. Despite the availability of cervical cancer screening facilities and availability of HPV vaccination, the burden of cervical cancer presenting in advanced stages remains high in India.

According to the National Family health Survey-5 (NFHS-5) 2019-2021, only 1.9% of women had ever undergone cervical cancer screening.[5] High cost of vaccines, inaccessibility of women in rural areas to screening services and lack of awareness among women about this preventable cancer, the methods of prevention and early detection ,lack of prompt treatment are barriers to achieve the WHO targets in low middle income Countries like India. Health care providers (medical and non-medical staff) play a major role in disseminating this information among the public. They are the first-line information source for our population. Therefore, it is important that their level of knowledge on cervical cancer, its prevention and available methods of screening is assessed, so that lacunae can be identified which will indirectly determine the awareness they pass on to the community.

Aim

To assess knowledge, attitude, and practices regarding cervical cancer, screening methods, and HPV vaccination among female employees in a tertiary care multi-specialty hospital.

Objectives

Objectives of the study were to determine the level of knowledge about cervical cancer, screening methods (e.g., Pap smear, HPV testing), early detection among female employees. To evaluate awareness of HPV vaccination and its role in cervical cancer prevention. To understand attitudes towards cervical cancer screening and HPV vaccination. To identify perceived barriers to access screening and vaccination. To investigate current practices related to cervical cancer screening. To determine the uptake of HPV vaccination among eligible participants and their daughters.

METHODS

Study design

A cross-sectional observational study was conducted among female employees of Believer's Church Medical College Hospital, a tertiary care multi-specialty teaching hospital in South India for a period of one year (2018-2019).

Study population

All female employees of the hospital aged above 18 years who are directly or indirectly linked to healthcare (including doctors, nursing staff, support staff, IT staff, canteen staff, guest relations, finance staff, etc.) were included in the study. Female employees who had a history of cervical cancer were excluded from the study.

Sample size and participants

663 female employees participated in the study out of the 1200 female employees of the hospital. The participants were grouped into medical staff and non-medical staff. Medical staff included doctors and nurses. Nonmedical staff includes IT related staff, front office staff, technical and support staff working in the hospital.

Data collection

A pre-structured, self-administered standardized questionnaire was used for data collection. The questionnaires were prepared in both English and Malayalam (local language) and included sections on: Demographic data (age, educational qualification, job role, etc.), knowledge regarding cervical cancer: causative agents, risk factors, clinical features, knowledge about screening modalities and vaccination for cervical cancer, attitudes towards cervical cancer screening and HPV vaccination, practices related to cervical cancer screening(frequency, barriers to screening) and HPV vaccination. Pre-testing of the questionnaire was done on five respondents; after which necessary changes were made, and the questionnaire was re-administered.

Ethical considerations

Informed written consent obtained from each participant before participation. Confidentiality of information ensured.

Statistical analysis

Data collected from the questionnaires were tabulated using Microsoft Excel. Statistical analysis was performed using SPSS version 17. Descriptive statistics were used to summarize demographic data and participants' responses. Knowledge, attitudes, and practices between the two groups (medical and nonmedical staff) were compared using the chi square test.

RESULTS

62.1% of the participants were staff directly involved in patient care (medical staff) and 37.9 % were indirectly involved in patient care (nonmedical staff). Majority of the participants (63.7%) were working for more than one year and less than five years in hospital settings. 22% participants were unmarried at the time of study. Among those who were married, majority of the participants

(63.6%) were married at the age of 20-29 yrs. 3.9% (n-26) were postmenopausal and 2.5% (n=17) had undergone hysterectomy. Only 12.4% participants had used OCP in their lifetime and use of condoms for more than 6 months was only in (34) 5% participants. Family history of breast cancer was most common (8.2%), ovarian cancer (1.5%) and colon cancer (1.3%). 35 participants (5.2%) had family history of other malignancies. 4.8% participants gave a personal history of intermenstrual bleeding and 1.6% participants gave history of postcoital bleeding. Demographics of both groups were similar (Table 1).

Authors conducted an educational talk regarding cancer cervix, preventive measures and treatment for the hospital employees prior to the study. 17.6% of the participants attended the talk. 8.2% participants thought that they were at risk of cancer cervix. Smoking was identified as a risk factor by 35% of the participants (n=235). 52% participants identified HPV and having multiple sexual partners as a risk factor. Awareness of HPV and multiple sexual partners as risk factor was present in 60% of medical staff and 40% of nonmedical staff. 46% participants identified HPV as cause of cancer cervix. 32.9% participants thought that cancer cervix runs in families.

Symptoms of cancer cervix were rightly identified as irregular bleeding by 62.8% of the participants (n=420), vaginal discharge by 54.7% (n=366), bleeding after intercourse by 20.4% (n-270). Awareness that cancer cervix has a long precancerous stage was seen in 21.8% participants and was similar in both groups (23.3% in medical staff and 19.9% in nonmedical staff). 67.6% opined that cancer cervix is preventable which was similar in both groups (70.4% in medical and 63.3% in nonmedical staff). 54% of participants were aware of the Pap smear as a screening test whereas 42.5% of the participants were aware of the HPV vaccine.

Knowledge of Pap smear was more in the medical staff (64%) as compared to 37.8% in the nonmedical staff and this difference in awareness between the two groups is statistically significant ($p<0.00001$). Knowledge of the vaccine was 47.1% in the medical staff and 35.5% in the nonmedical staff and the difference was statistically significant ($p<0.003321$) (Table 2). Main source of information regarding cervical cancer, screening, preventive measures of cancer cervix for the participants was internet (18.5%), doctors (13.2%) and magazines (10.5%). Television, friends and family, newspapers were sources of information for 8.4%, 7% and 6% respectively. 49.2% participants thought that they needed to undergo the Pap test to detect cervical cancer.

Comparing the two groups, 57.8% of medical staff thought they needed to undergo the Pap smear test whereas only 34.7% of nonmedical staff thought they needed to undergo Pap smear test. This difference was significant ($p<0.00001$). 39.3% participants were willing to undergo the test. 45.9 % of medical staff were willing to undergo the test, while only 28.3% of non-medical staff were willing to undergo the test. The difference was statistically significant ($p<0.00001$).

Majority of participants (70%) were in favor of a systematic screening programme. 74.3% of medical staff whereas 63.7% of non-medical staff opined in favor of a screening program. 35.9% of the participants are willing to vaccinate their girl child. The willingness to vaccinate the girl child was comparable in both groups and the difference was not statistically significant (p-0.279776) (Table 3).

On analyzing the practice among the participants, only 10.9 % (n-73) have undergone the pap smear test. 7.6% of participants have vaccinated themselves and 10.5% have vaccinated their girl child against HPV. Girl children who have received vaccine are comparable in both groups (10.9% in medical and 10% in nonmedical group). There was no statistical difference between the practice of Pap smear, vaccination or vaccination of daughters and the willingness to vaccinate (Table 3).

Among the reasons for not taking the vaccine, 13.8% were not sure of the complications, 13.6% thought it was not essential, 7.9% of the participants found the vaccine too expensive and 2.8% were not sure of its efficacy. 60% of the participants did not give any reason for not taking the vaccine (Table 4).

Table 1: Demographics of study population.

Demographic data	Medical staff (Doctor, nurses)		Non-medical staff (IT related staff, front office staff, technical staff, support staff)	
	N	%	N	%
No. of participants	412	62.1	251	37.1
Experience in hospital settings (in years)				
<1	60	14.6	51	20.3
1-5	253	61.4	172	68.5
5-10	54	13.1	10	4
>10	43	10.4	15	6
Contraceptive use				
Condom use	19	4.6	15	6
OCP use	26	6.3	9	3.6
Menopause	16	3.9	9	3.6

Continued.

Demographic data	Medical staff (Doctor, nurses)		Non-medical staff (IT related staff, front office staff, technical staff, support staff)	
Family h/o malignancy				
Breast	42	10.2	13	5.2
Colon	5	1.2	5	2
Ovary	5	1.2	4	1.6
Others	22	5.3	13	5.2
Any symptoms of				
Intermenstrual bleeding	16	3.9	16	6.4
Postcoital bleeding	4	1	7	2.8
Recurrent vaginal infections	19	4.6	12	4.8

Table 2: Awareness of pap smear and vaccine in medical/ nonmedical staff.

	Medical staff		Non-medical staff		Chi square test	P value (<0.05-significant)
	N	%	N	%		
Awareness of screening test						
Aware of pap smear	264	64	95	37.8	43.2197	<0.00001*
Correctly identified frequency of tests	155	37.6	60	25.1		
When to start screen?	129	31.3	51	20.3		
Should vaccinated be screened?	197	47.8	63	6		
Awareness of vaccine for prevention						
Aware of HPV vaccine	194	47.1	89	35.5	8.6221	<0.003321**
Correctly identifies number of doses	26	6.3	9	3.6		
Correctly identifies age of vaccination	97	23.5	38	15.1		
Who should be vaccinated?	68	16.5	28	11.2		

*p value-significant, ** p value-significant

Table 3: Attitudes and practice towards screening test and vaccine between medical /non-medical staff.

	Medical staff		Non-medical staff		Chi square test	P value (<0.05 significant)
	N	%	N	%		
Attitude and practice of pap smear						
Need to do screening test	238	57.8	87	34.7	33.3212	<0.00001 (Significant)
Willing to undergo screening test	189	45.9	71	28.3	20.2389	<0.00001 (Significant)
been screened	50	12.1	20	8	2.8691	0.090296 (not significant)
Attitude and practice of HPV vaccine						
Taken HPV vaccine	29	7	22	8.8	0.6545	0.418515 (not significant)
Vaccinated her girl child	45	10.9	25	10	0.1529	0.69577 (not significant)
Willing to vaccinate girl child	155	37.6	84	33.5	1.1682	0.279776 (not significant)

Table 4: Barriers for screening and HPV vaccination.

	N	%
Barriers for vaccination		
Don't think it is essential	59	8.9
Don't have time	110	16.6
It's expensive	26	3.9
It's painful	107	16.1

Continued.

	N	%
Uncomfortable with internal examination	85	2.4
Barriers for vaccination		
Not essential	91	13.6
Too expensive	53	7.9
Not sure of efficacy	19	2.8
Not sure of complications	92	13.8

DISCUSSION

The results of our study on awareness, attitudes, and practice regarding cervical cancer highlight significant gaps and opportunities for intervention in public health education and healthcare delivery. The study reveals a low percentage (8.2%) of participants who perceive themselves at risk for cervical cancer. This significantly low level of perceived risk among the health care staff is a reflection of lack of awareness of the role of HPV virus, the natural history of the disease, risk factors associated with the disease. Similarly, there is a significant gap in understanding the warning signs of cervical cancer. This may be a reflection of the general negligence of women in India to their own health issues.

The results show a statistically significant difference in the knowledge levels of qualified health care professionals compared to nonmedical staff. A study in Bangladesh showed despite high level of education in health care professionals, knowledge of the association of HPV and cervical cancer and relevant preventative methods was low.[6] The study highlights low rates of screening participation (10.9%) despite awareness of Pap smear test (54%). The barriers to undergo screening enumerated by the study population are discomfort with internal examinations, perceived lack of necessity due to absence of symptoms, and insufficient proactive healthcare engagement.

Though the awareness of the existence of a preventive vaccine is 42.5%, the actual uptake is minimal (7.6%).Though there is no HPV vaccination data available for India ,this is in accordance with the immunization data 2023 of World Health Organization for South East Asia which reports an HPV vaccination program coverage of 8%.[7] The willingness to undergo screening (39.3%) and vaccinate daughters against HPV (35.9 %%) reveals some openness to preventive measures. Addressing reasons for reluctance through educational campaigns, addressing misconceptions or improving access and comfort with screening procedures will increase participation. Health professionals affect the decision-making of patients and guardians regarding vaccination by minimizing vaccination barriers. They play a crucial role in improving acceptability through cultural guidance and removing taboo around the disease, screening tests and vaccines.[8] Studies from United States have identified that healthcare provider's recommendation of HPV vaccination is a strong predictor of uptake of vaccination.[9] In the absence of a national cervical screening programme in India, opportunistic screening is a realistic approach. NFHS-5 reports highest cervical screening rates of 9.8% in Tamilnadu compared to other parts of India.[10] This can be attributed to the introduction of opportunistic screening as a part of non-communicable disease program in all districts.[11] For an opportunistic approach to be successful, a positive attitude to offer and practice the screening methods and vaccination is primarily essential. Enhancing healthcare professionals' knowledge and communication skills regarding cervical cancer can improve patient education and encourage proactive health-seeking behaviours from the public.

Results of the study show a significant difference between knowledge and attitude of the two groups regarding pap smear and vaccine, but there is no significant difference in the practice of pap smear screening or vaccination between the two groups. Implementation of continuing education programs for health care professionals can be undertaken to reinforce the importance of cervical cancer screening and HPV vaccinations and thus fill the knowledge gaps found in this study. Campaigns in hospitals among health care professionals can motivate them. Initiatives within the hospital like educational campaigns, quizzes, use of audio-visual aids in waiting rooms can help to generate interest in not only patients but health care providers too. Social media platforms are also helpful tools to promote awareness. Health care providers who provide routine health check-ups, preconceptional counselling, postnatal care services, and adolescent clinics should be trained to use these encounters to talk about vaccine and screening tests. The call for a systematic screening program (70 % of participants) underscores the perceived need for structured healthcare initiatives that promote regular cervical cancer screening. Policymakers can play a crucial role in advocating for comprehensive cervical cancer preventive strategies, integrating vaccination programs into public health initiatives and improving healthcare infrastructure for screening. WHO strongly urges that screening tests have to be applied within an organized setting, as a component of a National Cancer Control Programme.[12]

Limitations

The generalization of the results to other regions of India needs to be validated because the study population is a convenience sample of health care and related workers in South India. Data collection was done by a self-

administered questionnaire; hence, subject to recall bias of the participants. The actual screening and vaccination status need to be assessed with help of medical records.

CONCLUSION

While there are pockets of awareness and willingness to engage in preventive practices against cervical cancer, the findings of the study highlight substantial gaps in knowledge, perception, and healthcare practices. Addressing these gaps through targeted education, improved healthcare delivery, and policy support can significantly enhance early detection and reduce the burden of cervical cancer in communities. The study highlights the need for a national screening programme and greater advocacy of the HPV vaccination in India at the earliest. Targeted campaigns for health professionals is needed to generate interest in cancer screening and preventive measures and to improve practices.

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