

Content available at: <https://www.ipinnovative.com/open-access-journals>

Indian Journal of Obstetrics and Gynecology Research

Journal homepage: www.ijogr.org

Original Research Article

Awareness about cervical cancer risk factors and its prevention among female healthcare professionals in north India

Hina Mittal¹, Neha Kachroo¹, Nidhi Mimani Gupta^{1*}, Neelam Goyal¹¹Dept. of Obstetrics and Gynecology, Gautam Buddha Chikitsa Mahavidyalaya, Dehradun, Uttarakhand, India

ARTICLE INFO

Article history:

Received 11-12-2023

Accepted 28-12-2023

Available online 17-02-2024

Keywords:

Awareness

Cervical cancer

HPV

Medical students

ABSTRACT

Background: Cervical cancer stands as the second most prevalent cancer among women in the reproductive age bracket. According to Globocan 2020, there were 604,100 newly diagnosed cases of cervical cancer worldwide, resulting in 341,831 fatalities. In India, there are 436.76 million women aged 15 and older who face the risk of developing cervical cancer.

Objective: To explore the basic knowledge of cervical cancer, its risk factors, and preventive measures among female healthcare professionals and medical students.

Materials and Methods: A cross-sectional study among all 205 female healthcare providers comprising of doctors, medical students (1st, 2nd & 3rd-year MBBS), and nurses was conducted at Gautam Buddha Chikitsa Mahavidyalaya, Jhajhra, Dehradun, in December 2023. Google Forms platform was used to conduct the pre-composed online survey. Data was entered and analyzed with SPSS software version 26.

Result: A maximum number (141) of participants identified HPV infection as a risk factor for cervical cancer followed by multiple sexual partners (137) while 41.95% of subjects knew about early pregnancy as a risk factor for cervical cancer. Knowledge of risk factors for cervical cancer is highest among doctors followed by nurses and students. 81.95% of participants knew that cervical cancer is preventable and screening helps in the prevention of cervical cancer.

Conclusion: Regular upgradation of knowledge of female nursing personnel is crucial since women tend to seek advice from them more often. Similarly, HPV and cervical cancer should be strategically incorporated at the beginning of the medical curriculum.

This is an Open Access (OA) journal, and articles are distributed under the terms of the [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License](https://creativecommons.org/licenses/by-nc-sa/4.0/), 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: reprint@ipinnovative.com

1. Introduction

A carcinoma of the cervix is a malignant tumour arising from the cells of the cervix. According to Globocan 2020, there were 604,100 newly diagnosed cases of cervical cancer worldwide, resulting in 341,831 fatalities.¹ In India, there are 436.76 million women aged 15 and older who face the risk of developing cervical cancer. Remarkably, cervical cancer stands as the second most prevalent cancer among women in the reproductive age bracket.² Cervical cancer (CC) is attributed to the human papillomavirus (HPV),

with HPV-16 and HPV-18 being the primary culprits, accounting for 70%–80% of total cases. Indian studies indicate that approximately 82.7% of invasive cervical cancers exhibit the presence of either HPV-16 or HPV-18.³ Several common risk factors associated with carcinoma cervix include poor personal hygiene, low socioeconomic status, Human papillomavirus infection, multiple sexual partners, multiple child births, early marriage, and sexual practice, early childbirth (before the age of 20), HIV infection, use of oral contraceptives & smoking, etc.³

Cervical cancer, out of all female genital tract cancers, can be prevented if detected at its early stages. Organized cervical screening programs have reduced incidence &

* Corresponding author.

E-mail address: nidhiyagupta@gmail.com (N. M. Gupta).

mortality from cervical cancer by 80% in developed countries.⁴ Effective primary (HPV vaccine) and secondary (cervical cancer screening and treating precancerous lesions) preventive measures will reduce the cases of cervical cancer. PAP smear screening is an effective tool for screening cervical cancer but most of the women in developing and underdeveloped countries do not have access to it. The major hurdle is their lack of participation in screening programs.⁵ In India cervical cancer screening is only 1.9% ranging from 0.2% in Gujrat to 9.8% in Tamil Nadu.⁶ Even more than a decade after the introduction of the HPV vaccine, the prevalence of cervical cancer is quite alarming in India, universal cervical screening is an unmet need.⁶

Awareness regarding cervical cancer and its prevention is quite low in Indian women. It is necessary to make medical staff aware of cervical cancer so that they can impart knowledge regarding cervical cancer and its prevention to the general public.⁷ The reported hurdle to screening cervical cancer includes a lack of awareness, knowledge of symptoms & risk factors, stigma and misconception about gynaecological diseases which results in underutilization of preventive measures. Healthcare staff with proper knowledge play a huge role in influencing the beliefs and practices of the general public, therefore their knowledge needs to be assessed and updated regularly.

The present study explores the basic knowledge of cervical cancer, its risk factors and preventive measures among female healthcare professionals and medical students.

2. Materials and Methods

A cross-sectional study among all female healthcare providers comprising doctors, medical students (1st, 2nd & 3rd-year MBBS), and nurses was conducted at Gautam Buddha Chikitsa Mahavidyalaya, Jhajhra, Dehradun, in December 2023. All participants who gave consent to participate in this study were included which comprised a total of 205 in number.

Google form platform was used to conduct the pre-composed online survey, and an informed consent was taken from all individuals on the first introductory page of the survey. The questionnaire was devised based on existing research findings following a thorough study of the literature. 10-13 The survey did not include the names and IDs of participants to maintain confidentiality.

The questionnaire was divided into three sections. Section A- questions regarding the demographic characteristics of the participants. Section B- questions about various risk factors of cervical carcinoma such as early sexual intercourse, multiple sexual partners, HPV infection and other factors, and Section C - questions about cervical carcinoma being the leading cause of death among all cancers in India among females, cervical cancer being

preventable, etc. were asked for assessment of knowledge of the participants regarding cervical cancer and its preventive measures. For Sections B and C, for each question, there were two options YES or AGREE and NO or DISAGREE. The scale was subsequently dichotomized assigning a value of 1 to "YES" and 0 to "NO".

2.1. Data and statistical analysis

Frequencies and percentages were computed for qualitative variables. Data was entered and analyzed with SPSS software version 26. The study was approved by the Institutional Ethics Committee.

3. Results

A total of 205 female participants contributed to the study which included 35 doctors, 54 nurses, and 116 medical students (1st, 2nd, and 3rd year MBBS).

Table 1 describes the demographic characteristics of participants. The majority of study subjects (67.32%) belong to the 20-30 year age group. 78.54% of respondents were unmarried and 56.59% of participants had a senior secondary certificate as the maximum level of education at the time of conduction of study.

A maximum number (141) of participants identified HPV infection as a risk factor for cervical cancer followed by multiple sexual partners (137) while 41.95% of subjects knew about early pregnancy as a risk factor for Cervical cancer. For all variables, knowledge of risk factors is highest among doctors followed by nurses and students (Table 2).

Table 3 provides knowledge of cervical Cancer prevention among participants. 81.95% of participants had knowledge that cervical cancer is preventable and screening helps in the prevention of cervical cancer. Knowledge of cervical Cancer prevention among doctors is highest for all variables related to cervical cancer prevention.

4. Discussion

Cervical cancer is one of the preventable gynaecological cancers. The prime purpose is early detection during the pre-invasive phase and treatment. Screening with pap smear is an effective method of cervical cancer screening and HPV vaccination provides primary prevention against carcinoma cervix.⁸

The knowledge, perception, and beliefs of healthcare providers are very important as they play a key role in the propagation of information to the general population. This study was conducted to evaluate knowledge, awareness, and orientation toward cervical cancer and its preventive measures among healthcare providers and medical students.

In this study, the majority (81.48%) of nursing employees were 21 to 30 years of age, younger than those in previous studies^{7,9} and unmarried (62.96%) in comparison to other studies.^{7,9} where a greater number were married.

Table 1: Demographic characteristics of participants

Variables	Medical Doctors (n=35)	Nurses (n=54)	Students (n=116)	Total (n=205)
	No. (%)	No. (%)	No. (%)	No. (%)
Age (Years)				
<20	-	-	38 (32.76)	38 (18.54)
20-30	16 (45.71)	44 (81.48)	78 (67.24)	138 (67.32)
>30	19 (54.29)	10 (18.52)	-	29 (14.14)
Marital Status				
Married	24(68.57)	20 (37.04)	-	44 (21.46)
Unmarried	11(31.43)	34 (62.96)	116 (100.0)	161 (78.54)
Education				
12 th Passed	-	-	116 (100.0)	116 (56.59)
Bachelor/Diploma	08 (22.85)	54 (100.0)	-	62 (30.24)
Masters	27 (77.15)	-	-	27 (13.17)

Table 2: Knowledge of the risk factors of cervical cancer among the participants

Variables	Medical Doctors (n=35)	Nurses (n=54)	Students (n=116)	Total (n=205)
	No. (%)	No. (%)	No. (%)	No. (%)
R1 Early Sexual intercourse	28 (80)	31(57.40)	50 (43.10)	109 (53.17)
R2 Early pregnancy	25 (71.42)	24 (44.44)	37 (31.89)	86 (41.95)
R3 Multiple Births	25 (71.42)	26 (48.14)	36 (31.03)	87 (42.43)
R4 Multiple Sexual partners	30 (85.71)	42 (77.77)	65 (56.03)	137 (66.82)
R5 Cigarette Smoking	29 (82.85)	41(75.92)	52 (44.82)	122 (59.51)
R6 HIV infection	30 (85.71)	33 (61.11)	65 (56.03)	128 (62.43)
R7 HPV infection	35 (100)	47 (87.03)	59 (50.86)	141 (68.78)

Table 3: Knowledge of cervical cancer prevention among the participants

Variables	Medical Doctors (n=35)	Nurses (n=54)	Students (n=116)	Total (n=205)
	No. (%)	No. (%)	No. (%)	No. (%)
P1 Cervical Carcinoma is a leading cause of death among all cancers in India among females(agree)	34 (97.14)	48 (88.89)	74 (63.79)	156 (76.09)
P2 Cervical cancer is preventable (agree)	35 (100.0)	51(94.44)	82 (70.68)	168 (81.95)
P3 Screening helps in its prevention(agree)	35 (100.0)	51(94.44)	82 (70.68)	168 (81.95)
P4 Have you heard about pap smear test for Cervical Carcinoma screening (yes)	35 (100.0)	44 (81.48)	57 (49.13)	136 (66.34)
P5 Do you know HPV vaccination helps in the prevention of carcinoma of the cervix (yes)	35 (100.0)	43 (79.62)	53 (45.68)	131 (63.90)

100% of doctors accepted HPV infection as a cause of cervical cancer and agreed that cervical cancer is preventable with pap smear screening test and HPV vaccination. Multiple sexual partners and HIV infection (85.71%) were both recorded as the second most common risk factor while early pregnancy and multiple births recorded the least associated risk factor among doctors.

Chawla et al¹⁰ recorded fairly high cervical cancer knowledge (84.06%) among healthcare providers but only 81.01% were aware of the HPV vaccine. A study conducted by Swapnajaswanth et al¹¹ also found 78.9% of doctors had

very good knowledge of cervical cancer whereas Heena et al¹² found only 11% of doctors had fair knowledge while only 3% had good knowledge of cervical cancer.

The level of knowledge possessed by nursing staff is adequate though relatively less than doctors. 87.03% of participants admitted that HPV infection is a cause of cervical cancer. Awareness about HPV infection has been improved as compared to previous studies where 54.1%,¹³ 25%¹⁴, 39.2%,¹⁵ and 49.5%¹⁶ of nursing staff admitted HPV infection as a cause of cervical cancer.

In the present study, HPV infection was documented as the most common risk factor for cervical cancer. These findings are consistent with studies done by Devi et al¹⁷ and Thiiveeranna et al¹⁵ whereas in various previous studies, early pregnancy,⁷ multiparity,¹⁸ non-maintenance of personal hygiene,¹⁹ multiple sexual partners⁹ were recorded as the most common risk factor.

Prevention with HPV vaccination has been acknowledged by 79.62% of nursing employees which is higher in contrast with earlier studies where only 30%,¹⁸ 43.7%,¹⁶ and 58.4%¹⁷ of nursing staff were aware of HPV vaccination.

Pap smear test for cervical carcinoma screening was known to 81.48% of nurses which is nearly similar to what was found in previous studies.^{14–17}

In this study, HIV infection and multiple sexual partners (56.03%) were identified as the most common risk factors by medical students whereas multiple births were believed to be the least common role to play. Half (50.86%) of students accepted HPV infection as a risk factor for cervical cancer which is almost the same as found in previous studies by Ganju et al²⁰ (56.75%), Anusha et al²¹ (54.8%) but quite low as compared to studies done by Chaudhery et al²² and Shetty et al.²³

45.68% of medical undergraduates were aware of cervical cancer prevention with HPV vaccination, which is considerably low as opposed to studies conducted by Chaudhery et al²² (75%) and Pandey et al²⁴ (75.6%) and nearly the same as the study by Shetty et al²³ (59.7%).

Even though 70.68% of students agreed that cervical cancer is preventable and screening helps in its prevention, only 49.13% had knowledge of pap smear test. This is similar to the study conducted by Anusha et al²¹ (52.5%) while Singh et al² recorded 78.78% of medical students (1st, 2nd, and 3rd-year MBBS) aware of the pap smear test.

Former studies conducted on medical students discovered different levels of knowledge in medical undergraduates according to their level of education. Students of MBBS final year had more knowledge than 3rd year and so forth.

In the present study 1st, 2nd, and 3rd year MBBS students were included and their knowledge rightly reflected their level of medical education since cervical cancer had not been introduced in their academic curriculum. Pandey et al²⁵ and Wanderley et al²⁴ associated seniority of the semester with the increasing trend of knowledge in medical students.

The present study has limitations of having all participants from one institute therefore these results cannot be generalized.

5. Conclusion

In this extensive research endeavour, healthcare providers, particularly doctors, showcased an impressive depth of

knowledge regarding cervical cancer's risk factors and preventive measures. Their expertise spanned various dimensions of this critical health issue. On the other hand, nursing personnel demonstrated proficiency in areas such as pap smears, HPV infection, and vaccination, yet their understanding seemed somewhat constrained when it came to recognizing additional prevalent risk factors within the specific context of Indian society. This highlights the significance of addressing these gaps to foster a more comprehensive awareness.

Moreover, a noteworthy finding emerged from the study: medical undergraduates revealed a notable gap in their understanding of cervical cancer risk factors and prevention methods. This revelation underscores the urgency for targeted educational interventions to enhance the awareness and preparedness of the next generation of healthcare professionals in effectively combating cervical cancer. Moving forward, closing these knowledge gaps among both healthcare providers and students becomes imperative for a more robust and well-informed approach to cervical cancer prevention and management.

The study's focus on female healthcare workers as participants stems from the societal preference of female patients feeling more at ease with women in healthcare roles. This comfort level fosters open communication. Hence, the research emphasises the need to raise awareness, particularly among these female healthcare workers, who can play a crucial role in further disseminating information and awareness on this important health issue.

6. Recommendation

Given the absence of a nationwide program for pap smear screening or HPV vaccination in India, the influence of knowledgeable and well-trained healthcare professionals becomes paramount in shaping societal perceptions and behaviours towards preventing such avoidable diseases. Continuous knowledge enhancement for nursing personnel is particularly vital, considering that women frequently seek advice from them. Simultaneously, a strategic integration of HPV and cervical cancer topics into the medical curriculum is imperative from the early stages. Medical undergraduates, being conduits of information in today's era of social media, can play a pivotal role in disseminating awareness within the community.

7. Source of Funding

None.

8. Conflict of Interest

None.

References

- Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, et al. Global Cancer Statistics 2020: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. *CA Cancer J Clin*. 2021;71(3):209–49.
- Singh J, Baliga SS. Knowledge regarding cervical cancer and HPV vaccine among medical students: A cross-sectional study. *Clin Epidemiol Glob Health*. 2021;9:289–92.
- Sreejata R, Mandal S. Current status of knowledge, attitude and practice (KAP) and screening for cervical cancer in countries at different levels of development. *Asian Pac J Cancer Prev*. 2012;13(9):4221–7.
- Anttila A, Pukkala E, Soderman B, Kallio M, Nieminen P. Effect of organised screening on cervical cancer incidence and mortality in Finland, 1963-1995: recent increase in cervical cancer incidence. *Int J Cancer*. 1999;83(1):59–65.
- Anttila A, Arbyn M, Veerus P, Viberga I, Kurtinaitiene R, Valerianova Z, et al. Barriers in cervical cancer screening programs in new European Union member states. *Tumori*. 2010;96(4):515–6.
- Gopika MG, Prabhu PR, Thulaseedhara JV. Status of cancer screening in India: An alarm signal from the National Family Health Survey (NFHS-5). *J Family Med Prim Care*. 2022;11(11):7303–7.
- Shah V, Vyas S, Singh A, Shrivastava M. Awareness and knowledge of cervical cancer and its prevention among the nursing staff of a tertiary health institute in Ahmedabad, Gujarat, India. *Ecancermedicalscience*. 2012;6:270.
- Kaarthigeyan K. Cervical cancer in India and HPV vaccination. *Indian J Med Paediatr Oncol*. 2012;33(1):7–12.
- Goyal A, Vaishnav G, Shrivastava A, Verma R. Knowledge, attitude & practices about cervical cancer and screening among nursing staff in a teaching hospital. *Int J Med Sci Public Health*. 2013;2(2):249–53.
- Chawla PC, Chawla A, Chaudhary S. Knowledge, attitude & practice on human papillomavirus vaccination: a cross-sectional study among healthcare providers. *Indian J Med Res*. 2016;144(5):741–9.
- Swapnajaswanth M, Suman G, Suryanarayana SP, Murthy NS. Perception and practices on screening and vaccination for carcinoma cervix among female healthcare professional in tertiary care hospitals in Bangalore, India. *Asian Pac J Cancer Prev*. 2014;15(15):6095–8.
- Heena H, Durrani S, Alfayyad I, Riaz M, Tabasim R, Parvez G, et al. Knowledge, Attitudes, and Practices towards Cervical Cancer and Screening amongst Female Healthcare Professionals: A Cross-Sectional Study. *J Oncol*. 2019;2019:5423130.
- Singh E, Seth S, Rani V, Srivastava DK. Awareness of cervical cancer screening among nursing staff in a tertiary institution of rural India. *J Gynecol Oncol*. 2012;23(3):141–6.
- Shekhar S, Sharma C, Thakur S, Raina N. Cervical cancer screening: knowledge, attitude and practices among nursing staff in a tertiary level teaching institution of rural India. *Asian Pac J Cancer Prev*. 2013;14(6):3641–5.
- Thippeveeranna C, Mohan SS, Singh LR, Singh NN. Knowledge, attitude and practice of the pap smear as a screening procedure among nurses in a tertiary hospital in north eastern India. *Asian Pac J Cancer Prev*. 2013;14(2):849–52.
- Kosambiya RJ, Gohil A, Kamdar ZN, Patel P, Modi A. Knowledge, attitude and practices about cervical cancer and screening among nurses of a tertiary care centre in Western India. *Nat J Community Med*. 2018;9(6):391–5.
- Devi SS, Babu VA, Kumari DA. Nursing staff awareness of cervical cancer and pap smear screening in a remote medical college hospital in South India. *Int J Res Health Sci*. 2014;2:1085–90.
- Vishwakarma S, Rawat R, Mittal N, Shree P. Knowledge, attitude and practices about cervical cancer screening among nursing staff in rural tertiary care center. *Int J Reprod Contracept Obstet Gynecol*. 2018;7(9):3796–3800.
- Jain SM, Bagde MN, Bagde ND. Awareness of cervical cancer and Pap smear among nursing staff at a rural tertiary care hospital in Central India. *Indian J Cancer*. 2016;53(1):63–6.
- Ganju SA, Gautam N, Barwal V, Walia S, Ganju S. Assessment of knowledge and attitude of medical and nursing students towards screening for cervical carcinoma and HPV vaccination in a tertiary care teaching hospital. *Int J Community Med Public Health*. 2017;4(11):4186–93.
- Anusha M, Jyotsna M, Naidu LVR. Medical Students Perspective about Cervical Cancer, Screening and HPV Vaccination in a Tertiary Care Teaching Hospital in Rural Vizianagaram. *J Med Sci Clin Res*. 2018;6(10):111–8.
- Choudhary G, Jodha BS, Sharma C, Parakh P, Yadav K, Goel K. Knowledge of HPV and attitude towards HPV vaccination among medical students of Jodhpur, Rajasthan. *Int J Med Health Res*. 2018;4(3):94–7.
- Shetty S, Prabhu S, Shetty V, Shetty AK. Knowledge, attitudes and factors associated with acceptability of human papillomavirus vaccination among undergraduate medical, dental and nursing students in South India. *Hum Vaccin Immunother*. 2019;15(7-8):1656–65.
- Wanderley MDS, Sobral DJ, Resende CN, Levino LDA, Marques LDA, Feijo MS, et al. Medical students' knowledge of the human papillomavirus (HPV), cervical cancer, and HPV vaccination. *Rev Bras Educ Med*. 2021;45(3). doi:10.1590/1981-5271v45.3-20210071.
- Pandey D, Vanya V, Bhagat S, Binu VS, Shetty J. Awareness and attitude towards human papillomavirus (HPV) vaccine among medical students in a premier medical school in India. *PLoS One*. 2012;7(7):e40619.

Author biography

Hina Mittal, Assistant Professor

Neha Kachroo, Assistant Professor

Nidhi Mimani Gupta, Assistant Professor

Neelam Goyal, Professor and Head

Cite this article: Mittal H, Kachroo N, Gupta NM, Goyal N. Awareness about cervical cancer risk factors and its prevention among female healthcare professionals in north India. *Indian J Obstet Gynecol Res* 2024;11(1):28-32.