ORIGINAL ARTICLE

Awareness and perception of cervical cancer among Pre-primary school teachers in Dehradun: A Cross-Sectional study

Monojit Das[1], Priyanka Dobhal[2], Debabrata Roy[3], Medhavi Rana[4]

[1]Department of Community Medicine, Government Doon Medical College, Dehradun, Uttarakhand
[2]Department of Community Medicine, Government Doon Medical College, Dehradun, Uttarakhand
[3]Joint Director, Research & Development, Ras Bihari Bose Subharti University, Dehradun, Uttarakhand
[4]Government Doon Medical College, Dehradun, Uttarakhand

CORRESPONDING AUTHOR
Dr. Monojit Das, Department of Community Medicine, Government Doon Medical College, Patel Nagar, Dehradun, Uttarakhand 248001
Email: drmonojitd@gmail.com

CITATION
Das M, Dobhal P, Roy D, Rana M. Awareness and perception of cervical cancer among Pre-primary school teachers in Dehradun: A Cross-Sectional study. Indian J Comm Health. 2025;37(4):545-550.
https://doi.org/10.47203/IJCH.2025.v37i04.008

ARTICLE CYCLE
Received: 09/05/2025; Accepted: 11/08/2025; Published: 31/08/2025

ABSTRACT

Background: Cervical cancer is preventable through primary, secondary, and tertiary activities, including health education, HPV vaccination, and early screening. Despite high costs and healthcare barriers, it remains a major public health issue in India. This study assesses knowledge, awareness, and perceptions of pre-primary school teachers in Dehradun about cervical cancer and vaccination. **Objectives**: To evaluate awareness of cervical cancer, its causes, symptoms, protection, and influencing socio-demographic factors among female teachers. **Methods**: A 2-month cross-sectional study used a pretested questionnaire on knowledge, attitudes, practices, and socio-demographics among female teachers in Dehradun. Data were analysed with SPSS v21 and Chi-square tests. **Results**: Of 104 teachers from 23 schools, 47% had heard of cervical cancer, mainly online (86%). About 80% were unaware of risk factors, and 70% didn't know the symptoms. Only 25% knew of vaccination, and none had received it. Twenty percent identified Pap smear as a screening test, with fewer than 3% having undergone it. Significant associations were found between risk factors and awareness of risk factors or warning signs. **Conclusion**: Raising awareness, education, and communication are vital for screening and prevention. Even educated women in Dehradun lack adequate knowledge of prevention, highlighting the need for increased health awareness.

KEYWORDS

HPV, Cervical cancer, Vaccine, Teachers, Barriers

INTRODUCTION

Carcinoma of the uterine cervix is the fourth leading cause of cancer deaths among women globally (1). Recent attention has increased with vaccine development, but the situation in India is more complex due to obstacles like low female literacy, early marriage, inadequate healthcare, and stigma. The cervical cancer mortality rate in India is 28% (2), with many cases diagnosed late, making treatment difficult. Despite wide availability, screening coverage remains very low (1). Although incidence and mortality declined globally, it remains the second most common cancer among Indian women per GLOBOCAN 2018 (3). A 2021 WHO report states the incidence is 18.7 per lakh women, with 45,300 deaths in 2019 and a mortality-to-incidence ratio of 0.62 in 2020. Fewer than 1 in 10 women have been screened in the past 5 years, and India accounts for 25% of global cervical cancer deaths, far from meeting WHO's 2030 elimination target.

Cervical cancer is preventable with three prevention levels. Main strategies include health education and HPV vaccination, while early detection depends on screening methods (3-7). In India, incidence rises around age 45, peaking at 55

(8). Despite approved vaccines, socio-cultural objections and costs hinder acceptance (9,10). Screening, often free or low-cost, is underused, resulting in late diagnoses. Many women feel at low risk and uncomfortable discussing cervical cancer (11,12). The stigma around the disease, HPV vaccine, and sexual behaviour worsens the burden (13). With a new vaccine in India, increasing awareness of screening and vaccination is vital. Considering the 79.8% literacy rate of women in Dehradun, our study emerged.

Aim & Objectives: Our study is designed to assess awareness & perception about cervical cancer, its causes, symptoms & signs, and available specific protection & services among pre-primary female school teachers of Dehradun, along with the socio-demographic factors influencing it. The study also aims to sensitize and inform the study subjects about the disease & allied variables, including screening techniques & available services. The results (outcomes) will be beneficial for planning better strategies for an informed community.

MATERIAL & METHODS

A list of Dehradun's pre-primary schools was obtained with proper permission from the District Education Officer, Dehradun, and the 'study schools' were selected using Systematic Random Sampling (SRS). Suitable appointments were scheduled with the respective sampled schools, and the study was conducted with the informed consent of the participants. It is estimated that Dehradun has around 37 pre-primary schools, each with an average of five female teachers. Using a 95% confidence level and a 7% allowable error, a sample size of no more than 103 was calculated. Female teachers from the sampled schools who were willing, held a graduate degree, and consented to participate were included as study subjects. Data collection maintained strict confidentiality; participants' identities and the names of the schools were kept anonymous. Over two months, from September to October 2024, questionnaires were completed through one-on-one interviews with 104 participants. The pretested, semi-structured questionnaires included a socio-demographic profile and questions to assess knowledge about risk factors, symptoms, and screening methods for cervical cancer. At the end of each session, teachers and female staff members received sensitization on the importance of screening and vaccination for cervical cancer. Ethical approval was granted by the Institutional Ethical Committee, Ref. No. GDMC/IEC/2024/52.

RESULTS

The study comprised 104 participants who volunteered for the study from the sampled 23 pre-primary schools in Dehradun city, among whom 58.6% are between the age group 18-30 years and 41.3% in the 31-45 years category. The majority of participants (88.5%) are Hindu, followed by Muslims (5.8%), Sikhs (2.9%), Christians (1.9%) and lastly Jain (1%). Half of the females were married and only two were divorced, the age of the marriage in 67.3% of them is between 23 – 30 years while 32.7% got married by 22 years of age, among which there was one participant who got married as early as 16 years of age. Approximately 52 % of those married have only one child, around 38% have two children and nearly 2% have three children and the rest 8% reported not having any children. Almost 60% of the participants live in a nuclear family and 40% live in joint families. The socio-economic status according to Modified Kuppuswamy Scale 2023, 86.5 % of the participants are classified under upper middle class, 8.6% under lower middle class and 4.8% fall in the upper-class category.

Among the 47.1% of study participants with prior knowledge about cervical cancer (Table 1), the primary source of this knowledge (Figure 1) was largely the internet, accounting for 85.7%. In contrast, government initiatives contributed a mere 4.1%. Information was also obtained from television broadcasts, articles, and various health facilities, with these sources showing almost equal representation, each comprising 20-30%. Participants displayed poor awareness of the risk factors associated with cervical cancer, evidenced by 77.9% lacking prior knowledge; only 3.8% identified HPV as a causative factor (Figure 2).

A poor understanding of cervical cancer symptoms was observed, with nearly 70% of participants unaware of the warning signs. Only 18% knew about its treatment options, with 57.8% of those selecting surgery and 42.1% choosing chemotherapy. Regarding maintaining genital hygiene, the majority of them (43.7%) avail market products, 42.7% of the participants use soap and water, and just 13.6% use only water. Of the widely available screening tests for cervical cancer, a very dismal proportion of about 20% of the participants knew about the pap smear test as a screening modality (Table 1), while even fewer than 3% had been tested for the same. While talking about the vaccine for cervical cancer, because of the newfound limelight of the topic, around 24% of the respondents knew about the vaccine (Table 1) but only recently, while none of them are vaccinated.

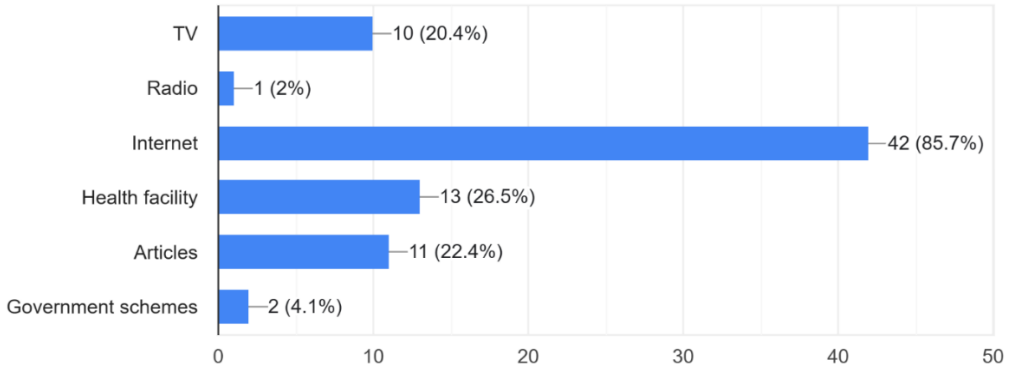
As shown in Table 2, the difference in the proportion of clients with poor genital hygiene

between those aged above and below 30 years was significant, indicating a positive association between genital hygiene and the age group (p-value = 0.0301). Likewise, concerning risk factors for cervical cancer, the difference in the proportion of clients between unmarried and married/divorced was significant with smoking (p-value = 0.0472), and also multiple sexual partners (p-value = 0.0419). Irregular menstruation as a symptom of cervical cancer was found to have a positive association with both age group (p-value = 0.0313) and marital status (p-value = 0.0186) in the proportion of clients in our study. In contrast, post-coital bleeding had a positive association with the proportion of participants in the age group above and below 30 years (p-value = 0.0343).

Table 1 – Distribution of study participants by knowledge about cervical cancer (N=104)

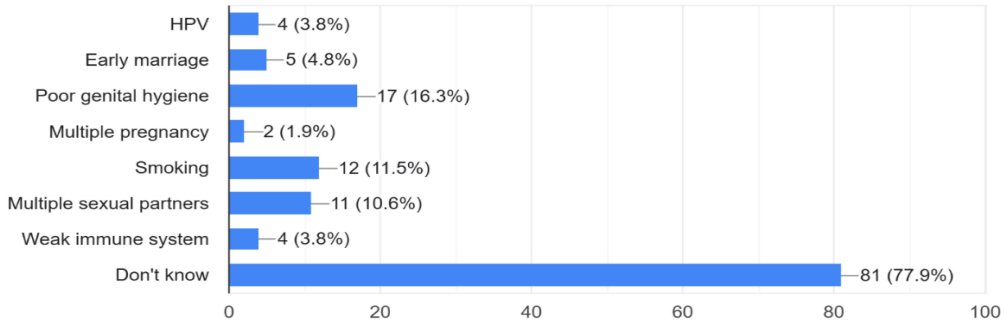
Knowledge Attributes	Yes	No
Heard of cervical cancer	49 (47.1%)	55 (52.5%)
Heard about pap-smear test	19 (19.8%)	77 (80.2%)
Heard about cervical cancer vaccine	25 (24%)	79 (76%)
Knowledge about cervical cancer treatment	16 (15.8%)	85 (84.2%)

Figure 1: Source of knowledge about cervical cancer among study participants.



** The proportion of the responses was more than 100%, as the clients had multiple options to choose from.*

Figure 2: Knowledge regarding risk factors of cervical cancer among the study participants.



** The proportion of the responses was more than 100%, as the clients had multiple options to choose from.*

Table 2: Distribution of participants according to age and marital status with cause and symptoms of cervical cancer (N = 104)

Sl.	Variables	Response	Age Group		p-value*	Response	Marital Status		p-value*
Risk factors			< 30 years	> 30 years			Unmarried	Married/Divorced	
	Poor Genital Hygiene	Yes	14	03	0.0301	Yes	08	09	0.9244
		No	47	40		No	42	45	
	Early Marriage	Yes	03	02	0.9496	Yes	03	02	0.5845
		No	58	41		No	47	52	

Sl. Risk	Variables factors	Response	Age Group < 30 years	Age Group > 30 years	p-value*	Response	Marital Status Unmarried	Marital Status Married/Divorced	p-value*
	Multiple Sexual partners	Yes	09	02	0.0990	Yes	02	09	0.0419
		No	52	41		No	48	45	
	Smoking	Yes	10	02	0.0649	Yes	09	03	0.0472
		No	51	41		No	41	51	
Presenting Symptoms									
	Irregular Menstruation	Yes	05	10	0.0313	Yes	03	12	0.0186
		No	56	33		No	47	42	
	Odorous Discharge	Yes	12	03	0.0696	Yes	06	09	0.4986
		No	49	40		No	44	45	
	Abnormal Bleeding During Menstruation	Yes	10	04	0.2965	Yes	06	08	0.6757
		No	51	39		No	44	46	
	Post-Coital Bleeding	Yes	09	01	0.0343	Yes	05	05	0.8963
		No	52	42		No	45	49	

** Statistical significance is measured using the chi-square test with significance level at p < 0.05.*

DISCUSSION

In our study among 104 women, almost 78% had poor knowledge regarding the causative factors, and less than 30% knew about the symptoms and warning signs, which is relevant to a similar study in an urban setting in South India (14,15,16). The study participants selected by Reichheld et al. belonged to the urban population of Vellore from low-income households, whereas the majority of participants in our study were from the upper-middle income group, which is concerning given the level of education and affordability of the clients. Our study also finds the Internet media as a predominant source of information (85.7%) followed by health facilities (26.5%) similar proportions were reported by studies done by Narayana et al. and Veerakumar A.M(16)(17), showing the lack of awareness drive in the government health facilities, leading to limited knowledge among the target population and also there is a chance of spreading information which is not scientifically backed through social media platforms.

In the present study, the knowledge regarding the etiological role of HPV is very low at 4%, as compared to a survey done by Arunadevi et al. (18) in Tamil Nadu, which reported a slightly higher awareness proportion of 13%. In the present study around 20% of participants had heard of the pap-smear test as a screening modality and less than 3% had been tested for the same in their lifetime, nearly similar results were attained by previous studies in rural Karnataka by R.Ramaiah, S. Jayarama (19) and Ghosh S et al (20) contrary to the findings (75 – 90) % by Mutyaba et al. (21) in Uganda, Ali et al. (22) in Pakistan, and Shah et al. (23) in a study in Gujrat, but their study participants were healthcare workers. The results reveal similarities in attitude and practice regarding the use of screening methods, regardless of education and socio-economic status, making it imperative to mandate the screening for such dire diseases.

Our study highlighted the awareness regarding genital hygiene in 16.3% of the participants whereas in the case of multiple sexual partners to be only in 10.6% of them, which was slightly more than reported by Aswathi et al. in a study conducted in rural Kerala, where a tiny proportion of women who were mostly housewives with poor socio-economic status of being aware regarding poor genital hygiene (3.9%) and multiple sexual partners (1.6%) as risk factors for cervical cancer. It shows that the impact of education and socio-economic strata yields a better awareness level among respondents, but not by very high significant margins. The result highlights the significant association of irregular menstruation which was also cited in a study conducted among nursing staff in a tertiary health facility in Gujrat by Shah et al (24), they also reported multiple sexual partners, and genital hygiene as risk factors for cervical cancer which also showed a positive association in the present study.

While about 24% of the participants in our study had heard about the vaccines available for cervical cancer, none of them ever got vaccinated, around 18% of the respondents said they knew the treatment modalities and an equal proportion stated surgery or chemotherapy as a cure for the ailment as also reported by Reichheld et al in their study (15). The results reflect a poorly updated

sample of the population on the prevention and treatment facilities available for cervical cancer.

An assessment conducted by Shankar et al among school teachers on knowledge, attitude, and practices in major cities of India during the Pink Chain campaign (2013-2015) also found a significant association between genital hygiene, smoking, and multiple partners as perils for cervical cancer among the participants (25). The study also highlighted a lack of time, lethargic attitude, and majorly ignorance as reasons for not undergoing screening tests for cancer.

CONCLUSION

The present study focuses on understanding the extent of knowledge and allied practices concerning cervical cancer among the teachers of pre-primary schools in Dehradun, keeping in mind the minimum education and qualification levels attained by the participants to be graduates and thereby having a basic understanding of good health practices. The study was also aimed at understanding the views about cervical cancer vaccine that will serve as a major tool to decrease the burden of the disease to an extent that will meet global targets and also to eliminate any stigma or hesitancy regarding the vaccine in context to the previously discontinued vaccine drive in 2010 due to unproven public safety concerns.

The study revealed a limited knowledge of cervical cancer and the availability of measures of prevention at different levels (screening, vaccination, allied services, etc.) among the participants, Though all of the had access to the Internet and other media resources, the study findings reveal a limited degree of awareness about the importance & implications of cervical cancer including prevalent taboos about sexual health to be the principal drivers for such limited knowledge of this disease.

After the conclusion of every data collection session, the teachers and other female staff of the schools were sensitized regarding the safe practices of cervical cancer prevention, its screening facilities, and the significance of vaccination in tackling the growing burden of the disease presenting at late stages and also reducing impoverishment due to out-of-pocket expenditure. The study aims to highlight the importance of increased participation in promoting awareness in not only rural but also urban community settings and involving various institutions for better outreach. Furthermore, there is a greater need to initiate dialogue & discussion on women's health & hygiene and related practices among the peer groups to sensitize & generate awareness among them to proactively seek/utilize the already available & accessible services like regular screening and make advocacy to include HPV vaccination in the immunization schedule.

RECOMMENDATION

Based on our study, the focused awareness campaigns should be organised in urban settings and workplace-based settings as well. Digital media messaging should also be strengthened, and communication on menstrual and sexual health, as well as HPV vaccination, should be intensified.

LIMITATION OF THE STUDY

The study was limited to the central area of Dehradun city, approximately a 10 km radius. Due to the lack of manpower and time constraints in the data collection process, the sample size was smaller, and thereby, statistical significance could not be achieved in some of the desired detailed parameters.

RELEVANCE OF THE STUDY

The study provides actionable evidence that educated women in urban settings require targeted cervical cancer education, and it advocates integrating health promotion activities within schools to achieve widespread community benefits.

AUTHORS CONTRIBUTION

All the authors have contributed equally.

FINANCIAL SUPPORT AND SPONSORSHIP

Nil

CONFLICT OF INTEREST

The authors have declared no conflict of interest.

DECLARATION OF GENERATIVE AI AND AI ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

The authors have used no AI tools in writing the manuscript.

REFERENCES

1. Pimple S, Mishra G. Cancer cervix: Epidemiology and disease burden. Cytojournal. 2022 Mar 29;19:21.
2. World Health Organization. Cervical cancer country profiles. WHO Newsroom; 2021 Nov 17, accessed on 25 Aug 2025
3. Dhillon PK, Mathur P, Nandakumar A, Fitzmaurice C, Kumar GA, Mehrotra R, et al. The burden of cancers and their variations across the states of India: The Global Burden of Disease Study 1990–2016. Lancet Oncol. 2018;19(10):1289–306.
4. World Health Organization. Global Cancer Observatory (GLOBOCAN): Cancer Today. 2018.
5. Dahiya N, Acharya AS, Bachani D, Sharma D, Gupta S, Haresh K, et al. Quality of life of patients with advanced cervical cancer before and after chemoradiotherapy. Asian Pac J Cancer Prev. 2016;17(7):3095–9.

6. Sankaranarayanan R, Nessa A, Esmy PO, Dangou JM. Visual inspection methods for cervical cancer prevention. Best Pract Res Clin Obstet Gynaecol. 2012;26(2):221–32.
7. World Health Organization. Comprehensive cervical cancer control: A guide to essential practice. Geneva: WHO; 2006.
8. Mehrotra R, Yadav K. Cervical cancer: Formulation and implementation of Government of India guidelines for screening and management. Indian J Gynecol Oncol. 2022;20(1):1–8.
9. Nigam A, Saxena P, Acharya AS, Mishra A, Batra S. HPV vaccination in India: Critical appraisal. ISRN Obstet Gynecol. 2014;2014:–.
10. Sankaranarayanan R, Bhatla N, Gravitt PE, Basu P, Esmy PO, Ashrafunnessa KS, et al. Human papillomavirus infection and cervical cancer prevention in India, Bangladesh, Sri Lanka and Nepal. Vaccine. 2008;26 Suppl 12:M43–52.
11. Oelke ND, Vollman AR. "Inside and outside": Sikh women's perspectives on cervical cancer screening. Can J Nurs Res. 2007;39(1):175–90.
12. Roy B, Tang TS. Cervical cancer screening in Kolkata, India: Beliefs and predictors of cervical cancer screening among women attending a women's health clinic in Kolkata. J Cancer Educ. 2008;23:253–9.
13. Thulaseedharan JV, Frie KG, Sankaranarayanan R. Challenges of health promotion and education strategies to prevent cervical cancer in India: A systematic review. J Educ Health Promot. 2019;8:–.
14. International Institute for Population Sciences (IIPS) and ICF. India National Family Health Survey (NFHS-5), 2019–21. Mumbai: IIPS; 2021.
15. International Institute for Population Sciences (IIPS). National Family Health Survey (NFHS-5), India, 2019–21: Uttarakhand. Mumbai: IIPS; 2021.
16. Reichheld A, Mukherjee PK, Rahman SM, David KV, Pricilla RA. Prevalence of Cervical Cancer Screening and Awareness among Women in an Urban Community in South India-A Cross Sectional Study. Ann Glob Health. 2020 Mar 16;86(1):30
17. Narayana G, Suchitra MJ, Sunanda G, Ramaiah JD, Kumar BK, Veerabhadrappa KV. Knowledge, attitude, and practice toward cervical cancer among women attending an obstetrics and gynecology department: A hospital-based cross-sectional survey from South India. Indian J Cancer. 2017;54(2):481–7.
18. Veerakumar AM. Knowledge of carcinoma cervix among rural women of reproductive age in Trichy district, India. J Compr Health. 2017;5(2):46-52.
19. Arunadevi V, Prasad G. Knowledge and awareness of cervical cancer among women in rural India. Int J Curr Res Rev. 2015;7(21):29–34.
20. Ramaiah R, Jayarama S. Knowledge, attitude and practices about cervical cancer among rural married women: A cross-sectional study. Int J Community Med Public Health. 2018;5(4):1466–70.
21. Ghosh S, Mallya SD, Shetty RS, Pattanshetty SM, Pandey D, Kabekkodu SP, et al. Knowledge, attitude and practices towards cervical cancer and its screening among women from a tribal population: A community-based study from Southern India. J Racial Ethn Health Disparities. 2021;8(1):88–93.
22. Mutyaba T, Mmiro FA, Weiderpass E. Knowledge, attitudes and practices on cervical cancer screening among medical workers in Mulago Hospital, Uganda. BMC Med Educ. 2006;6:13.
23. Ali SF, Ayub S, Manzoor NF, Azim S, Afif M, Akhtar N, et al. Knowledge and awareness about cervical cancer and its prevention among interns and nursing staff in tertiary care hospitals in Karachi, Pakistan. PLoS One. 2010;5(6):e11059.
24. Shah V, Vyas S, Singh A, Shrivastava M. Awareness and knowledge of cervical cancer and its prevention among nursing staff of a tertiary health institute in Ahmedabad, Gujarat. Ecancermedicalscience. 2012;6:269.
25. Aswathy S, Quereshi MA, Kurian B, Leelamoni K. Cervical cancer screening: Current knowledge and practice among women in a rural population of Kerala, India. Indian J Med Res. 2012;136(2):205–10.
26. Shankar A, Roy S, Rath GK, Chakraborty A, Kamal VK, Biswas AS. Impact of cancer awareness drive on generating awareness and improving screening for cervical cancer: A study among schoolteachers in India. J Glob Oncol. 2018;4:1–7.