International Journal of Science and Research (IJSR)
ISSN: 2319-7064
Impact Factor 2024: 7.101

Knowledge of Cervical Cancer and HPV Vaccination and the Effectiveness of an Awareness Program Among School Teachers in a South Indian City

Dr. Ushadevi E[1], Dr. Amodini L[2], Dr. Muganagowda Patil[3], Dr. Chaya KA[4]

1Post Graduate, Department of Paediatrics, JJM Medical College, Davanagere
Corresponding Author Email: *ushadevie95[at]gmail.com*

Post Graduate, Department of Paediatrics, JJM Medical College, Davanagere
Email: *amodini2327[at]gmail.com*

Professor, Department of Paediatrics, JJM Medical College, Davanagere
Email: *patilmg1991[at]hotmail.com*

Associate Professor, Department of Paediatrics, JJM Medical College, Davanagere
Email: *chaya.ka247[at]gmail.com*

Abstract: ***Background: Cervical cancer is a huge public health burden on society and is one of the leading causes of death among women in India, after breast cancer. Hence the primary objective of this study was to evaluate the awareness of cervical cancer and HPV vaccination among school teachers in a South Indian city. The secondary objective was to assess the impact of an awareness program on cervical cancer and HPV vaccination knowledge among these teachers. Methods: This was a cross-sectional study involving 350 school teachers from rural and urban areas in and around a South Indian city. A standardized questionnaire was administered before and after a ward-level awareness program to assess knowledge, attitudes, and practices regarding cervical cancer, its risk factors, HPV vaccination, and screening tests. Convenience sampling was used to select participants. Results: The study showed a significant improvement in knowledge following the awareness program. Awareness of cervical cancer increased from 73% to 98%, while awareness of the HPV vaccine rose from 66.8% to 97%. Additionally, the percentage of teachers aware of cervical cancer risk factors increased from 27% to 91%, and awareness of the Pap smear test increased from 16% to 89%. Teachers' willingness to educate students about cervical cancer and HPV vaccination increased from 75% to 93%, with confidence in teaching also improving from 54% to 86%. Paired t-tests revealed statistically significant improvements ($p<0.001$) in both knowledge and attitudes. Conclusion: The awareness program significantly improved school teachers' knowledge about cervical cancer, HPV vaccination, and related health practices. These findings suggest that similar programs can be effective in enhancing public health awareness.***

Keywords: HPV vaccine, awareness, attitudes, practices, school teachers

Ethics statement: Institutional Ethics Committee approval obtained with reference number JJMMC/IEC-13-2025

1. Introduction

Cervical cancer is a huge public health burden on society and is one of the leading causes of death among women in India, after breast cancer. [1] Despite significant economic and social progress, cervical cancer mortality in India remains much higher than other more developed countries. Human papilloma virus (HPV) is the causative agent of cervical cancer, and serotypes 16 and 18 account for three quarter of the cases in India. [2] The most common risk factors are early age of marriage, multiple sexual partners, multiparity, smoking, long term use of oral contraceptives, malnutrition, poor genital hygiene and poverty. [3] As most of the etiological and risk factors are preventable, there is an urgent need for improved awareness of the disease, risk factors, screening tests and availability of treatment among the general public, to act as primordial prevention. [4] Although India has a national program for prevention of cervical cancer that has been in place since 1975, there is no nation-wide screening program or universal immunization program with HPV vaccine, and the incidence of the disease continues to increase yearly. Delayed diagnosis due to inadequate, unaffordable or inaccessible screening facilities, and inadequate or unaffordable standard treatment options has heightened the problem in developing countries like India. School teachers hold the major responsibility of educating the youth, and have immense potential in improving awareness of cervical cancer among both children attending their schools, and their parents. This potential can be utilized by conducting health awareness programs to improve better understanding of this condition among the general public and ultimately reducing morbidity and mortality.

Our study aims to assess the baseline awareness of cervical cancer and HPV vaccination among school teachers in a South Indian City, and evaluate the knowledge, attitude and practice through a ward level awareness program.

2. Materials and Methods

- Study type: Cross sectional study
- Study design – Cross sectional school-based study
- Study setting – School-based study
- Study population - School Teachers in a South Indian City

- Sampling method – Convenience sampling
- Sample size – 350 pretest samples; 350 post test samples
- Type of sampling – Convenience sampling
- Methodology - A standardized questionnaire was designed to collect information about the awareness of cervical cancer, risk factors, age groups affected, awareness about HPV vaccination, trust in the vaccine and willingness to educate school children
- Statistical Analysis: The data collected was entered into Microsoft Excel in spread sheets and was analysed using *SPSS version 25.0.* Qualitative variables were expressed as frequencies (percentages) and quantitative variables as mean ± SD. Odds ratio was used to measure the strength of association of different variables. P-value of <0.01 was considered to be statistically significant.

3. Results

School teachers aged 21 to 65 years were enrolled in the study, with maximum belonging to the 41-to-50-year age group, which were 148 of 350 (42.3%, n=350). Among 350 teachers, 147 (42%) were male and 203 (58%) were female.In our study, teachers from 140 schools in rural areas (40%) and 210 urban areas (60%) were included.

Among the study subjects, 163 teachers were from primary schools (46.6%), 57 from secondary schools (16.3%) and 130 were from high schools (37.1%). Most of the participants, 43.1% (302 out of 700) mentioned their source of information as doctors, 61 (21.5%) television, and 113 (16.1%) newspaper, as their major source of information on cervical cancer. Other sources of information were internet, ASHA workers, friends, relatives, neighbours and other patients of cervical cancer. In other studies [4], the primary source of information was friends, relatives and mass media.

Table 1: Questions on Knowledge of cervical cancer, HPV Vaccine pre- test and post-test

Knowledge Questionnaire	Pre-test (n=350)		Post-test (n=350)	
	No	%	N0	%
Q7 – Population affected				
7-0 – No response	31	9	0	0
7-1 – Males	3	0.9	33	9
7-2 – Females	307	88	338	97
7-3 – Children	11	3	27	8
Q8 – Awareness of risk factors				
8-0 – No response	17	5	6	2
8-1 – Yes	95	27	320	91
8-2 – No	238	68	24	7
Q9 – Awareness of screening test	190	54	324	93
Q10a – Awareness of HPV vaccine	234	33	339	97
Q10b – Target age group for HPV vaccine				
10-0 – No response	118	34	3	0.90
10-1 – Less than 5 years	8	2	2	0.60
10-2 – 9 to 14 years	94	27	330	94
10-3 – 15 to 45 years	102	29	69	20
10-4 – More than 45 years	29	8	38	11
Q11 – Awareness of Pap Smear Test	56	16	314	89

Table 2: Comparison of Knowledge, Attitude and Practice on cervical cancer pre-test and post-test

Knowledge Questionnaire	N	Mean	Std. Deviation	Mean Difference	Paired t test	P Value
Pre-test	350	3.75	1.39	1.52	17.22	P<0.001
Post-test	350	5.27	0.90			
Attitudes and Practices Questionnaire	N	Mean	Std. Deviation	Mean Difference	Paired t test	P Value
Pre-test	350	2.07	1.16	0.68	9.662	P<0.001
Post-test	350	2.75	0.64			

Table 3: Questions on attitudes, practice on cervical cancer, HPV Vaccine pre-test and post-test

Attitudes and Practices Questionnaire	Pre-test (n=350)		Post-test (n=350)	
	No	%	N0	%
Q13a – Willingness to teach students	261	75	325	93
Q13b – Confidence in teaching students				
13-0 – No response	58	17	6	2
13-3 – Very confident	188	54	300	86
13-2 – Moderately confident	104	30	44	13
13-1 – Less confident	0	0	0	0

4. Discussion

An awareness program was conducted among school teachers in a tier two South Indian city in the year 2024 by a pediatrician and an obstetrician in the regional language. The baseline knowledge, attitude and practices regarding cervical cancer and HPV vaccination was assessed through a predesigned questionnaire. After the conduct of the program, the school teachers were administered the same questionnaire once again, to estimate improvement, if any, in their awareness and attitudes. School teachers aged 21 to 65 years

were enrolled in the study, with maximum belonging to the 41-to-50-year age group, which were 148 of 350 (42.3%, n=350). Among 350 teachers, 147 (42%) were male and 203 (58%) were female. Teachers from 140 schools in rural areas and 210 urban areas were included. 163 teachers were from primary schools, 57 from secondary schools and 130 were from high schools. In a study conducted by Supriti Ghosh et al, in Southern Karnataka in 2024, baseline awareness of cervical cancer was 67%. [4] In the present study, 254 out of 350 teachers (73%) were aware of cervical cancer before the conduct of the program, and this number improved to 343 (98%) during the post-test evaluation. Most of the participants, 43.1% (302 out of 700) mentioned their source of information as doctors, 61 (21.5%) mentioned television, and 113 (16.1%) newspaper, as their major source of information on cervical cancer. Other sources of information were the internet, Asha workers, friends, relatives, neighbours and other patients of cervical cancer. In other studies [4], the primary source of information was friends, relatives and mass media.

Knowledge of cervical cancer was assessed through questions about the population affected by the disease (7), risk factors (8) and availability and awareness of the screening test (9, 11). As 88% (307) teachers answered correctly that cervical cancer is a disease that affects women, and this improved to 97% (338) during the post-test. In a study conducted by Sukriti Ghosh et al, 50.9% of participants were aware of at least one risk factor for cervical cancer. [4] In our study, only 27% (95) were aware of the risk factors of cervical cancer during the pre-test, and 91% (320) were aware of the same during the post-test, which was found to be statistically significant, with a p value of <0.001. In a study conducted among nursing staff in a tertiary care center in Gujarat in 2012 [5], awareness of Pap smear test was found to be 88%. In our study, before the conduct of the awareness program, only 190 (54%) were aware of the availability of a screening test for cervical cancer, and after the conduct of the program, this awareness increased to 324 (93%). During the post-test, 314 (89%) had heard about the Pap Smear Test, while only 56 (16%) had heard of it during the pre-test. Answers to the questions on awareness of the screening test were found to be statistically significant, with a p value of <0.001(Table -1)

Awareness of the HPV vaccination was assessed by questions on availability (10a), target age group (10b). Arun Kumar P, et al [6], in their study conducted in the year 2022 in Tamil Nadu, found that the awareness of HPV vaccination among women attending obstetric out-patient clinics was 62.2%, and more than 60% were willing to get vaccinated. In the present study, during the pre-test, 234 (66.8%) were aware of the existence of the HPV vaccine, and this improved to 339 (97%) during the post-test, which was found to be statistically significant, with a p value of <0.001. Awareness of the correct target age group for vaccination was found to be low in both the pre-test and post-test groups, of around 29% and 20% respectively (Table -2).

The teachers were also asked if they were willing to educate students of their schools about cervical cancer and HPV vaccination, and if so, how confident they were about the same. During the pre-test, 261 (75%) of the teachers expressed their willingness to teach their students about the disease, and this number improved to 325 (93%) during the post-test. 188 (54%) expressed strong confidence in their knowledge and ability to educate students during the pre-test, and 300 (86%) did so during the post test, which was found to be statistically significant, with a p value of <0.001(Table -3).

5. Conclusion

In conclusion, this study demonstrated a significant improvement in the awareness of cervical cancer and HPV vaccination among school teachers in a South Indian city following a targeted awareness program. The results highlight the critical role that awareness programs can play in enhancing knowledge about cervical cancer, its risk factors, screening methods, and preventive measures such as the HPV vaccine. Pre- and post-program evaluations showed marked improvements, with knowledge of cervical cancer increasing from 73% to 98%, and HPV vaccination awareness rising from 66.8% to 97%. Furthermore, the program effectively boosted teachers' confidence and willingness to educate students about cervical cancer, with confidence levels increasing from 54% to 86%. These findings suggest that similar educational initiatives can play a vital role in improving public health knowledge, particularly in settings where teachers can act as key agents of change in their communities. The successful outcomes of this study underscore the potential for scalable awareness programs to reduce the burden of cervical cancer through better prevention and early detection practices, ultimately contributing to better health outcomes for women in the region. Further research and program expansion are recommended to reach broader populations and sustain these gains in health literacy.

References

[1] Gupta K, Mandal R, Chatterjee P. Navigating the landscape of cervical cancer in India: Epidemiology, prevention, current status, and emerging solutions. The Journal of Obstetrics and Gynecology Research. 2024
[2] Sreedevi A, Javed R, Dinesh A. Epidemiology of cervical cancer with special focus on India. Int J Womens Health. 2015 Apr 16; 7:405-14. doi: 10.2147/IJWH.S50001. PMID: 25931830; PMCID: PMC4404964.
[3] Kashyap N, Krishnan N, Kaur S, Ghai S. Risk factors of cervical cancer: A case-control study. Asia Pac J Oncol Nurs. 2019 Jul-Sep;6(3):308-314. doi: 10.4103/apjon.apjon_73_18. PMID: 31259228; PMCID: PMC6518992.
[4] Ghosh S, Mallya SD, Pattanshetty SM, Pandey D, Kamath VG, Kabekkodu SP, et al. Awareness, attitude, and practice towards cancer cervix prevention among rural women in southern India: A community-based study. *Clin Epidemiol Glob Health*. 2024
[5] 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. ecancer. 2012; 6:270.
[6] Arunkumar P, Kohila K. Study on awareness of human papillomavirus vaccine. Int J Reprod Contracept Obstet Gynecol. 2022; 11:2142-6.

[7] Singh J, Roy B, Yadav A, Siddiqui S, Setia A, Ramesh R, et al. Cervical cancer awareness and HPV vaccine acceptability among females in Delhi: a cross-sectional study. Indian J Cancer. 2018;55(3):233.
[8] Islam JY, Khatun F, Alam A, Sultana F, Bhuiyan A, Alam N, et al. Knowledge of cervical cancer and HPV vaccine in Bangladeshi women: a population-based, cross-sectional study. *BMC Womens Health*. 2018 Jan 11;18(1):15.