

Original Research Article

Assessing the knowledge of HPV vaccination among nursing students in selected nursing college at Meerut, Uttar Pradesh

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ABSTRACT

Background: Cervical cancer is the third most commonly diagnosed cancer worldwide and the fourth leading cause of cancer death in women. But in India, it is the leading cancer among women accounting for more than 74,000 deaths per year. This study aimed to evaluate knowledge regarding Human Papillomavirus (HPV) vaccination among nursing students and find out the association between their level of knowledge and selected demographic variables.

Methods: The study was conducted in selected nursing colleges at Meerut (U.P.). Data was collected from 100 nursing students who meet inclusion criteria. A quantitative descriptive research approach was used. Researcher used non-probability convenience sampling technique. Data were obtained with the help of a structured closed ended knowledge questionnaire.

Results: The study of 100 participants reveals that a majority (77%) demonstrated good knowledge (21%) had average knowledge and (2%) reflect poor knowledge. The overall mean knowledge score was 16.09 ± 2.91 (73.1%).

Conclusions: It is suggested that there is a need for educational intervention and structured awareness campaigns to augment HPV Immunization programs for control of cervical cancer in India.

Keywords: Cervical cancer, HPV vaccine, Human papilloma virus, Knowledge, Nursing students

INTRODUCTION

Human Papillomavirus (HPV) is the most common virus infection of the reproductive tract.¹ Globally, HPV is responsible for nearly all cases of cervical cancer, which represents the fourth most common cancer in women.² More than 270,000 women die from cervical cancer every year, with approximately 85% of these deaths occurring in low- and middle-income countries.³ India bears a major portion of this burden, accounting for more than 74,000 cervical cancer deaths per year.⁴ Low-resource settings face the highest disease burden due to limited access to routine screening, vaccination programs, and timely treatment.⁵

Extensive literature demonstrates that HPV vaccination is a highly effective preventive strategy against cervical dysplasia and carcinoma. Limited knowledge among the general population and inadequate awareness among healthcare professionals continue to pose major challenges to achieving optimal vaccine uptake.⁶ Administering the vaccine during early adolescence (ages 9-14) substantially reduces the incidence of HPV-related malignancies.⁷ As future frontline healthcare providers, nursing professionals play a critical role in educating the public, dispelling vaccine hesitancy, and advocating for immunization.⁸ Therefore, assessing their baseline knowledge and awareness is essential to designing targeted educational interventions, supported by comprehensive global health and regional guidelines.^{11,12}

Objectives

The objectives of the study were to assess the level of knowledge regarding the human papillomavirus (HPV) vaccine among nursing students in Meerut, Uttar Pradesh; to determine the association between the level of knowledge regarding HPV vaccination and selected demographic variables; and to provide a self-instructional module on HPV vaccination to nursing students in Meerut, Uttar Pradesh.

METHODS

Study design and setting

This study utilized a quantitative descriptive research design. The study was conducted across nursing colleges in Meerut, Uttar Pradesh, India.

Study duration

The study was carried out over a period of four months, from 10 January 2025 to 9 May 2025.

Population, sample size, and sampling technique

The target population comprised nursing students currently enrolled in diploma and degree nursing programs in Meerut. A total of 100 nursing students were included in the study.

The required sample size was determined through standard statistical power analysis, considering an alpha level of 0.05, a moderate effect size, and 80% statistical power. Participants were selected using a non-probability convenience sampling technique.

Inclusion criteria

Nursing students who were present during the data collection period, willing to participate, and provided written informed consent.

Exclusion criteria

Students who were critically ill, unavailable during data collection, or unwilling to provide written consent.

Data collection tool and scoring procedure

Data were gathered using a validated, structured closed-ended knowledge questionnaire. The tool was divided into two sections: Section A-Socio-demographic variables including gender, place of residence, parental education, family income, history of cancer, and prior exposure to HPV educational materials or seminars; and Section B-Knowledge items regarding HPV infection, transmission, cervical cancer risk factors, and vaccination guidelines (22 items total). Each correct response received a score of 1, while incorrect responses received 0 (maximum score: 22, minimum score: 0). Knowledge levels were categorized as follows: good knowledge (15-22, 68-100%), average knowledge (8-14, 36-64%), and poor knowledge (0-7, 0-35%).

Statistical analysis

The data was analyzed by using both descriptive and inferential statistics.

RESULTS

This section describes the demographic characteristics of the sample under study. The data obtained describes the characteristics pertaining (Table 1).

Table 1: Demographic profile of the subjects (n=100).

Socio-demographic performa		Percentage (%)	Frequency (F)
Gender	Male	34	34
	Female	66	66
Residence	Urban	59	59
	Rural	41	41
Mother education	Illiterate	8	8
	Primary school	23	23
	Secondary school	35	35
	Graduate/above	34	34
Father education	Illiterate	5	5
	Primary school	15	15
	Secondary school	28	28
	Graduate/ above	52	52
Marital status	Married	9	9
	Unmarried	91	91
Family income (monthly income in INR)	Below 10000/-	15	15
	10001-20000/-	34	34

Continued.

Socio-demographic performa		Percentage (%)	Frequency (F)
	Above 20000/-	51	51
Family history of any type of cancer	Yes	16	16
	No	42	42
	If yes	42	42
Did your school participate in the HPV vaccine awareness campaign	Yes	10	10
	No	89	89
	I don't know	1	1
Did your school get any promotional materials (brochures, posters, pamphlets, etc.) On HPV	Yes	20	20
	No	74	74
	I don't know	6	6
Did you attend any seminar or training on HPV vaccine?	Yes	16	16
	No	84	84
Have you heard about Pap smear test?	Yes	74	74
	No	25	25
	Others	1	1
Have you taken HPV vaccination?	Yes	18	18
	No	82	82

The analysis of knowledge scores revealed that majority 77% of participants (n=77) demonstrated good knowledge with scores ranging between 15 and 22, and 21% (n=21), fell under the average knowledge category, scoring between 8 and 14. Meanwhile, 2% of participants (n=2) exhibited poor knowledge, with scores ranging from 0 to 7. This indicates that while most participants have a good understanding (Table 2).

Table 2: Frequency and percentage distribution of knowledge scores.

Criteria measure of knowledge score		
Category score	Percentage	Frequency
Good (15-22)	77	77
Average (8-14)	21	21
Poor (0-7)	2	02

Table 3: Descriptive statistics of pre-test level of knowledge scores.

Descriptive statistics	Mean	SD	Median	Max	Mini	Range	Mean %
Knowledge score	16.09	2.91	16.5	22	5	17	73

The mean knowledge score among participants was 16.09, with a standard deviation of 2.91, indicating a moderate spread of scores around the mean. The median score was 16.5, suggesting that half of the participants scored above and half below this value. The maximum score achieved was 22, and the minimum was 5, giving a range of 17. On average, participants scored 73% of the total possible score, indicating a good level of knowledge overall (Table 3).

DISCUSSION

The primary objective of this study was to evaluate knowledge regarding the HPV vaccine among nursing students in Meerut and assess its association with selected socio-demographic parameters. The findings revealed that 77% of participants possessed good knowledge, 21% had average knowledge, and 2% had poor knowledge, yielding an overall mean knowledge percentage of 73.1%.

Comparison with previous literature-knowledge level

The present study demonstrated that a majority of the participants (77%) had a good level of knowledge, which

is consistent with the findings reported previously, observing elevated awareness levels among healthcare-oriented university students compared to the general public.⁶

In contrast, studies conducted on general community samples found comparatively lower levels of baseline knowledge, suggesting that structured medical and nursing education may play an important role in improving health literacy.^{7,8} Similar regional assessments among nursing trainees in India further validate the necessity of targeted awareness campaigns.⁹

Knowledge vs. actual vaccination uptake

Despite high theoretical knowledge (77%), only 18% of participants reported having received the HPV vaccine. This marked discrepancy between knowledge and practice mirrors findings from previous literature, which reported that high awareness among nursing professionals does not automatically translate into self-vaccination, often due to vaccine cost, lack of institutional campaigns, or perceived personal risk.¹⁰

Screening awareness

A substantial proportion (74%) of respondents were aware of the Pap smear test, consistent with global health recommendations outlined regarding early screening literacy among nursing trainees.^{13,14}

This study has few limitations. This study was restricted to selected nursing institutions in Meerut, Uttar Pradesh, and employed a non-probability convenience sampling technique, which may limit the generalizability of the findings to all nursing students across India. Additionally, reliance on self-reported questionnaires carries an inherent risk of social desirability or recall bias.

CONCLUSION

This study demonstrates a high level of theoretical knowledge regarding HPV vaccination (77%) among nursing students in Meerut, Uttar Pradesh. However, a significant gap remains between knowledge and actual vaccine uptake, as evidenced by the low vaccination rate of 18%. By identifying these gaps, this research advances understanding in the field by highlighting that academic knowledge alone is insufficient to drive immunization behaviors. To bridge this implementation gap, institutional policy initiatives such as subsidized campus vaccination drives and structured Self-Instructional Modules (SIM) must be integrated into health science programs to equip future healthcare workers as effective advocates for cervical cancer prevention in India.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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