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ORIGINAL RESEARCH

Attitudes and Perceptions of HPV Vaccine in North Indian Adolescent Girls and Their Parents

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ABSTRACT

Background: HPV vaccine serves as the primary line of defence against HPV-related illnesses and malignancies. Despite the vaccine's proven benefits, achieving high vaccination rates globally remains challenging due to diverse socio-economic, cultural, and access-related factors. Parental acceptability plays a crucial role in enhancing vaccination coverage, influenced by perceptions of vaccine safety and efficacy for children and adolescents. The degree of awareness and understanding regarding various aspects of a disease and its vaccine is a major determinant of the effectiveness and benefits of cervical cancer control and prevention. Hence this study was conducted to determine the perception and acceptability towards HPV vaccination among parents and adolescent girls. **Methods:** We conducted this questionnaire based, cross-sectional study at PMCH Patna, Bihar, India over 2 years from April 2022 to March 2024 including adolescent girls of 10 to 19 years of age including their attending parent(s) attending OPD of Pediatrics and Gynaecology department. Girls with serious illness, mental retardation and those not giving consent were excluded from the study. **Result:** Over the study period, we enrolled 526 participants in the study. Mean age of the study population was 14.56±3.27 years and mean weight was 41.34±8.71 Kg. Majority of them were from 13–16-year age group, rural inhabitant and from lower middle class. Only 11.8% (n=62) had any knowledge about HPV infection. Similarly, only 10.8% (n=57) girls had any idea of HPV vaccine before and only 31 or 5.9% of these girls had actually received any dose of HPV vaccine in past. More than 90% of the participants were not aware about cervical cancer, its causative relation with HPV, spread and prevention. Most of the respondents strongly agreed to get vaccinated, if it were provided free of cost and were also willing to know more about HPV infection and HPV vaccination. **Conclusion:** Majority of the young women surveyed demonstrated a poor knowledge about cervical cancer, its causal relation with HPV, mode of transmission and prevention through HPV vaccination. But it was encouraging to find that most of them had a positive attitude towards HPV vaccination, though high cost remains a constraint to deal with.

Key words: Cervical cancer, HPV vaccination, Human Papillomavirus.

INTRODUCTION

Human papillomavirus (HPV) is the most prevalent viral sexually transmitted infection (STI). It is also considered as one of the most widespread STIs affecting the genital tract. With more than 100 distinct serotypes, HPV can lead to genital warts, abnormal cervical cells, and even cervical cancer.1 The global prevalence of HPV infection in women without cervical abnormalities is estimated to be around 11-12%, with higher rates observed in regions, such as sub-Saharan Africa, Eastern Europe, and Latin America. HPV infection has been proven to be strongly associated with various cancers, including cervical, penile, vulvar, vaginal, anal, and oropharyngeal cancers. HPV-related cervical cancer is the fourth most common cancer globally. In the year 2020, the World Health Organization reported over 600,000 new cases globally, resulting in 342,000 fatalities. In India cervical cancer is the third most common cause of cancer and second highest cause of deaths occurring due to cancer.2 The age standardized incidence rate for cervical cancer in Indian women is 22 per 100,000 women per year, which is the highest in south Asia.3 HPV is also causative factor in 78% vaginal cancers, 15-48% of vulval cancers and 88% of anal cancers.4 The most common HPV strains which are associated with cervical cancer are HPV-16 and

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18 and these 2 account for more than 75% of cervical cancer cases in India.

HPV vaccine serves as the primary line of defence against HPV-related illnesses and malignancies. Introduced in stages starting with the bivalent (2vHPV) vaccination for girls in 2006, followed by approval of the quadrivalent (4vHPV) vaccine for boys in 2009, and the availability of the 9-valent HPV vaccine for both genders in 2014, vaccination is recommended ideally between ages 9 and 14.5 Research has focused particularly on teenagers, especially girls aged 15-25, emphasizing the vaccine's efficacy against various HPV types.6 The available vaccines in Indian market like Cervarix, a bivalent vaccine and Gardasil, a quadrivalent vaccine have demonstrated efficacy as high as 90 % among the targeted age groups in reducing HPV infections and subsequent cervical cancer cases. The vaccine is said to be most effective when administered to 9–13 year old adolescents or among 14–26 year old females before they have had sexual intercourse. The vaccine also protects against genital warts and some other cancers like anal, vulvar, vaginal, penile, oropharyngeal as well some cancers of head and neck. Despite the vaccine's proven benefits, achieving high vaccination rates globally remains challenging due to diverse socio-economic, cultural, and access-related factors.7 Parental acceptability plays a crucial role in enhancing vaccination coverage, influenced by perceptions of vaccine safety and efficacy for children and adolescents. The degree of awareness and understanding regarding various aspects of a disease and its vaccine is a major determinant of the effectiveness and benefits of cervical cancer control and prevention. Hence this study was conducted to determine the perception and acceptability towards HPV vaccination among parents and adolescent girls of Northen India.

Aim & Objectives

To assess knowledge, attitude and practices on HPV infection and its vaccine among adolescent girls and their parents and factors influencing the same.

MATERIALS AND METHODS

Study Setting: Deptt of Pediatrics and deptt of Gynaecology, PMCH Patna, Bihar, India.

Study duration: 2 years, from April 2022 to March 2024

Study design: questionnaire based, cross-sectional study.

Study participants: Adolescent girls of 10 to 19 years of age including their attending parent(s) attending OPD of Pediatrics and/or Gynaecology department were evaluated for enrolment in this study and verbally explained about the objectives and purpose of this study. Those who gave consent, were finally included. Girls with serious illness, mental retardation and those not giving consent were excluded from the study.

Sample size: it was calculated using epi info software. Sampling technique was purposive sampling. **Data collection:** A predesigned questionnaire was used to collect the desired information. The questionnaire was designed in Hindi, keeping in mind the local preference. The questionnaire enquired about the awareness of cervical cancer, HPV vaccine, causative relationship of HPV with cervical cancer, effectiveness and acceptance of HPV vaccine. Direct questions were asked if the participants believed that cervical cancer was preventable and if they had heard about HPV vaccine. Vaccine acceptability was also assessed from them. "Likert rating scale "was used to rate and analyse their responses. Each response was rated with integer value 1 for strongly disagree, to 5 for strongly agree. The participants were assured of confidentiality. SPSS version 21 was used for statistical analysis.

RESULT

Over the study period, we enrolled 526 participants in the study. Mean age of the study population was 14.56±3.27 years and mean weight was 41.34±8.71 Kg. Table 1 depicts general characteristics of the participants. Majority of them were from 13–16-year age group, rural inhabitant and from lower middle class.

Table 1: General characteristics of the participants

Parameter	Number (n=526)	Percentage
Age:		
10-13 years	132	25.10%
13-16 years	251	47.71%
16-19 years	143	27.19%
Background:		
Rural	281	53.42%
Urban	245	46.58%
Education		
Illiterate	9	1.71%
Below Matriculation	139	26.42%
Matriculation	182	34.60%
Plus 2	109	20.72%
Graduate	62	11.78%
Post Graduate	25	4.75%

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Socio-economic status		
Upper class	19	3.61%
Upper middle	37	7.03%
Middle	136	25.85%
Lower middle	171	32.50%
Lower	163	30.98%

Of these 526 adolescent girls, sadly only 11.8% (n=62) had any knowledge about HPV infection and the rest 88.2% (n=464) had no idea about HPV infection. Of these 62 girls, books (n= 37) were the major source of information about the HPV infection followed by social media/internet (n=12). Similarly, only 10.8% (n=57) girls had heard of HPV vaccine before and the rest 89.2% (n=469) had no idea about HPV vaccine which clearly indicates ignorance by our policymakers about a vaccine preventable cancer. Not surprisingly, only 31 or 5.9% of these girls had actually received any dose of HPV vaccine in past. Table 2 depicts Questionnaire based response of the participants. As shown there, more than 90% of the participants were not aware about cervical cancer, its causative relation with HPV, spread and prevention.

Table 2: Questionnaire based response of the participants

Question	Yes: Number (%)	No: Number (%)
Have you ever heard of cervical cancer?	49 (9.3%)	477 (90.7%)
Is incidence of cervical cancer high in India?	37 (7.1%)	489 (92.9%)
Does HPV cause cervical cancer?	52 (9.9%)	474 (90.1%)
Does HPV spread by sexual contact?	39 (7.4%)	487 (92.6%)
Is HPV cured by medication?	27 (5.1%)	499 (94.9%)
Is HPV a self-limiting disease?	18 (3.4%)	508 (96.6%)
Is HPV identified by investigation?	57 (10.8%)	469 (89.2%)
Should women be investigated for HPV?	59 (11.2%)	467 (88.8%)
Is HPV infection very common?	42 (7.9%)	484 (92.1%)
Does HPV infection cause any symptoms in women?	47 (8.9%)	479 (91.1%)
Is HPV infection prevented by vaccine?	56 (10.6%)	470 (89.4%)

Attitude of the participants regarding HPV vaccine was studied using a separate questionnaire as shown in table 3 below. Most of the respondents strongly agreed to get vaccinated, if it were provided free of cost and were also willing to know more about HPV infection and HPV vaccination. The median response, for whether, parents would pay for vaccine and whether, only sexually active should receive HPV vaccine, was “can’t say” or neutral. The central tendency for the item “it’s not necessary for me to get vaccinated” was “strongly disagree”. This observation provides an opportunity to encourage more young women to get vaccinated against HPV.

Table 3: Attitude regarding HPV vaccination

Question	Strongly disagree Number (%)	Disagree Number (%)	Can’t say Number (%)	Agree Number (%)	Strongly agree Number (%)
I think my parents would pay for the vaccine	54 (10.3%)	71 (13.5%)	212 (40.3%)	103 (19.6%)	86 (16.3%)
I would get the vaccine if it were for free of cost	40 (7.6%)	31 (5.9%)	47 (8.9%)	137 (26.1%)	271 (51.5%)
It’s not necessary for me to get vaccinated	249 (47.3%)	144 (27.4%)	53 (10.1%)	51 (9.7%)	29 (5.5%)
Only sexually active women should receive the vaccine	46 (8.7%)	59 (11.2%)	233 (44.3%)	129 (24.5%)	59 (11.2%)
I wish to get more information on HPV infection/ HPV Vaccine	22 (4.2%)	31 (5.9%)	40 (7.6%)	137 (26.1%)	296 (56.3%)

DISCUSSION

The present study was conducted at our tertiary care level institute to obtain information regarding knowledge and perceptions about HPV and its vaccine among young women of northern India. Here we found that an overwhelming majority of participants

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had not heard about HPV infection (88.2%). And among those who were aware, the most common source of their information was books and internet. There was minimal role of health care professionals as the source of their knowledge in the present study. Whereas, the most common source of information was health professional in a study by Juntasopeepun et al, in Thailand.8

Jyoti Singh et al, at Delhi found that majority of the women surveyed (85%), were aware of cervical cancer and among them 32.4% knew about its causal relationship with HPV and that, it was sexually transmitted.9 This contrast was probably because, 74.4% participants in their study were educated up to graduation or higher level as compared to only 15.5% participants in our study. In a similar survey done in Karnataka, India, about 50% of the sample population was aware that cervical cancer was sexually transmitted.10 Also, the knowledge about HPV infection and HPV vaccine was more among later age group (17 to 19 years) participants in our study. Participants with education level up to matriculation had no or little knowledge about cervical cancer or HPV infection.

In the present study, only 9.9% women knew about the causal relationship between HPV and cervical cancer and only 7.4% were aware that it spreads by sexual contact. Also, only 10.6% women believed that HPV infection and cervical cancer could be prevented by vaccination. Despite this poor knowledge, their attitude towards vaccination was overall positive and the majority believed that it was good for them to receive the vaccine. In this study, 35.9% participants agreed that their parents could pay for the vaccine, while 71.6% eventually were willing for vaccination if it were provided free of cost. This high acceptance rate among the surveyed population, may be due to the usual high acceptance of vaccines against preventable diseases in general. In a comparable study, CharaKorn C. et al11 found that despite poor knowledge, the acceptability of HPV vaccine was high among the participants. In a similar study, by Basu and Mittal in Kolkata, it was reported that, counselling and information by health care providers increased the acceptance of HPV vaccine.12 One of the possible reasons of low coverage rate of HPV vaccination in our country is its high cost. Most of the participants in the present study felt that the acceptance level of HPV vaccine would increase, if it were a part of the Government sponsored immunization program.

CONCLUSION

Majority of the young women surveyed demonstrated a poor knowledge about cervical cancer, its causal relation with HPV, mode of transmission and prevention through HPV vaccination. But it was encouraging to find that most of them had a positive attitude towards HPV vaccination, though high cost remains a constraint to deal with. Introduction of a nationwide sensitization campaign, educating target population and induction of HPV vaccination in national immunization program would facilitate awareness and acceptance of HPV vaccination in our country.

Limitations: First limitation is inherent in the study design that this is a single centre study and so the findings may not be truly representative of a larger community. Second, follow up of these young girls was not done

Conflict of interest: None worth declaring.

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