Impact of a Brief School Based Educational Intervention to Increase the Knowledge about HPV Vaccination among Adolescent Girls

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DOI: https://doi.org/10.24321/2455.9199.201811

Abstract

Background: Human papilloma virus (HPV) infections are one of the commonly sexually transmitted infections. Worldwide, HPV has been documented as the causative factor in 99% of the cervical cancers but still HPV vaccination implementation is still non-pragmatic in India. For the successful implementation of the vaccination programs, the target population – adolescents’ awareness regarding HPV associated diseases and benefits of vaccination should be improved.

Aims and Objectives: To assess the knowledge of human papilloma virus and attitude towards HPV vaccination among adolescent girls and the effect of a short educational intervention on improving the knowledge and thereby increasing the acceptance of the vaccine.

Methodology: A questionnaire study was conducted among adolescent girls in the age group of 14-18 years in secondary and higher secondary schools. The participants were given a brief power point presentation about HPV and vaccination. The post interventional questionnaire was given immediately and one month later to test the level of retention of the knowledge acquired.

Results: Among 984 participants, only 743 were found to be valid. The mean test scores was not significantly different among participants from urban or rural group nor was it higher among children of higher parental education or socio-economic status. Among the study population, only 0.4% had received the HPV vaccination and only 32% knew that cervical cancer was preventable. In the post intervention study, 85% were willing to get vaccinated and 91% wanted to recommend it other family members. The mean test score was statistically significant (p = 0.000) in both the post interventional studies.

Conclusion: Awareness campaigns about HPV, HPV vaccine and cervical cancer should be conducted at all educational institutions, mainly targeting the adolescent population.

Keywords: Adolescents, HPV vaccination awareness, School based educational interventions

Introduction

Cervical cancer ranks as the 2nd most frequent cancer among women aged between 15 to 44 years of age. Current statistics reveal that every year 122844 women are diagnosed with cervical cancer and 67477 die from the disease in India. 83.2% of invasive cervical cancers are attributed to Human papilloma virus (HPV) 16 or 18 and

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How to cite this article: Sneha LM, Scott JX, Kennedy AS et al. Impact of a Brief School Based Educational Intervention to Increase the Knowledge about HPV Vaccination among Adolescent Girls. Int J HealthCare Edu & Med Inform 2018; 5(3): 6-10.
about 5% of women in general population are estimated to harbor cervical HPV 16/18 infection at a given time.\(^1\)

India alone accounts for one quarter of the worldwide burden of cervical cancer.\(^2\) It is estimated that 1 in 53 women in India will acquire cervical cancer in their life time when compared to 1 in 100 women in developed countries.

Since the introduction of pap smears, there has been a significant decrease in the incidence and mortality from cervical cancer, which is only a secondary prevention. Cervical cancer is one of the few cancers that is preventable by vaccination and vaccination is the primary prevention. As a prophylactic vaccine against the HPV subtypes 16/18 would be an effective preventive measure to reduce the burden of cervical cancer, WHO recommended HPV vaccine to be included in national immunization schedule in 2009. Despite its safety and excellent efficacy profile, HPV vaccination uptake is still far below acceptable level in India. It is the lack of awareness about HPV, HPV vaccines and cervical cancer that is the major cause of the low percentage of HPV vaccination in India. Strong awareness levels among parents and adolescents are associated with and are predictive of future adolescent vaccination.

Health education programmes are effective for all the 3 levels of prevention- primary, secondary and tertiary. They help in encouraging adoption of healthy life styles, reduces risky behavior and promotes effective utilization of available health services. Interventional educational programmes conducted at educational settings helps in targeting more and the right population and these participants have more influential role in disseminating the information to their family and friends, thereby adding up to the goal of spreading awareness to maximum number of populations. Interventions that improve the understanding of HPV and increase the positive attitude towards HPV vaccination, increases the vaccination coverage among such population.

Hence, we wanted to assess the knowledge of human papilloma virus and attitude towards HPV vaccination among adolescent girls and the effect of a short educational intervention on improving the knowledge and thereby increasing the acceptance of the vaccine.

Methodology

A cross sectional study over three months period, was conducted among adolescent girls in the age group of 14-18 years, in secondary and higher secondary schools both in rural and urban areas. The study was conducted as a part of Chancellor summer research project study for undergraduate medical students of our institution. The study was approved by the Ethics committee of our institution. We obtained consent from the heads of the respective schools to conduct the study. A questionnaire was developed based on inputs from experts and from previous studies. The questionnaire was based on the facts about etiology of cervical cancer, preventable nature of cervical cancer, availability of vaccines, dosage of vaccines, target population for vaccination and efficacy of vaccines. We conducted the study among 4 schools and covered a population of 984 adolescent girls. They were informed of their rights of not willing to participate in the study. After obtaining verbal consent, the participants were asked to fill up a questionnaire and the same was collected. Then, they were given a short live presentation of standardized educational slides of 30 minutes duration by a health professional, which had information for all the questions and basic facts about human papilloma virus and cervical cancer. To evaluate the impact of the educational intervention on the attitude of participants towards cervical cancer and its prevention, a post education questionnaire was administered immediately after the presentation. To assess the retention of knowledge, the same was given after one month of the presentation.

Data Analysis

All the 3 completely filled questionnaires were collected and data were analyzed using SPSS software. out of 984 participants, only 743 had duly filled in all the particulars in the 3 questionnaires. Chi square tests were used to evaluate the association of various factors like parental education, parental socio-economic status, urban or rural locality and access to social network to the awareness about HPV and cervical cancer.

Results

Out of the 984 participants, only 743 questionnaires were found to be valid. Out of the 743 participants, 35% were in the age group of 14-16 years and 64% in the age group of 16-18 years. The baseline demographic details of the participants are shown in Table 1. Knowledge of the participants about HPV, cervical cancer, vaccine availability and vaccine efficacy are shown in Table 2. The mean test scores (maximum 8) was not significantly different among participants from urban or rural group. Nor did their parental education or socio-economic status had a statistical significance over the mean test scores. Though 70% of the participants had access to social network and 94% of them had been a regular user of social network, the mean test scores were not high in the group who were using social network. Among the study population, only 0.4% had received the HPV vaccination and only 32% knew that cervical cancer was preventable, only 34% were aware of the HPV vaccine availability and 58% had expressed their desire to get vaccinated. In the post intervention study, 85% wanted to get vaccinated and one month later, 76 % were still willing to get vaccinated. The mean test scores were statistically significant (<0.000) in both the post intervention study population.

The attitude of the participants towards HPV vaccination and HPV awareness is shown in Table 3.

Discussion

The study demonstrates the poor knowledge, awareness
and attitude of the adolescent girls towards HPV vaccination. Though HPV vaccine has been introduced in 57 countries by 2013, only Australia, Great Britain and Portugal, that have school-based vaccination programmes have achieved the highest (80% or greater) female vaccination coverage rates. Clear benefits of mass vaccination in terms of reductions in viral prevalence and associated disease burden have been reported from countries with national HPV immunization programmes. Even in high income countries like France and United States, where the HPV vaccine is included in national immunization schedule, the 3-dose vaccine coverage has been as low as 28.5% and 34% respectively.4,5

Though, numerous data’s regarding the incidence of various malignant conditions associated with HPV is available, the immunization rates for HPV vaccine coverage in females by birth cohort in India is still not available.6

In India, HPV vaccine is included in category II, to be offered to all eligible females who can afford the vaccine. In addition to the cost effect and other factors like societal, religious and ethical issues, poor knowledge about HPV and its disease burden also contribute to the low vaccine coverage in a country like ours. Adolescent group population are the right targets for educational interventions as they are prone for HPV infection due to the high-risk behavior and they are in the exact age group for successful vaccination outcome.

Kingston et al. in his study among health science students in Malaysia, identified family and friends (28%), media (28%) and internet (14.2%) as the main source of information and only 12% knew from health professionals and clinics.7 In our study, school teachings formed a main source of information (42%) followed by family and friends (29%) and media (26%) and none from health care professionals, in concurrence with study by Pandey et al where medical school teachings (42.9%) formed the major source of information, followed by internet (29.9%), friends (16.8%) and newspapers (16.8%).8

| Characteristics                  | n (%)     |
|----------------------------------|-----------|
| **Age**                          |           |
| 14-16 years                      | 265 (35.6)|
| 16-18 years                      | 478 (64.4)|
| **Mother’s educational status**  |           |
| Elementary                       | 83 (11.1) |
| High School                      | 214 (28.8)|
| Graduate                         | 302 (40.6)|
| Post Graduate                    | 144 (19.3)|
| **Mother’s occupational status**|           |
| Housewife                        | 548 (73.7)|
| Professional                     | 43 (5.7)  |

Table 1. Demographic details of the participants

In a systematic review of educational interventions to increase HPV vaccination by Linda et al., the outcomes of educational interventions among adolescents and parents were compared.9 All 5 of the adolescent education studies showed significant improvement in vaccination intention in contrast to no improvement in the studies targeting parents. But none of the 5 studies involving the adolescents had evidence to prove that the change in attitude were durable enough to impact vaccine uptake. In a study by Doherty et al. that included a follow up assessment of education study, the higher intention to be vaccinated that was seen post intervention was found to be extinguished after 1 month.10 This is in contrast to our study, where the follow up assessment done after 1 month of educational intervention still revealed higher percentage of participants (76.1%) expressing their willingness to get vaccinated.
Gottvall et al. and Patel et al. who used receipt of first dose of HPV vaccine as primary outcome of educational trials, could not find significant increase in vaccine uptake after the educational interventional studies among adolescents.\textsuperscript{11,12} This was attributed to the fact that all the interventions were completed in a single session with little or no reinforcement later, and they were not robust enough to affect vaccination behavior in these adolescents who are yet to receive their first dose. But Vanderpool et al has demonstrated that a single session education intervention would help in completing the 3-dose series in those who had already received the first dose and thereby improves the compliance.\textsuperscript{13}

In our study, in the pretest questionnaire, the main obstacle for HPV vaccination was the inadequate information about the vaccine (54.8%), followed by worries about the complication of vaccination (19%) and efficacy of the

\begin{table}
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\begin{tabular}{|l|c|c|c|c|}
\hline
Questions & Pre-test n (\%) & Post-educational intervention test 1 n (\%) & Post-educational intervention test 2 n (\%) & P value \\
\hline Would you like to receive information about cervical cancer and vaccination? & & & & \\
Yes & 590 (79.5) & 681 (91.8) & 653 (88) & P =0.000 \\
No & 152 (20.5) & 61 (8.2) & 89 (12) & \\
\hline Would you like to get vaccinated against Human Papilloma Virus (HPV)? & & & & \\
Yes & 436 (58.8) & 631 (85) & 565 (76.1) & P = 0.000 \\
No & 306 (41.2) & 111 (15) & 177 (23.9) & \\
\hline Would you recommend HPV vaccination to other eligible population in your family? & & & & \\
Yes & 243 (32.7) & 682 (91.9) & 609 (82) & P = 0.000 \\
\hline What is the most important obstacle that would prevent you from being vaccinated against HPV? & & & & \\
High cost & 63 (8.5) & 336 (45.3) & 261 (35.2) & P = 0.000 \\
Worry about complications of vaccination & 141 (19.0) & 133 (17.9) & 147 (19.8) & \\
Inadequate information & 405 (54.6) & 132 (17.8) & 174 (23.5) & \\
Not sure about the efficacy of vaccine & 78 (10.5) & 71 (9.6) & 75 (10.1) & \\
Family restrictions & 51 (6.9) & 70 (9.4) & 85 (11.5) & \\
\hline
\end{tabular}
\caption{Attitude of participants towards cervical cancer prevention: pre and post educational intervention response}
\end{table}

\begin{table}
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\begin{tabular}{|l|c|c|c|c|}
\hline
Questions & Pre-test n (\%) & Post-educational intervention test 1 n (\%) & Post-educational intervention test 2 n (\%) & P value \\
\hline Are cancers preventable & 220 (29.6) & 533 (71.8) & 425 (57.2) & P = 0.000 \\
Commonest cancer among women in India & 156 (21.0) & 486 (65.5) & 432 (58.2) & P = 0.000 \\
Is cervical cancer preventable & 242 (32.5) & 716 (96.5) & 668 (90.3) & P = 0.000 \\
What is the causative agent of cervical cancer & 341 (46.2) & 713 (96.2) & 527 (71.0) & P = 0.000 \\
Is there a vaccine for cervical cancer prevention & 258 (34.8) & 720 (97.0) & 663 (89.3) & P = 0.000 \\
What is the percentage of protection of these vaccines & 251 (36.5) & 417 (56.2) & 338 (45.5) & P = 0.000 \\
Which age group of girls should be vaccinated & 473 (66.8) & 617 (83.1) & 579 (78.1) & P = 0.000 \\
How many doses are supposed to be taken & 240 (35.4) & 632 (85.1) & 515 (69.4) & P = 0.000 \\
\hline Mean test score & 3 & 6 & 5.5 & P = 0.000 \\
\hline
\end{tabular}
\caption{Correct response of the participants towards their knowledge about cervical cancer and its prevention: pre and post educational intervention}
\end{table}
vaccine (10.6%), whereas in the post tests, the cost of the vaccine (45.3%-35%) was cited as the main obstacle. In our study, the concerns about the complications of the vaccines had not varied much before (19.1%) and after (17.9%) the intervention, thereby highlighting the fact that more weightage should be given to allay the anxiety about the vaccine related side effects among adolescents. A study on African- American adolescents by Hamlish et al. reveals that some of the common reasons cited for low vaccination rates are unfamiliarity of the mothers about HPV, doubts about vaccine safety and efficacy, considering vaccine as less urgent and inadequate information regarding vaccine in advertisements.14

Our study demonstrates that as knowledge of HPV and cervical cancer improves, so does the acceptability for the vaccine. Though the recent studies suggest that knowledge alone does not increase HPV vaccination, it has been accepted that knowledge is the basic requirement to increase awareness.15

However, we do realize that acceptability of vaccine cannot be confirmed unless it translates into actual uptake of vaccine – a fact, which needs long term follow up to see how many of those who received educational intervention took up vaccination. This warrants that such educational interventional programmes should not be a onetime event but a regularly scheduled event, and be a part of all the educational institution’s academic activity, conducted every 6 months or 1 year so that all the adolescent population are adequately exposed to the knowledge about HPV and its vaccination.

Conclusion

As HPV vaccination is not being a part of national immunization schedule, awareness campaigns about HPV, HPV vaccine and cervical cancer should be conducted at all educational institutions, mainly targeting the adolescent population and mass vaccination should be practiced at schools to augment the HPV immunization programme and thereby reduce the burden of disease in a resource limited country like ours.

Conflict of Interest: None

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Date of Submission: 2018-09-14
Date of Acceptance: 2018-09-29