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HEALTH EDUCATION REGARDING HUMAN PAPILLOMA VIRUS (HPV VACCINE) FOR PRIMARY PREVENTION OF CERVICAL CANCER FOR PARENTS OF ADOLESCENT GIRLS

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ABSTRACT

Objective: To assess the existing knowledge regarding causation and prevention of carcinoma cervix and to increase their awareness though a health education program addressing prevention especially by HPV vaccination among teachers and parents of school children.

Material and Methods: This was a cross sectional interventional study conducted in St. Joseph's of Cluny School, in Puducherry. Health education regarding carcinoma cervix and its prevention was given by an illustrated lecture using powerpoint presentation and Question answer sessions. Pretest and post test questionnaire in Tamil (Local Language) and English was used. Study population was 325 mothers including school teachers.

Statistical Analysis: SPSS 16 was used. All categorical variables were presented as percentages and the pre-test and post test questionnaire were compared by using Chi square test.

Results: Knowledge of causation by HPV virus improved from 50% to 98% on post test ($p<0.001$). There was a significant improvement (80%) regarding dosage, side effects of the vaccine and 75% improvement regarding age of administration of vaccine. There was a significant improvement in knowledge regarding efficacy of the vaccine, place of availability and cost of HPV vaccine. Acceptability if the vaccine is provided through the schools was about 92% after the health education programme.

Conclusion: Though 50% were aware about the disease and its causation the knowledge regarding its prevention by HPV vaccination and its availability was poor at baseline. After the health education programme there was a statistically significant improvement in all aspects.

Key Words: Carcinoma Cervix, Primary prevention, HPV Vaccine, Health education, Parents of adolescent girls

INTRODUCTION

Cervical cancer is the most common cancer among women in India and is also the most common cuase of mortality when deaths due to cancer are considered. Approximately 510,000 new cases are diagnosed and 288,000 deaths are registered per year World wide. In India, 132,000 new cases were diagnosed and 74,000 deaths were accounted due to carcinoma cervix[1].

The cause for carcinoma cervix is well established and it is proven beyond doubt that that Human Papilloma Virus (HPV) is the causative agent in more than 95% of cases. There is long latent period as long as 20 years between the infection with pathogenic HPV and the development of cancer. Primary prevention of cervical cancer is being undertaken in developed World by using Quadrivalent or bivalent vaccine[2]. Australia was the first country since 2007 to provide free vaccination to the school going children and now more than 110 countries are implementing HPV vaccination . In India it is not yet incorporated in to child or adult national immunization schedule though it was approved by FDA as early as 2006[1,3] and is available in India. The public aware-

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ness about this modality of prevention is lacking although Indian Academy of Pediatrics Committee on Immunisation (IAPCOI) recommends offering HPV vaccine to all female children who can afford the vaccine (Category 2 of Indian Academy of Paediatrics categorisation of vaccines).

In this context, this study aimed to assess the existing knowledge regarding causation and prevention of carcinoma cervix and to increase their awareness and clear misconceptions though a health education programme addressing prevention especially by HPV vaccination. The target population was school teachers and parents of adolescent school girls.

MATERIAL AND METHODS

This was a cross sectional interventional study conducted in one of the best girl's schools (St. Joseph's of Cluny) in Pondicherrycherry after interacting with the principal and teachers. The summary of the importance of the programme was mailed to the Principal. The project was approved by our Institutional Scientific Committee and Ethics committee (JIP/IEC/SC/2013/3/398).

The programme was conducted in 2 sessions after the school hours. The school authorities informed to the parents of students class 6th to 10th to attend and participate voluntarily in the health education programme. However only mother's of the adolescent girls attended the programme. Though more than 500 mothers attended the programme, 325 were included in the study as per the sample requirement. The sample size was calculated assuming 50% would have knowledge. With 80% power , 5% alpha error and one sided hypothesis testing the sample size was estimated to be 305.

All subjects were approached personally by the investigators and oral informed consent was taken for inclusion into the study. They were told that the programme is being conducted to find out the awareness regarding cervical cancer and its prevention among them and information would be given about cause and prevention of the same by an illustrative lecture in English and Tamil and there will be a question and answer session at the end of the session They were also assured that the identity and the information provided by them would be kept confidential. A self administered questionnaire (In English and local language Tamil) was given to all participants (Pre-test) who gave informed consent for taking part in the study.(Annexure-1). An illustrative Lecture on prevention of carcinoma cervix and HPV vaccine administration and side effects was delivered by the principal investigator. Any doubts/queries were cleared to the participant by the investigator and co- investigators. Post test was conducted at the end of the programme. After the post-test activity was over, they were also given a had-out containing information regarding HPV vaccine .

Statistical Analysis

Data was processed by means of SPSS 16 and presented as proportions. All categorical variables like knowledge regarding Carcinoma cervix , HPV Vaccine were presented as frequencies or percentages The pretest and post test scores were compared by using Chi square test. Differences in the proportions along with 95% confidence intervals is expressed .All statistical analysis was carried out with 5 % level of significance and p value of <0.05 will be considered as significant.

RESULTS

Table 1 shows the awareness of the disease causation and its prevention. Three hundred and twenty five people participated in the study Eighty percent of them know about the disease can cause death and it is preventable. But only 50% knew the causative agent and the vaccine availability to prevent it. After the lecture (health education programme) this proportion increased to 97%. Similarly correct knowledge of causation by HPV virus improved from 50% to 98% on post test ($p<0.001$).

Table 2 shows the knowledge regarding vaccine administration. In pre-test, 20% were aware about the age of administration of vaccine; seven percent knew about the number of doses. Twelve percent had awareness regarding the precautions to be taken when vaccine is administered. Twenty percent responded that it can be administered along with other vaccines and 40% felt that it is very effective. Six percent had correct knowledge regarding side effects and only 2.5 % answered correctly about other advantages of vaccine. After the lecture (post-test) almost all (99.7%) were clear regarding the age of administration of HPV vaccine and 99% were sure of the number of doses and frequency. Ninety three percent came to know about the other advantages of preventing all HPV related cancers. This is as against the pre-test awareness of 2.5%. Eighty one percent were aware that it can safely be administered along with other vaccines and 77% learnt the precautions to be taken when HPV vaccine is administered. Their confidence levels increased by 80% regarding side-affects. Knowledge regarding effectiveness of vaccine is increased by 32%. Knowledge of vaccine and vaccination improved significantly after the health education session. The improvement in knowledge varied from 52% in case of co-administration of other vaccines to a maximum of 94% regarding the number of doses to be administered. There was a significant improvement (80%) side effects of the vaccine and 75% improvement regarding age of administration of vaccine.

Knowledge regarding Vaccine availability, acceptability and Cost is shown in Table 3 There was a significant improve-

ment in knowledge regarding place of availability and cost of HPV vaccine following the health education session. Though the parents' awareness regarding HPV vaccine was poor at baseline, two thirds (62%) were willing for vaccination for their children, thereby safeguarding their health. Acceptability of HPV vaccine for their children improved by around 35% and at the end of the session almost all the participants were willing to vaccinate their daughters. Similarly, acceptability if the vaccine is provided through the schools was about 92% after the health education programme.

DISCUSSION

Cervical cancer is the commonest cancer among Indian women and the mortality rates are high due to late diagnosis especially in socioeconomically disadvantaged population. In India though the prevalence of HPV is less when compared to Asia and World, Indian women were found harbor high risk HPV types especially 16 and 18[1] thus the Indian women are at increased risk of developing invasive cancer. Even though the vaccine is available in India because of the misconceptions and misinterpretation of few deaths in vaccinated tribal girls, unrelated to the vaccine had come as a major barrier to its acceptability even among the educated masses. The awareness among public is also lacking regarding cancer prevention vaccine though the coverage of other vaccines like BCG and Polio is more than 80%. The main barrier in India is its nonavialability and recommendation in the Government hospitals. The awareness among public is poor as there are no public health education programmes regarding HPV vaccine. Literature review showed that schools are the best places to educate the adolescents and their parents/ legal guardians[4]

Pandey D and colleagues assessed attitudes toward HPV Vaccine among 641 medical students. Eighty five percent knew about the preventive aspects and 75% were only aware of the vaccine availability. The barriers for acceptance of vaccination in this study were fear of side effects and not knowing the efficacy of the vaccine and more than 57 % agreed about lack of proper information[5]. This reveals that even among the medical community the knowledge regarding HPV vaccine is not optimum. In developed countries patient and public education programmes are in place and thus the vaccine acceptability has increased but still some barriers are noted as the parental consent is necessary though some schools in US and Australia made it a mandatory issue An online survey of house hold parents regarding knowledge, attitudes and intention to vaccinate their adolescent children revealed that the knowledge is high. But only 19% had vaccinated their daughter(s), 34% intended to, 24% were undecided, and 24% had decided against vaccination[6].

Even though many women knew about the Pap test as a screening modality for carcinoma cervix most of them (85%) did not know the relationship between the cancer and HPV. After the education programme on HPV and its relationship to cancer 80% accepted to vaccinate their daughters. Those who refused to vaccinate their daughters requested more information and expressed fears about side effects.[7]

A study which assessed the knowledge of symptomatology, screening and preventive aspects of carcinoma cervix among urban women and students in India found no difference among both these groups. Only 20% were aware that carcinoma cervix could be prevented by vaccination. Up on advice 45% of students and 52% of urban women accepted vaccination and most of the study population were unaware about the consequences of untreated cervical cancer[8]. In Puducherry region, in the present study population, 80% of mothers of female school going children knew the disease can cause death but only 50% were aware of the causative agent and its prevention. At the end of the health education programme almost all participants knew the causative agent and its prevention and they are willing to vaccinate their daughters if the vaccine is provided.

Increasing awareness regarding HPV vaccine may or may not increase the acceptability. This aspect was investigated by Young Kyung Do and Ker Yi Wong in 2012 among US population among18 year and older and also among the women with female children .The estimations were done by a bivariate prohibit model. Comparing previously aware group and unaware group. The study concluded that among population who are unaware of the HPV Vaccine the acceptability is substantial as the effect of awareness on acceptability is 46%. Hence public health education programmes on HPV vaccination can strengthen the policies to promote HPV vaccination and remove the barriers[9] .This is evident in the present study also that at the end of the health education programme their acceptability further improved by 35%.

It is essential to present the evidence regarding the efficacy and safety to remove the fear of side affects as these are the main reasons for not accepting vaccine10,11. The evidence from the studies in Western population reported that HPV4 (Gardasil) had high efficacy (>98%) for prevention of HPV 6-, 11-, 16-,and 18-related grade 2 or 3 cervical intraepithelial neoplasia (CIN2/3) or adenocarcinoma in situ (AIS), grade 2 or 3 vulvar intraepithelial neoplasia (VIN2/3), and grade 2 or 3 vaginal intraepithelial neoplasia (VaIN2/3) 12 . Regarding safety the post-licensure safety data was similar to pre-licensure data and the side effects are minimal. Post licensure safety data from the Vaccine Safety Data link study, included data of >600,000 HPV4 doses given. There was no statistically significant increased risk for the outcomes studied, including Guillain-Barré syndrome, stroke, venous thrombo-

embolism, appendicitis, seizures, syncope, allergic reactions, and anaphylaxis13. A systemic review and metaanalysis on the safety and efficacy of HPV vaccine showed that the vaccine is highly effective in the prevention of HPV associated pre-cancerous lesions with minimal side –effects14

The rationale of efforts to increase the awareness regarding HPV vaccination is further supported by the evidence of increasing HPV etiology among other cancers like oropharengeal, anal and penile. It is reported that approximately 15,000 HPV 16 and 18 cancers occur in women 7,000 HPV 16 and 18 associated cancers occur in men in United states and hence the ACIP recommends HPV vaccination of male children beginning at 9 years and also adults up to 26 years[15]

The above facts need to be put forward to the policy makers in the department of Health and Family Welfare and also to the Public through the Health Education Programmes especially through NRHM (National Rural Healyh Mission). Once upon a time it was made aware through health education that cancer was curable only if detected at early stage but know we should make the Public aware that it is preventable as well, like Tuberculosis by Primary vaccination.

School based vaccination programmes are successful in coverage of all three doses of vaccination and in UK the implementation of HPV vaccination was initiated in Schools[16.]

Parental support/ Mother's support in school based HPV vaccination is encouraging as most of the mothers have supported such a programme[17,18]. In the present study also 91% supported school based HPV vaccination. Hence a school based health education pregramme for adolescents and their parents to increase the awareness regarding prevention of carcinoma cervix and other HPV related cancers incorporating HPV Vaccine provision is the need of the hour.

WHO position paper on HPV vaccines recommended its introduction in to routine national immunisation schedules as a public health priority[19].A systematic review which assessed the knowledge, awareness and acceptability of HPV vaccine in Sub Saharan Africa concluded that there was a high acceptability of the vaccine and low levels of knowledge and awareness. The review identified six countries which met the criteria for GAVI (Global Alliance for Vaccines and Immunizations) alliance for financial support of the HPV vaccination programme and they have sucessfully introduced free HPV vaccination programme in their country[20]. The 2 criteria were 1. A DTP3 threshold of 70% national coverage (WHO/UNICEFestimates) and 2. a pilot demonstration of the ability to deliver a complete multi-dose series of vaccines to at least 50% of the target vaccination cohort in an average sized district in a country. India also should implement and provide low cost HPV Vaccination especially to low socioeconomic population as the incidence and mortality of of carcinoma cervix is high[1]. Many states in India would meet the eligibility criteria put forward by GAVI alliance.

CONCLUSION

Though 50% of the study populations were aware of the causation of carcinoma cervix and its prevention, the knowledge regarding the HPV vaccine availability, administration and side effects is poor. After the health education programme there is a great improvement in their knowledge in all aspects especially HPV vaccine administration, availability and acceptability. It is very encouraging that more than 90% are willing to vaccinate their children if the vaccine is provided at Schools.

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Table 1: Knowledge regarding Carcinoma Cervix

Knowledge regarding Carcinoma cervix	Pretest (n=325)		Post-test (n=325)		p value	Difference in proportions (95% CI)
	n	%	n	%		
Death due to Cancer cervix	260	80	314	96.6	<0.001	16.6% (11.6% - 21.5%)
Preventable cancer	260	80	314	96.6	<0.001	16.6% (11.6% - 21.5%)
Causation by HPV Virus	155	47.7	317	97.5	<0.001	49.8% (42.9 - 56.6)
Availability of vaccine for prevention	159	48.9	307	94.5	<0.001	45.6% (38.7- 52.5)

Table 2: Knowledge regarding HPV vaccine

Knowledge about HPV vaccination	Correct responses on Pretest N=325		Correct responses on Post-test N=325		p value	Difference in proportions (95% CI)
	n	%	n	%		
Age of administration	81	24.9	324	99.7	<0.001	74.8% (67.3- 82.2)
Number of doses to be taken	17	5.2	321	98.8	<0.001	93.6% (85.9-99.9)
Precautions to be taken after vaccination	38	11.7	252	77.5	<0.001	65.8% (58.2-73.4)
Administration along with other vaccines	91	28.0	263	80.9	<0.001	52.9% (45.2-60.5)
Side –effects	19	5.8	279	85.8	<0.001	80% (72.3-87.6)
Prevention of cancers other than cervix	8	2.5	303	93.2	<0.001	90.7% (83.0- 98.3)

Table 3: Knowledge regarding accessibility and acceptability regarding HPV vaccination

Knowledge Tested	Correct responses on Pretest N=325		Correct responses on Post-test N=325		p value	Difference in proportions (95% CI)
	n	%	n	%		
Place of availability	5	1.5	305	93.8	<0.001	88.0% (80.3-95.7)
Cost of vaccine	3	0.9	290	89.2	<0.001	88.3% (80.4-95.7)
Provision by Government(NO)	145	44.6	245	76.4	<0.001	30.7 (23.3-38.3)
Vaccine is effective (YES)	128	39.4	231	71.1	<0.001	31.7% (24-39.3)
Acceptability for own child (YES)	200	61.5	312	96.0	<0.001	34.5% (28.2-40.8)
Acceptability if made available at school at your own cost (agreed)	217	66.8	297	91.4	<0.001	24.6% (18.3-30.8)

ANNEXURE !

QUESTIONNAIRE

1. Are you aware that many women die due to cancer cervix and it is a preventable cancer ? Yes/ No
2. Do you know that cancer cervix is caused by a virus? Yes/ No
3. Are you aware that a vaccine called HPV vaccine is available in India as a preventive measure for cervical cancer? Yes/ No
2. At what age this vaccine is to be given?
3. How many doses need to be taken?/how many times one needs to take?
4. Does it cause any harm? Or serious side effect? YES/NO
5. Any precautions one should take after vaccination?
6. Can be it be given along with all other vaccines? Yes/ No

7. Does it prevent any other cancers or only cancer cervix?
8. Is the Govt providing this vaccine like Polio and DPT etc? Yes/No
9. Do you know where the vaccine is available and how much it costs?
10. Do you think if all the doses of vaccine were taken correctly one does not get cancer cervix in their lifetime/ Yes/ No
11. Would you like your child/your student to receive this vaccine?
    If yes------ Write why do you think so—
    If no-------- please write your fears /doubts
12. If the vaccine is made available in school would you like your child to receive it at your own cost? Yes/ No.

Thank you for your participation and the information you have given will be kept confidential and will be anonymised in publication