HPV VACCINATION AWARENESS AND ITS RELATION TO ORAL AND OROPHARYNGEAL CANCER: A SINGLE CENTRE STUDY

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ABSTRACT

Background - The recently developed HPV vaccine is highly effective against the HPV virus. It has met widespread acceptance amongst healthcare and public health professionals. However, there are still social barriers to vaccination that hampers the effects of preventing the disease caused by HPV. The primary goal of this study was to evaluate the survey responses regarding the knowledge, awareness, and vaccination status among dental professionals and students in a local population and to emphasize the relationship between HPV and the increasing incidence of oral and oropharyngeal cancers in the current scenario.

Methodology - This study was a prospective analysis of a questionnaire collected from the dentist and dental students at The Faculty of Dental Sciences, Sri Ramachandra Institute of Higher Education and Research, Porur, Chennai, Tamilnadu, India; regarding their knowledge, awareness, and Human Papilloma Virus (HPV) - vaccination status.

Results - 96% of the participants were aware of the HPV and only 4% were unaware of the virus. About 18.7 % of the participants were unaware of the modes of transmission of HPV. Only 66.6 % knew that HPV - 16 and 18 were responsible for Oral and cervical cancers.

Conclusion - Understanding the barriers and hesitancy to vaccination is the crucial step to designing strategies that may aid in enhancing the vaccination

Keywords – Human Papilloma Virus, HPV vaccine, Oral and oropharyngeal cancer

INTRODUCTION

HPV is a non-enveloped, double-stranded, circular DNA virus associated with various genital and aero-digestive diseases, including warts, laryngeal papilloma, and cervical cancer⁴. Although most HPV infections resolve spontaneously, relentless infection by Human Papilloma Virus (HPV) strains 16 and 18 can cause Oral and cervical cancers¹. HPV 16 and 18 are globally responsible for 85% of head and neck carcinomas⁵. Three cancer locations in the head and neck have been linked with HPV: oropharynx, oral cavity, and larynx⁵. Around 30% of oropharyngeal cancers are caused by HPV⁵. The prevalence of HPV infection and oral cancer is significantly higher throughout the world¹. The preponderance of these HPV strains can vary by way of socio-economic factors, including the geography and the ethnic group affected¹.

Recent systematic reviews and meta-analyses have shown convincing evidence of significant reductions in HPV infections in geographical areas with increased vaccination, which will possibly facilitate both clinical protection and herd immunity within that population⁶.

The World Health Organization (WHO) has necessitated the global elimination of oral and cervical cancer as it is preventable with a well-known etiological factor. The various levels of prevention available to prevent this type of cancer are - primary prevention by HPV vaccination and sexual education, secondary prevention by screening and treatment of carcinoma in situ, and tertiary prevention using timely diagnosis and prompt treatment. Primary prevention with vaccines is pertinent to young adolescent girls, and secondary prevention with screening is for women⁷.

Though the HPV vaccination is a successful public health intervention, the level of community protection achieved through it is still considerably lower¹. HPV vaccination rates are still lower regardless of the availability of vaccines with well-known safety and efficacy¹. Measuring the rates of vaccination can be challenging and entail different measures to quantify the impact (Table - 1)¹.

The common barriers to vaccine acceptability are socio-demographic characteristics (e.g., age, education, race, marital status, pregnancy (or trying to conceive)), awareness and dogmas (e.g., perceived lack of need, religious or community influences, fear of side effects), competing priorities (e.g., child-care, funding), apprehension about the vaccination process (e.g., pain or fear of needle pricks)¹. Other challenges are information and consent process, vaccination

setting, anxiety regarding privacy and pain during vaccination, financial constraints, social norms, and values¹.

Only a small number of studies have evaluated the familiarity, understanding, and acceptance of HPV vaccination among undergraduate dental students, post-graduate residents, and practitioners. These studies have evaluated and found deficiencies in both knowledge and awareness among dental students specifically, that may be added to the dental curriculum⁶.

This study was a prospective analysis of a questionnaire collected from the dentist and dental students at The Faculty of Dental Sciences, Sri Ramachandra Institute of Higher Education and Research, Porur, Chennai, Tamilnadu, India; regarding their knowledge, awareness and HPV vaccination status.

MATERIALS AND METHODS

This study was a prospective analysis of a questionnaire collected from the dentist and dental students at The Faculty of Dental Sciences, Sri Ramachandra Institute of Higher Education and Research, Porur, Chennai, Tamilnadu, India; regarding their knowledge, awareness, and Human Papilloma Virus (HPV) - vaccination status. A total of 10 questions were framed and circulated among the dental students and faculties as Multiple-Choice Questions (MCQs) through a Google form for them to fill in (Figure 1).

RESULTS

The questionnaire was circulated in a randomized manner to 250 members. 96% of the participants were aware of the HPV and only 4% were unaware of the virus. 76.4% of the participants were aware of the modes of transmission of HPV and 18.7% were not sure about its mode of transmission and 4.9% of the participants did not know the route of transmission of HPV. Only 66.3% of the participants knew that HPV-16 causes oral and cervical cancer.

76.4% of the participants were aware that health care professionals are at risk of getting affected by HPV. 72.8% of the participants were aware of HPV vaccination. Only 82% of the participants were vaccinated for HPV. 82% considered the vaccination to be safe and necessary.

According to the data collected 15.2% of participants felt that there is lack of knowledge about the vaccine, 6% felt it's due to religious beliefs, 39.2% feared complications/side effects of the vaccine and 39.6% felt there may be any other causes like age range for the administration of the vaccine. Only 70.8% of the participants were aware of the vaccination guidelines for HPV (Figure 2). 96% of the participants felt that there is a need for awareness about HPV and vaccination against HPV (Figure 3).

DISCUSSION

Oral carcinoma, with an incidence rate of 16.1 adults per 1 lakh, is one of the leading malignancies worldwide with a varied geographic distribution³. Squamous cell carcinoma (SCC) is the most common oral malignancy³. The percentage of carcinomas of the tongue and palatine tonsils is on the rise among younger men (2 - 4%)². This increased prevalence of a

subdivision of oropharyngeal carcinoma can be associated with Human Papilloma Virus (HPV)². Among the head and neck cancers, a strong association with HPV infection is evident with oropharyngeal cancers, particularly tonsillar and basal tongue cancers². HPV-related carcinomas accounted for about 4.5% of all cancers⁵. These represent 8.6% of cancers in women and 0.8% in men and account for 6.7% of all cancers in low- and middle-income countries and 2.8% in high-income countries⁵. In 2012, of 636,000 HPV-related cancers worldwide, approximately 38,000 were head and neck cancers⁵.

Two vaccines approved globally are available in India; a quadrivalent vaccine (GardasilTM marketed by Merck) and a bivalent vaccine (Cervarix TM marketed by Glaxo Smith Kline). Both of these vaccines are made by recombinant DNA technology that produces non-infectious virus-like particles (VLPs) comprising of the HPV L1 protein⁹. An Indian quadrivalent HPV vaccine, which includes VLPs of HPV types 6, 11, 16, and 18 made by Serum Institute of India (Pune, India) is currently going through phase 2–3 trials for effectiveness and safety⁸.

70% - 90% of all HPV-related carcinomas can be prevented by universal high-coverage HPV vaccination⁵. Universal vaccination of girls is the most effective measure to evade cases of and deaths from carcinomas caused by HPV⁵.

CONCLUSION

Understanding the barriers and hesitancy to vaccination is the crucial step to designing strategies that may aid in enhancing the vaccination. Three effective methods - vaccination against HPV, screening for cancer followed by treatment of Carcinoma in situ will be highly beneficial in eliminating oropharyngeal cancer in India and worldwide.

CONFLICT OF INTEREST

None

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FIGURES

Figure 1 – Questionnaire

QUESTIONNAIRE
<p>1. Are you aware of Human Papilloma Virus (HPV)? YES/NO</p> <p>2. Are you aware of the modes of transmission? YES/NO</p> <p>3. Which HPV causes oral and cervical cancer? a) HPV-31 b) HPV-16 c) HPV-6</p> <p>4. Are you aware that health care professionals are at a risk of getting affected by HPV? YES/NO</p> <p>5. Are you aware of HPV vaccination? YES/NO</p> <p>6. Are you vaccinated for HPV? YES/NO</p> <p>7. Do you consider the vaccination safe/necessary? YES/NO</p> <p>8. If 'NO' what prevents you from getting vaccinated? a) Lack of knowledge about the vaccine b) Religious beliefs c) Fear of complications/side effects d) Others</p> <p>9. If 'YES' are you aware of the guidelines for getting vaccinated? YES/NO</p> <p>10. Do you feel that there is a need for awareness about HPV and vaccination? YES/NO</p>

Figure 2 - Responses for “Are you vaccinated for HPV?” **Figure 3 - Responses for “Do you feel there is a need for awareness about HPV vaccination?”**