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Awareness Regarding Human Papilloma Virus (HPV) Related Oral Cancers among Oral Health Professionals

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Abstract

Context: There is an evident causal relationship between HPV and Oral cancers with recent studies suggesting increasing trends of HPV related oral cancers worldwide. It is important for the Oral health professionals to have awareness regarding the HPV for prevention, early diagnosis and successful treatment of HPV related oral cancer. The aim of this study was to assess the knowledge and awareness of oral health professionals regarding HPV related oral cancer.

Method: A validated questionnaire was distributed among 200 oral health professionals. The information regarding demographic data, knowledge about HPV-oral cancer link and prevention was statistically analysed.

Results: Of the 200 participants, 55.5% thought HPV can cause oral cancers and 34.5% thought it was sexually transmitted. Only 39.5% believed it was important to differentiate HPV related and non-HPV related oral cancers. 54.5% were aware that HPV related oral cancers can be prevented by vaccination. However, 62.5% were not aware of the availability of HPV vaccine in India. Almost all (95%) of the respondents agreed with the need to educate OHPs regarding HPV related oral cancers and their prevention.

Conclusion: The results suggest there is a need for substantial increase in awareness among OHPs regarding HPV related oral cancers.

Keywords: Human papilloma virus, Oral Cancer, Oral health professionals, HPV Vaccine.

Introduction

Oral cancer is considered a worldwide public health problem. It is the sixth most frequent type of cancer, and two out of three cases occur in developing countries (1). In the Indian subcontinent, it ranks among the top three types of cancer (2). Oral squamous cell carcinoma (OSCC) accounts for 95% of oral cancers and it is

associated with avoidable etiological risk factors of which, the most important are tobacco, alcohol and betel quid usage (3). Recent research suggests that human papillomavirus (HPV) infection is an important factor for oral cancers. The transmission of HPV is through sexual contact. Among the various strains, HPV -16 is primarily associated with oral cancers(4).

Despite the decline in the incidence of oral cancers in the last 30 years, the incidence of oral squamous cell carcinomas in the oropharynx associated with HPV has increased (5). Recent literature shows 25.6% of all oropharyngeal cancers are associated with HPV infection (4).The increasing incidence of HPV is associated with alterations in the sexual practices over the past 40 years. OSCC associated with HPV has better prognosis compared to tobacco-related OSCC (6). Oral HPV is about three times more common in men than in women (7).

Early diagnosis of oral cancer is of prime importance as it is associated with a high mortality rate which could be related to the late presentation of patients with advanced disease. Although the oral cavity represents an easily accessible site for clinical examination, the lack of awareness in both the patients and health care professionals precludes early detection of these lesions (8). Oral health professionals (OHP) should have a basic understanding of HPV, its role in carcinogenesis and its association with oropharyngeal cancers (7).They play an important role in the prevention of HPV-associated OSCC by educating patients about its etiology and by informing about vaccines that are available , which can protect individuals from HPV infection (5).

Several studies in different parts of the world have assessed the knowledge and awareness of patients, dental students and oral health professionals towards non-HPV related oral cancer caused by different etiologic agents. However, very few studies have assessed their knowledge about HPV-related oral cancer (8). Since, oral health professionals may be key agents for promoting HPV prevention, the rationale of the current study is to assess :

1) their knowledge regarding HPV related oral cancers.
2) their attitude regarding screening of HPV related oral cancers.
3) their practices regarding prevention of HPV related oral cancers.

Methods

Collection of Data: The study comprised of 200 Oral health professionals that included general dentists, specialists in Oral Medicine, Oral Pathology, Oral Surgery and from other specialties.

Prior to conducting the study, the participants were provided with information regarding the conduct of the study and written informed consents were obtained. A self-administered validated paper-based questionnaire was provided which was duly filled by each Oral health professional.

Research Questionnaire: The questionnaire was validated prior to the survey and included a total of 14 close ended questions. The initial 5 questions were related to the demographic information of the participants like age, gender, academic/clinical experience, specialty and how they rate their knowledge regarding HPV. The next set of questions dealt with the knowledge regarding HPV associated OSCC and the transmission route of HPV infection. Further questions related to the site of occurrence and the importance of distinguishing HPV associated OSCC and OSCC from non-HPV origin. The final section assessed the knowledge regarding HPV vaccine, its availability in India and the willingness to educate patients regarding HPV-Oral cancer link and its prevention.

Statistical Analysis

Statistical Package for Social Sciences [SPSS] for Windows Version 22.0 Released 2013. Armonk, NY: IBM Corp., was used to perform statistical analyses. Chi Square Goodness of Fit test was used to compare the distribution of responses to the study questionnaire among study participants. Independent Chi Square Test was used to compare the responses to the study questionnaire between general dentists and specialist groups. The level of significance was set at $P<0.05$.

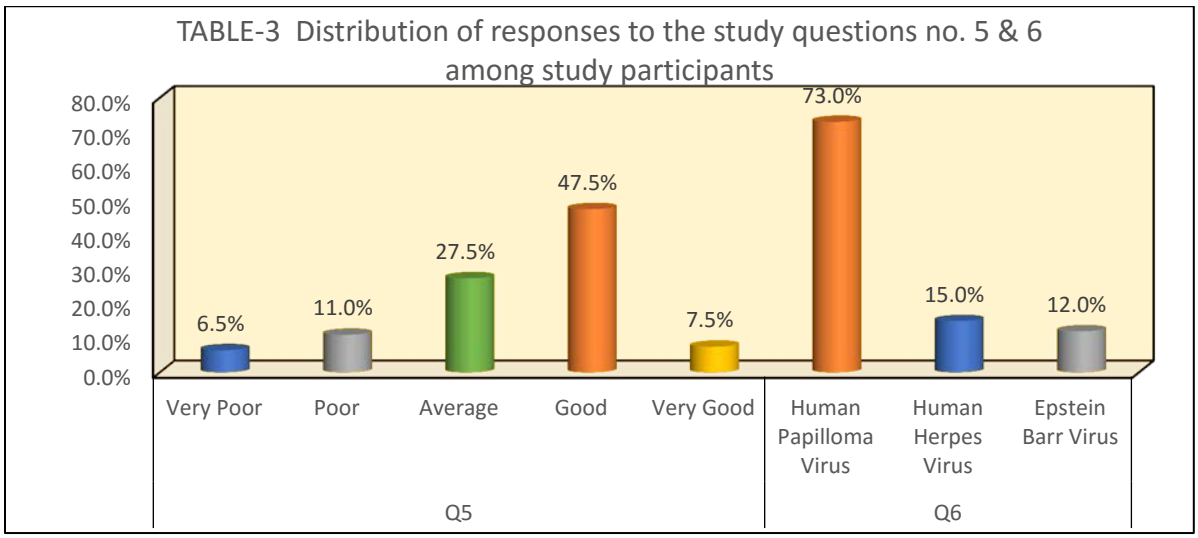
Results

Table 1- Distribution of gender among study participants			
Variable	Category	N	%
Gender	Females	119	59.5%
	Males	81	40.5%

The study was conducted involving 200 Oral health professionals where in 59.5% were females and 40.5% were males with ages ranging from 23-50 years and majority of the participants having < 5 years of experience. Table 1 shows the gender distribution.

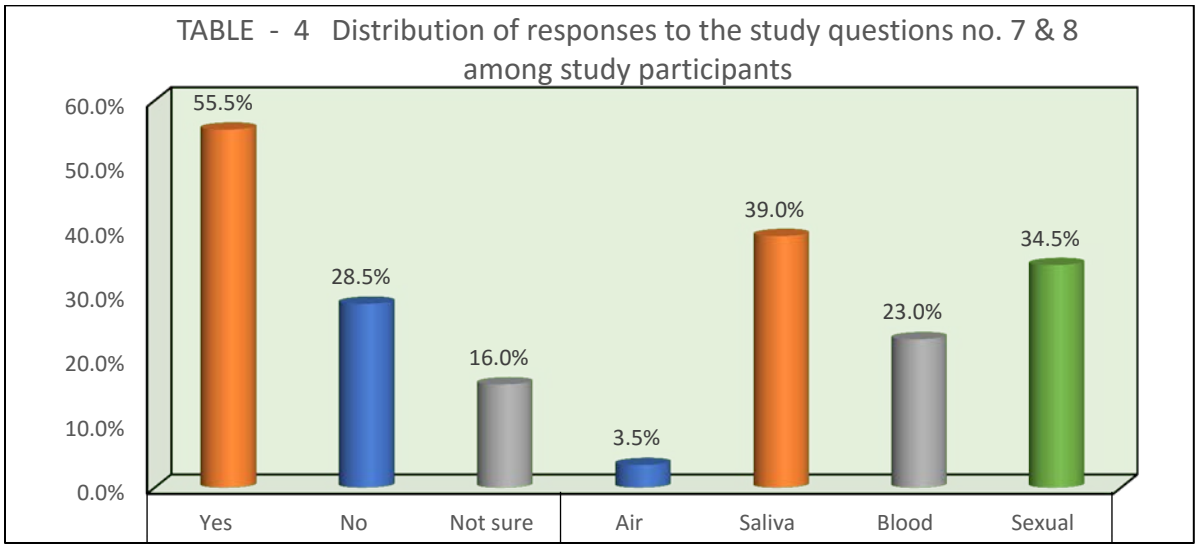
Table 2 - Distribution of specialization in dentistry among study participants			
Variable	Category	N	%
Specialization	General Dentist	88	44.0%
	Oral Medicine Specialist	9	4.5%
	Oral Pathologist	13	6.5%
	Oral Surgeon	24	12.0%
	Others	66	33.0%

Table 2 shows the distribution of specialization of the study participants where majority of them were General dentists (44.0%).

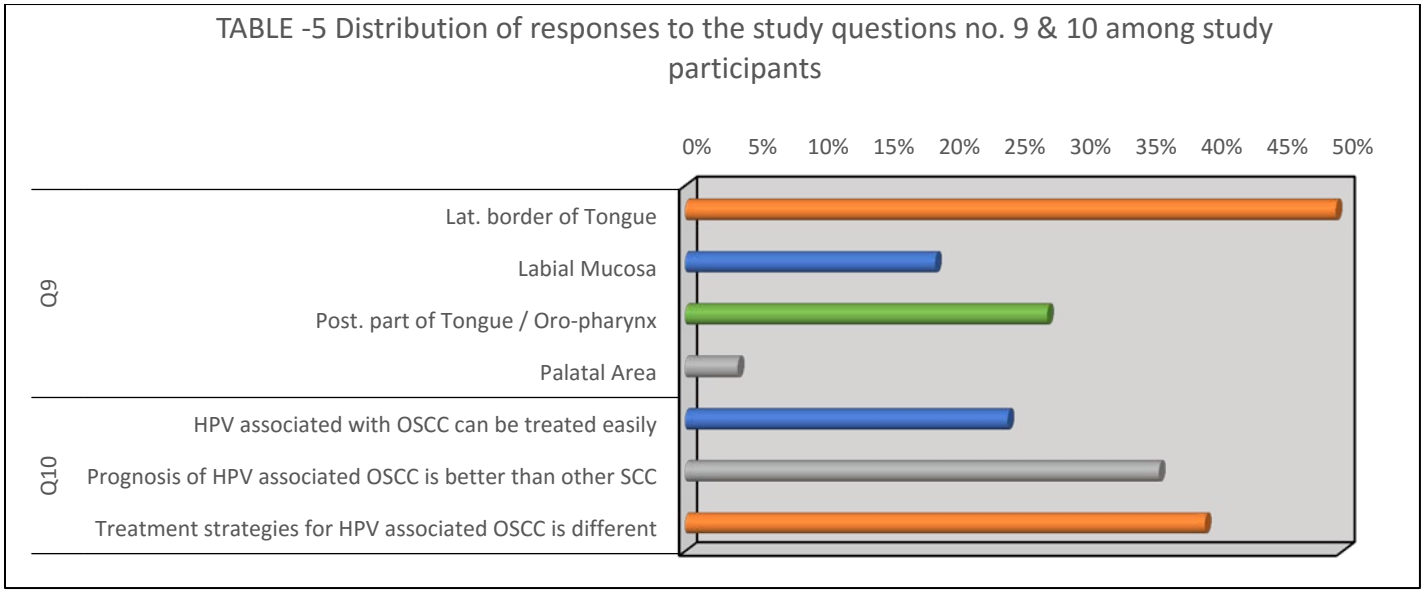


According to the responses of the participants to the study questions, 47.5% of them thought their knowledge

regarding HPV related Oral cancers was good and majority of them thought HPVs can cause Oral cancer (Table -3) which were statistically significant.

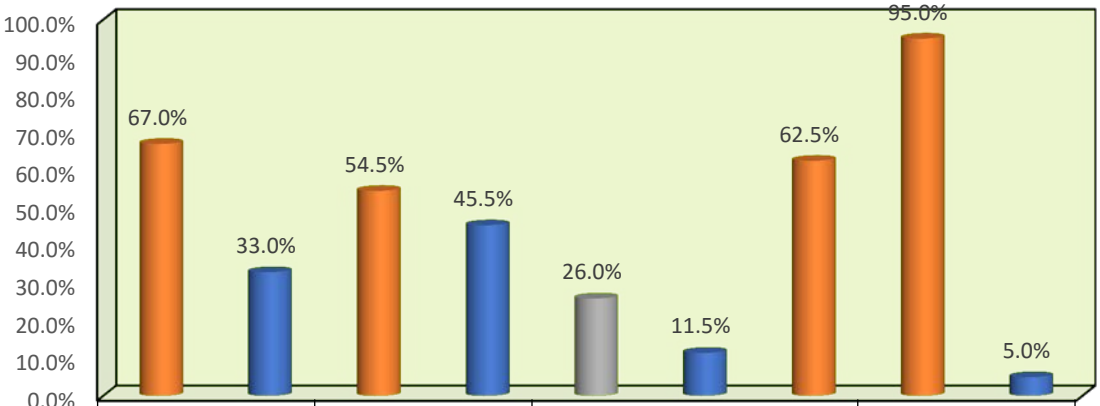


A considerable percentage of the participants(55.5%) said they agreed with the link between Oral cancers and HPV and 39.0% of them opined that the most common transmission route of HPV was through the saliva whereas 34.5% thought it was sexually transmitted (Table-4) which were also statistically significant.



When asked about the common site of occurrence, 49.5% of the participants identified it to be the lateral border of the tongue and only 27.5% thought it was the oropharyngeal region. Responding to the question on the why it was important to differentiate between HPV related and non-HPV related Oral cancers, 39.5% of them thought it was because the treatment strategies were different for both (Table-5). The results were statistically significant.

TABLE -6 Distribution of responses to the study questions no. 11 to 14 among study participants



Majority of the participants (67.0%) said they educate their patients about oral HPV infections. 54.5% were aware that HPV related oral cancers can be prevented by vaccination. Surprisingly, 62.5% of the participants were not aware of the availability of HPV vaccine in India and lastly, almost all the participants (95.0%) agreed on the need to educate Oral health professionals highlighting the advances and preventive strategies in the fight against Oral cancers (Table-6). The results were statistically significant.

Comparison of responses to the study questionnaire between general dentist and specialist group using Chi Square Test

Questions	Responses	General Dentist		Specialist		χ^2 Value	P-Value
		n	%	n	%		
Q5	Very Poor	6	6.8%	7	6.3%	6.651	0.16
	Poor	11	12.5%	11	9.8%		
	Average	27	30.7%	28	25.0%		
	Good	42	47.7%	53	47.3%		
	Very Good	2	2.3%	13	11.6%		
Q6	Human Papilloma Virus	63	71.6%	83	74.1%	0.399	0.82
	Human Herpes Virus	13	14.8%	17	15.2%		
	Epstein Barr Virus	12	13.6%	12	10.7%		
Q7	Yes	47	53.4%	64	57.1%	1.288	0.53
	No	24	27.3%	33	29.5%		
	Not sure	17	19.3%	15	13.4%		
Q8	Air	4	4.5%	3	2.7%	3.325	0.34
	Saliva	39	44.3%	39	34.8%		

Comparison of responses to the study questionnaire between general dentist and specialist group using Chi Square Test							
Questions	Responses	General Dentist		Specialist		χ^2 Value	P-Value
		n	%	n	%		
	Blood	16	18.2%	30	26.8%		
	Sexual	29	33.0%	40	35.7%		
Q9	Lat. border of Tongue	49	55.7%	50	44.6%		
	Labial Mucosa	16	18.2%	22	19.6%		
	Post. part of Tongue / Oro-pharynx	19	21.6%	36	32.1%	3.381	0.34
	Palatal Area	4	4.5%	4	3.6%		
Q10	HPV associated with OSCC can be treated easily	20	22.7%	29	25.9%		
	Prognosis of HPV associated OSCC is better than other SCC	34	38.6%	38	33.9%	0.535	0.77
	Treatment strategies for HPV associated OSCC is different	34	38.6%	45	40.2%		
Q11	Yes	59	67.0%	75	67.0%	0.000	1.00
	No	29	33.0%	37	33.0%		
Q12	Yes	49	55.7%	60	53.6%	0.089	0.77
	No	39	44.3%	52	46.4%		
Q13	Yes	23	26.1%	29	25.9%		
	No	7	8.0%	16	14.3%	2.011	0.37
	Don't Know	58	65.9%	67	59.8%		
Q14	Yes	84	95.5%	106	94.6%	0.068	0.79
	No	4	4.5%	6	5.4%		

On comparing the responses between General dentists and the Specialists, it was noted that both the groups had same knowledge irrespective of the specialization (Tables 7 and 8). The differences in their knowledge were not statistically significant.

Discussion

Oral cancer is a serious health problem with a multifactorial etiology. Studies have found that 10-20% of patients with Oral cancer are not related to tobacco or alcohol consumption suggesting other factors such as viruses to be implicated in Oral carcinogenesis (9). Infection has been recognized as a major cause of cancer worldwide. In February 2009, an expert working group reviewed infectious agents that are carcinogenic to humans and found that HPV was one of them (9,10). The Global burden of cancers caused by infections is estimated to 16%. HPV is estimated to be responsible for 30% of these cancers (11). The exact incidence of HPV cancers in

India has not been reported and it needs further research. However, according to Yete et al., the prevalence in India was 36.6% which is slightly higher than the global prevalence (12).

HPV is anticipated to be the most common risk factor for Oral cancers in the next decade. Adequate knowledge on Oral cancers among dental professionals is crucial, since early diagnosis is a decisive factor in reducing the morbidity and mortality from the disease (8). Thus, the assessment of their knowledge and attitude is critical to recognize the limitations of the current curriculum.

Recent research has indicated a strong association between HPV infections and oral cancers regardless of the use of tobacco and alcohol. The most common subtypes of HPV are HPV-16 and HPV-18. The transmission of HPV is through sexual contact. Oral HPV infection is more common in men in younger age group. According to Arora S et al., out of 179 participants, 165 believed that oral cancer can be caused by HPV infection (4). A survey was conducted in Spain (Lorenzo-Poura et al .) in which 75% of the participants affirmed there is a link between HPV infection and Oral cancers (5). In our study, a similar trend was noted with 73.0% of the Oral health professionals affirming the same.

HPV related OSCC has been frequently diagnosed in the oro-pharynx. Studies have found that 25.6% of all oro-pharyngeal cancers are related to HPV infection. Arora S et al. assessed the knowledge of Oral health professionals regarding the site of occurrence and found that 44% responded correctly as the oro-pharynx and 29% believed it was the lateral border of tongue. In their study, Oral Medicine /Oral Pathology specialists (56%) were more aware of the site as compared with other specialists and General Dentists (4). Whereas, in our study 27.5% of the participants identified the Oropharynx as the most frequent site of occurrence and 49.5% believed it was the lateral border of the tongue. Oral Medicine/ Oral pathology /Oral Surgery specialists (32.1%) were more aware of the site as compared to other specialties (21.6%).

Most importantly, HPV related OSCC is associated with better prognosis due to improved response to therapy and longer life span (6). The presence of HPV in oral cancer constitutes a positive prognostic marker. The favorable outcome of HPV related oral cancers might be attributable to the absence of field cancerization or enhanced radiation sensitivity. The better response could be because radiation and chemotherapy reactivate p53 which aids in the treatment of cancers (6,9). 36% of the participants in our study also agreed that the prognosis of HPV related OSCC is better than non-HPV related OSCC and 39.5% of them believed the treatment strategies for HPV related OSCC are different. These results were similar to a study by Arora S et al., where 43% of the participants suggested that treatment strategies were different for HPV related Oral cancers (4).

Prevention of HPV infection is of utmost importance in the management of oral cancers. Currently, three HPV vaccines providing protection against high-risk HPV types have been licensed by the FDA which are available in most countries. Bivalent and quadrivalent HPV vaccines were licensed for prescription use by Indian authorities in 2008 (12). These vaccines target the HPV-16 and HPV-18 subtypes by inducing humoral immune response to HPV (6). According to a survey conducted by Keerthana Baskar and T. Lakshmi, 72.7% of the participants were aware of HPV vaccination (13). In our study it was noted that, 54.5% of the participants thought prevention can be achieved by HPV vaccine. However, a majority (62.5%) of them were unaware of the availability of HPV vaccine in India.

Educational policies should provide information on the risk factors, prevention, early diagnosis and treatment of

HPV related oral cancer (2). In our study, 95% of the participants concurred that there is a need to offer continuing education programmes to dentists highlighling advances and preventive strategies in the fight against HPV related Oral cancers. These findings were in accordance with Arora S et al., who reported that 99% of the participants in their study agreed there is a need for continuing education programmes (4). According to a study by Pouso Alejandro et al., a majority of participants wanted to have a better education about the relationship of HPV-Oral cancer (5).

Conclusion: In this study, the Oral health professionals demonstrated lack of awareness regarding HPV-related Oral cancers. Thus necessary interventions including Changes in the Dental curriculum, conducting campaigns regarding HPV and continuing educational courses should be implemented to improve the standards.

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