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Prevalence and Epidemiological Variation of Oral Squamous Cell Carcinoma among the Population of Central Nepal

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ABSTRACT

Background: Squamous cell carcinoma (SCC) is the most common malignant neoplasm of the oral cavity and represents about 90% of all oral malignancies. Oral squamous cell carcinoma (OSCC) is an important cause of morbidity and mortality worldwide with an incidence rate that varies widely by geographic location. The purpose of this study was to identify any trends in prevalence at specific anatomic sites or within specific age or sex groups of OSCCs in Chitwan population of Nepal. **Methods**:The study covers the period between January 2016 and October 2018. OSCC cases were retrospectively analysed for site, age, gender and habits and the findings were formulated to chart the trends in Chitwan population. **Results**: The study revealed a male to female ratio of 2.45:1 with the largest number of OSCCs developing in the fourth and fifth decades of life. Most commonly affected site was the buccal mucosa (66.06%), followed by retromolar area (19%), floor of the mouth (10.41%), lateral border of the tongue (1.81%), labial mucosa (2.26%), and palate (0.45%). Smokeless tobacco habit was more prevalent than smoking tobacco in both men as well as women. Chi Square test was done to show association between different variables i.e. between gender to site and gender to habit and gender to different grades of cancer, which were found to be non-significant. **Conclusions**: Oral cancer is an important cause of morbidity and mortality worldwide with an incidence rate that varies widely by geographic location. Even within one geographical location, the variations are seen among groups categorized by age, sex, site or habit.

Keywords: epidemiology; oral squamous cell carcinoma; trends.

INTRODUCTION

Squamous cell carcinoma (SCC) is the most common malignant neoplasm of the oral cavity and represents about 90% of all oral malignancies.[1] Oral squamous cell carcinoma (OSCC) is an important cause of morbidity and mortality worldwide with an incidence rate that varies widely by geographic location.[2] In Nepal, oral cancer represents a major health problem constituting up to 40% of all cancers and is the most prevalent cancer in males and the third most prevalent in females. Variations in oral cancer trends in different geographical location, anatomic site, race, age and sex have been depicted by few authors.[2,3] Thus, descriptive oral cancer data for each specific geographic area is important understanding the extent of the problem by relating the burden of oral cancer to that of other cancers thereby, facilitating the evaluation of the allocation of resources for research, prevention, treatment and support services.[3,4] Despite several diagnostic and therapeutic advances, the overall incidence and mortality associated with OSCC are rising, with current estimates of age- standardized incidence and mortality being 6.6/100,000 and 3.1/100,000 in men and 2.9/100,000 and 1.4/100,000 in women, respectively.[5] There have been studies reported on the incidence and pattern of OSCCs from various parts of the world.[4-7] However, very few studies have been reported on the incidence and trends of OSCC in the Chitwan population. The purpose of this retrospective study was to identify any trends in the number of cases or incidence rates at specific anatomic sites or within specific age or sex groups in the Chitwan population and also to compare their trends with reports from other studies on OSCC.

METHODS

In this cross-sectional study, histologically verified 221 cases of OSCCs diagnosed between January 2016 and October 2018 were extracted from the archives of Department of Pathology of College of Medical Sciences. The anatomic sites included in the study were the tongue, floor of the mouth, hard palate, buccal mucosa, labial mucosa and retromolar area. Charts were made listing the age, sex, site and habits of two hundred twenty-one OSCC patients. A comprehensive analysis was done on the data collected and the results were formulated.

RESULTS

Of the 221 OSCC patients, men represented a higher proportion (157= 71.04 %) of OSCCs than women (64=28.95 %). The data for the present

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study was entered in the Microsoft Excel 2007 and analysed using the SPSS statistical software 21.0 Version. The descriptive statistics included percentage and frequency. The chi square test was used for the comparison between the different variables. The level of the significance for the present study was fixed at 0.05 with confidence level of 95%. Larger number of cases were seen developing in the 4th to 6th decade. Of all the sites involved in squamous cell carcinoma, buccal mucosa was the most common site affected (66.06%) while the least involved site was found to be the palate in this belt of Central Nepal (0.45%). The study revealed that major set of patients had the habit of smokeless tobacco (68.32%) than bidi or cigarette smoking habit (30.31 %). The analysis revealed that there seemed to be no inter-relationship between OSCC and age, OSCC and gender, OSCC and site & OSCC and habits as shown in (Table 1 to 4).

Table 1. Showing Variability Interrelationship between Diagnosis & Age.

Age	*Diagnosis*			$\chi 2$	*P value*
	WDSCC	*MDSCC*	*PDSCC*		
25-35	3(60)	2(40)	0		
36-45	61(84.7)	11(15.3)	0		
46-55	64(78)	14(17.1)	4(4.9)	9.679	0.289
56-65	41(75.9)	12(22.2)	1(1.9)		
66-75	5(62.5)	2(25)	1(12.5)		

Table 2. Showing Variability Interrelationship between Diagnosis & Gender.

Sex	***Diagnosis***			***χ2***	***P value***
	WDSCC	***MDSCC***	***PDSCC***		
Male	127(80.9)	27(17.20)	3(1.9)	2.145	0.342
Female	47(73.40)	14(21.90)	3(4.70)		

Table 3. Showing Variability Interrelationship between Diagnosis & Site.

Site	***Diagnosis***			***χ2***	***P value***
	WDSCC	***MDSCC***	***PDSCC***		
Buccal Mucosa	115(78.8)	26(17.8)	5(3.4)		
Lingual Mucosa	4(80)	1(20)	0		
Floor of Mouth	20(87)	3(132)	0	4.825	0.903
Retromolar Area	32(76.20)	9(21.40)	1(2.40)		
Tongue	2(50)	2(50)	0		
Palate	1(100	0	0		

Table 4. Showing Variability Interrelationship between Diagnosis & Habit.

Habit	**Diagnosis**			**χ2**	**P value**
	WDSCC	**MDSCC**	**PDSCC**		
No Habit	2(66.70)	1(33.30)	0		
Smokeless Tobacco	116(76.80)	31(20.50)	4(2.60)	2.04	0.727
Smoking Tobacco	56(83.60)	9(13.40)	2(3)		

DISCUSSION

The incidence and prevalence of Oral squamous cell carcinoma appears to be increasing with increasing incidence and mortality rates. Every year around 300,000 patients are diagnosed to have oral cancer worldwide.[4,7,8] Variations are seen in Oral squamous cell carcinoma with respect to the age, site, sex and habits within geographical location.[1,2,9] Overall prevalence rate in South East-Asia as given by WHO is 5.5%.[10] The present study revealed a male to female ratio of 2.45:1. Maximum incidence of OSCCs was seen in the 4th and 5th decades of life which was consistent with the findings reported by Mehrotra et al. (2008)[8] & Fali S. Mehta "et al" (1977)[11] confirming the data that oral cancer was a disease of the middle aged male and females (35-54 years). Despite the findings obtained, it failed to reveal any significant relationship between diagnosis and age which means that oral squamous cell carcinoma whether well differentiated, moderately differentiated or poorly differentiated is not age specific and can occur at any age. As regards the site of preference for intra-oral SCC, our study showed some degree of variation from other studies conducted at Spain, Canada, Scandinavia and some parts of India.[12,13,14] A retrospective study conducted by Manuel S and co-workers[15] , in 2003 at Regional Cancer Centre (RCC), Trivandrum, Kerala analysed one of the largest series of young patients under the age of 45 years having SCC of the oral tongue. In the present study, the buccal mucosa and retromolar pad were the most frequently involved sites (66.06% and 19% respectively), while the palate was the least commonly involved site (45%) which was consistent with the study done by Manuel S & co-workers[15]. The regional differences seen may be attributed to the exclusive use of chewing tobacco in South east Asia compared to smoking in the West.[14] The findings of the present study though did not revealed any relationship between OSCC and other variables ,which could be due to the changing habit trends in the females and these findings were consistent with the findings of the study done by Bhatta P[17], 1.35% of the patients showed no association with any habits like tobacco smoking or chewing in our study that could be due to factors like certain viruses as human papilloma virus, below par usage of fruits and vegetable & genetic predisposition, etc.[16]

CONCLUSIONS

This study was undertaken to present a comprehensive data on the trends of oral squamous cell carcinoma among Chitwan population. With changing trends in the habits significant rise in

prevalence of oral squamous cell carcinoma has been seen in Chitwan region. Different levels of tobacco and alcohol exposure, diet, socio economic circumstances, age, gender and sites are the causative factors in the differences seen in the incidence rates of OSCC in various populations globally. As dental professional cannot alter the race, ethnicity and age but the continuously changing lifestyle behaviours such as use of tobacco and alcohol should be addressed to profess the measures required in the prevention and early detection as it is the responsibility of oral cancer. The only drawback of this study was, neglect of knowledge of educational status of the individual as it would have appreciably influenced the results of the study.

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