Assessment of Oral Health Status among Head and Neck and Oral Cancer Patients in Rajasthan State: An Infirmary Based Cross-Sectional Study

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Abstract

Background: The increase in number of cancer patients and their poor oral health South East Asia especially in India has prompted us to undertake this retrospective study. The aim isto assess the oral health status of head and neck and oral cancer patients.

Materials and Methods: The present cross sectional descriptive study was conducted at the oncology and radiology department of SMS medical college and hospital, Rajasthan. Patients from all the districts of Rajasthan state are being referred to this centre. Data was collected through face-to-face interviews using a standardized questionnaire including socio-demographic variables, smoking, alcohol consumption, family history of cancer, infectious diseases, and diet. SPSS version 20 was used for the statistical analysis.

Results: Of the cohort, male and female patients constitute 88.43% and 11.57% respectively. 66.53% of the patients were having missing teeth. Decayed and filled teeth were found in 55.37% and 7.44% cases respectively.

Conclusion: The results indicate the existence of correlation between poor oral health status and HNC and oral cancer. The present study open new ventures for further longitudinal studies in the future considering other variables such as staging, nutritional status etc. should be conducted so as to make this situation more evident, determining clearly the role of poor oral health status as a risk factor for HNC and oral cancer. Prevention is the best possible way to fight cancer. Therefore focus should be on to have more health programs and initiatives that promote periodic oral examination.

Keywords: CPI; HNC; OHI-S; Oral health

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Introduction

Cancer is currently the cause of 12% of all deaths worldwide and is a significant global health problem with more than 10 million new cases and 6 million deaths each year worldwide. Among them, head and neck cancer (HNC) and oral cancer is a key form of cancer in India, accounting for 23% of all cancers in males and 6% in females [1]. Head and neck cancer is described as cancer of tonsil, pharynx, nasal cavity, salivary gland, hypopharynx, larynx and other. Oral cancer refers to cancer of lip, tongue, gingivae, floor of the mouth, palate (hard and soft), maxilla and cheek [2,3]. Smoking and alcohol consumption are widely documented as risk factors for HNC and oral cancer, but also nutrition, occupation, excessive exposure to ultraviolet light, human papilloma virus (HPV) and metabolic gene polymorphisms seem to have specific role for the development of oral cancer. Earlier epidemiological studies have provided evidence of the consequence of oral health status. Poor oral hygiene seems to cause additional cancer risk [4].

Maximum cancer cases are identified at later stages of the disease. Self-analysis and periodic visits to a trained professional are recommended for earlier diagnosis [5]. Brazilian guidelines recommend the promotion of oral hygiene and regular visits to dental care professionals as preventive measures. Cautious clinical examination of the mouth must be performed in all visits to the medical doctor, even if the complaints are not located there. High risk individuals (smokers and drinkers) should have their mouths systematically examined, and those with doubtful lesions must be immediately referred to a specialized reference centre so that the proper diagnostic procedures can be performed [6]. The oral health status of this medically compromised population is being published earlier but the sample size reported by these authors are little and consequently a need was felt by authors to verify the statistics on a large scale in this South Asian country with high prevalence of tobacco consumption.

Materials and Methods

The present cross sectional descriptive study was conducted at the oncology and radiology department of SMS medical college and hospital, Jaipur, Rajasthan, India. The study was conducted during the month of July-September 2014. Patients from all the districts of Rajasthan state are being referred to this centre. The study population was further classified into five geographical zones as shown in the (Table 1). The ethical clearance was obtained from the ethical committee of Surendera Dental College and Research Institute before commencing the study. An informed consent was signed by the patients who agreed to participate in the study. The selection of the patients for the current study was done by doctors in charge of the routine OPD, who had been briefed about the research protocol. The dental clinical examination was conducted by a single calibrated examiner for whom kappa statistics was determined 88% two days prior to study. Data was collected through face-to-face interviews using a standardized questionnaire applied to all cases. The questionnaire included socio-demographic variables such as smoking, alcohol consumption, family history of cancer, infectious diseases, and diet. The questionnaire was piloted on a group of twenty cases, and few adjustments were made before its application. WHO type III examination was carried out with the help of plane mouth mirror and CPITN (WHO) clinical probe. Out of 280 patients recruited, 242 were considered eligible according to the inclusion criteria i.e. histopathological confirmation, patients programmed for chemotherapy and radiotherapy and mouth opening of at least 25mm. Exclusion criteria were patients who had undergone previous treatment for HNC and oral cancer, HNC and oral cancer of unknown region, patients who had tumour at primary sites other than those established in the study and edentulous patients.

S.NO.	Zone	Covered
1	North	Sri Ganganagar, Bikaner, Hanumangarh, Churu, Jhunjhunu, Sikar
2	South	Tonk, Bundi, Bhilwara, Rajsamand, Chitorgarh, Pali, Udaipur, Dungapur, Banswara
3	East	Jaisalmer, Barmer, Jalor, Sirohi
4	West	Alwar, Bharatpur, Dausa, Dholpur, Karauli, Sawaimadhopur, Jhalawar, Kota, Baran
5	Centre	Jodhpur, Nagaur, Jaipur, Ajmer

Table 1: Zone wise distribution of Rajasthan State.

After compiling the socio-demographic factors, the following explorations were performed in the subjects:

a. Evaluation of oral hygiene on buccal/labial and lingual/palatal surfaces of the selected index teeth was performed. Debris and calculus was assessed according to the Oral Hygiene Index- Simplified (OHI-S) [7].
b. Evaluation of the DMFT [8] index. The criteria used for the recording of decayed (D), missing (M), and filled (F) components were according to the rules of DMFT index (1997 modifications).
c. Evaluation of the gingival and periodontal status was done by using community periodontal index (CPI) [9]. The teeth were examined according to the criteria of CPI index.

Statistical Analysis

SPSS version 20 was used for the statistical analysis.The statistical significance was determined by the Chi-square test, and level of significance was set at P < 0.05.

Results

Of the cohort, male and female patients constitute 88.43% and 11.57% respectively. The demographic characteristics are shown in (Table 2). 66.53% of the patients were having missing teeth. Decayed and filled teeth were found in 55.37% and 7.44% cases respectively (Table 3). Majority of the patients (66.94%) had poor oral hygiene status. Maximum patients with poor oral hygiene status fall in the 60-69 year of age group (21.9%) whereas ≥70 year of age group constitutes only 4.13% patients having poor oral hygiene status. There was statistical significant difference reported when oral hygiene status were tested with gender, where else no such difference was reported for age groups (Table 4). 45.87% of the patients were having CPI code 2. Highest reported CPI code 2 patients belong to 60-69 years of age group constituting 15.29% cases while least reported prevalent age group was ≥70 years constituting 8 (3.31%) cases. CPI code 4 was found only in 3 patients. There was statistical significant difference reported when CPI scores were tested with age groups and gender (Table 5).

Variable	Head and neck		Oral cancer		Total		x^2	p value
	N	N%	N	N%	N	N%		
Gender								
Male	78	32.23	136	56.2	214	88.43	0.20	0.7
Female	9	3.72	19	7.85	28	11.57		
Total	87	35.95	155	64.05	242	100		

Table 2: Gender group distribution among HNC and oral cancer patients.

Age group (years)	DMFT							
	D		M		F		DMFT	
	N	N%	N	N%	N	N%	N	N%
<40	25	10.33	16	6.61	5	2.07	46	19.01
40-49	25	10.33	30	12.4	7	2.89	62	25.62
50-59	48	19.83	43	17.77	4	1.65	95	39.26
60-69	36	14.88	60	24.79	2	0.82	98	40.5
≥70	0	0	12	4.96	0	0	12	4.96
Total	134	55.37	161	66.53	18	7.44	313	129.35

Table 3: Age group distribution of DMFT among HNC and oral cancer patients.

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Variables	Oral hygiene status						Total		χ^2	p value
Age group (years)	Good		Fair		Poor					
	N	N%	N	N%	N	N%	N	N%		
<40	5	2.07	11	4.55	21	8.68	37	15.29		
40-49	3	1.24	16	6.61	33	13.64	52	21.49		
50-59	3	1.24	23	9.5	45	18.6	71	29.34	14.5	0.07
60-69	0	0	16	6.61	53	21.9	69	28.51		
≥70	0	0	3	1.24	10	4.13	13	5.37		
Total	11	4.55	69	28.52	162	66.94	242	100		
Gender										
Male	7	2.89	64	26.45	143	59.09	214	88.43		
Female	4	1.65	5	2.07	19	7.85	28	11.57	7.9	0.02
Total	11	4.55	69	28.52	162	66.94	242	100		

Table 4: Gender and age group distribution of OHI-S among HNC and oral cancer patients.

CPI													
Age group (years)	CPI Code 0 (healthy)		CPI Code 1 (bleeding)		CPI Code 2 (calculus)		CPI Code 3 (pocket 4-5 mm)		CPI Code 4 (pocket 6 mm or more)		χ^2	p value
	N	N%	N	N%	N	N%	N	N%	N	N%		
<40	3	1.24	18	7.44	16	6.61	0	0	0	0		
40-49	11	4.55	14	5.79	19	7.85	8	3.31	0	0		
50-59	0	0	22	9.09	31	12.81	18	7.44	0	0		
60-69	6	2.48	12	4.96	37	15.29	11	4.55	3	1.24	48.3	0.04
≥70	3	1.24	1	0.41	8	3.31	1	0.41	0	0		
Total	23	9.51	67	27.69	111	45.87	38	15.7	3	1.24		
Gender												
Male	17	7.03	59	24.38	105	43.39	31	12.81	2	0.82		
Female	6	2.48	8	3.31	6	2.48	7	2.89	1	0.41	12	0.02
Total	23	9.51	67	27.69	111	45.87	38	15.7	3	1.24		

Table 5: Gender and age group distribution of CPI among HNC and oral cancer patients.

Discussion

The purpose of the study was to provide the oral health status in the patients having HNC and oral cancer. In the present study oral cancer accounts for 64.06% cases while earlier studies [10-12] show a lower oral cancer prevalence with 24 to 28% of the total HNC cases. A little higher reported oral cancer cases are being reported by Shinde, et al. [13] with 41.28% cases, this difference in the prevalence of oral cancer within a country reported can be due to difference of tobacco consumption and form of tobacco in this diverse country. Reddy, et al. [14] reported that among HNC and oral cancer patients, 65.2% of the patients had poor oral hygiene status which is similar to the present study, on a contrary Galindo, et al. [15] have reported majority of the study participants with good oral hygiene status. Good oral hygiene status is reported in 4.55% of the patients in the present study but in contrary [15] didn't find any patient with good oral hygiene status. In the present study CPI code 2 (calculus) is reported for 45.87% cases while according to Reddy, et al. [1] it was reported only in 21.8% cases whereas Wahi [16] revealed that maximum percentage with 90.9% of study participants had CPI code 2 (calculus) and 3 (pocket 4-5

mm). Most of the subjects in the present study had calculus and periodontal pockets of 3mm which is similar to the study done by Rezende, et al. [5] but survey conducted by Holmgren, et al. [15] show more prevalence of shallow and deep pockets in the surveys. In the present study shallow and deep pockets of more than 6mm was found only in 1.24% of the cases. In the present research decayed teeth were found in 55.37% of the cases whereas study conducted by Rezende, et al. [5] showed that 100% of the patients had decayed teeth. Rezende, et al. [5] reported missing teeth in the 100% of the cases while in the present study it was found only in 66.53% of the patients. Filled teeth were found only in 7.44% of the patients whereas in [5] research filled teeth were reported in 100% of the patients. The limitation in the present study is that authors try to obtain information on the exposure and potential confounding factors through interviews, and such information could be subject to recall bias. The strength of the present study is that authors have taken the maximum sample of HNC and Oral cancer to examine the oral health status till date.

Conclusion

Prevention is the best possible way to fight cancer by early examination and diagnosis so that risk factors can be eliminated. Therefore focus should be on to have more health programs and initiatives that promote periodic oral examination. The results indicate the existence of correlation between poor oral health status and HNC and oral cancer. The present study opens new ventures of further research in future. Longitudinal studies considering other variables such as staging, nutritional status etc. should be conducted so as to make this situation more evident, determining clearly the role of poor oral health status as a risk factor for HNC and oral cancer.

References

1. Ammajan RR, Joseph R, Rajeev R, Choudhary K, Vidhyadharan K (2013) Assessment of periodontal changes in patients undergoing radiotherapy for head and neck malignancy: A hospital-based study. J Can Res Ther 9(4): 630-637.

2. MacCarthy D, Flint SR, Healy C, Stassen L (2011) Oral and neck examination for early detection of oral cancer--a practical guide. J Ir Dent Assoc 57(4): 195-199.

3. Fritz A, Percy C, Jack A, Shanmugaratnam K, Sobin LH, et al. (2000) International classification of diseases for oncology (ICD-O). 3rd ed. Geneva: World Health Organization.

4. Marques LA, José Eluf-NetoII, Rejane AOF, José F de Góis-FilhoIII, Luiz PK, et al. (2008) Oral health hygiene practices and oral cancer. Rev saudepublica 42(3): 471-479.

5. Rezende CP, Ramos MB, Daguíla CH, Dedivitis RA, Rapoport A (2008) Oral health changes in patients with oral and oropharyngeal cancer. Rev Bras Otorrinolaringol 74(4): 596-600.

6. Green JC, Vemillion JR (1964) The Simplified oral hygiene index. Am Dent Assoc 68: 7-13.

7. (1997) World Health Organization. Oral Health Surveys Basic Methods 4th (ed.) Geneva.

8. Ainamo J (1989) Epidemiología de la enfermedad periodontal. En: Lindhe J ed. PeriodontologíaClínica Buenos Aires: Editorial Médica Panamericana 70-86.

9. Gangadharan P (1979) Epidemiologic observation on cancer in Indian people. Indian J Cancer 16(3-4): 5-17.

10. Manjari M, Popli R, Paul S, Gupta VP, Kaholon SK (1996) Prevalence of oral cavity, pharynx, larynx, nasal cavity malignancies in Amritsar, Punjab. Indian J Otolaryngol Head Neck Surg 48(3): 191-195.

11. Thakur S, Chaturvedi V, Singh AK, Puttewar MP, Raizada RM (2001) Pattern of ear, nose, pharynx, larynx and esophagus (ENPLO) cancers in rural-based hospital. Indian J Otolaryngol Head Neck Surg 53(2): 93-99.

12. Kulkarni PV, Jaiswal SS, Rathod SB, Khalique A, Kulkarni RR (1996) Profile of malignancy at Ambajogai (15 years retrospective study). Indian J Cancer 33(1): 31-36.

13. Shinde JK, Hashmi SIH (2013) Retrospective study of malignant lesions of head & neck in rural area of Ahmednagar district. IOSR Journal of Dental and Medical Sciences (IOSR-JDMS) 4(2): 12-19.

14. Uma CR, Subhashgouda P, Sopan S, Savita D, Jitendra S, et al. (2014) Oral health status of oral cancer patients seeking care from government hospital, Jaipur, Rajasthan. IJOCR 2(4): 7-10.

15. Galindo MPL, Bagán JV, Soriano YJ, Alpiste P, Camps C (2006) Clinical evaluation of dental and periodontal

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status in a group of oncological patients before chemotherapy. Med Oral Patol Oral Cir Bucal 11(1): 17-21.

16. Wahi PN, Kehar U, Lahiri B (1965) Factors influencing oral and oropharyngeal cancers in India. Brit J Cancer 19(4): 642-660.

17. Holmgren CJ, Corbet EF, Lim LP (1994) Periodontal conditions among the middle-aged and elderly in Hong Kong. Community Dent Oral Epidemiol 22: 396-402.