SSR Institute of International Journal of Life Sciences
ISSN (O): 2581-8740 | ISSN (P): 2581-8732
Shreeya *et al.*, 2024
DOI: 10.21276/SSR-IIJLS.2024.10.1.4

Research Article

open access

Understanding the Invisible Threat: A Study on Oral Cancer Risk Factors among Medical Recipients

Shreeya[1*], Deelip S Natekar[2], Manjula[3], Umesh Kamble[3], Basavaraj Hadaginal[3], Vidyashree Patil[3], Kavita Gudihal[3], Sanjota Hadapad[3]

[1]Lecturer, Dept. of Medical-Surgical Nursing, Shri. B.V.V.S. Sajjalashree Institute of Nursing Sciences, Navanagar, Bagalkot-587102, Karnataka, India

[2]Principal, Dept. of Community Health Nursing, Shri B.V.V.S Sajjalashree Institute of Nursing Sciences, Bagalkot, Karnataka, India

[3]Student, Shri B.V.V.S Sajjalashree Institute of Nursing Sciences, Bagalkot, Karnataka, India

***Address for Correspondence:** Shreeya, Lecturer, Dept. of Medical Surgical Nursing, Shri. B.V.V.S. Sajjalashree Institute of Nursing Sciences, Navanagar, Bagalkot-587102, Karnataka, India
E-mail: shreeyamath123@gmail.com

Received: 17 Aug 2023/ Revised: 27 Oct 2023/ Accepted: 05 Dec 2023

ABSTRACT

Background: Cancer is a non-infectious disease. It starts at the molecular level of the cell and, ultimately, affects the cellular behaviour. Generally, it can be defined as the uncontrolled proliferation of cells without differentiation. Cancer is a group of conditions where the body's cells begin to grow and reproduce uncontrolled. These cells can then invade and destroy healthy tissues.

Methods: A retrospective research approach is used in the present study, and the researcher follows a descriptive study design. The sample size was 120 adults. The convenient sampling technique was used to select the study area, and the proportionate stratified random sampling technique was used to select study participants. The pilot study revealed the feasibility of the study. The reliability of the tool was evident by using the questionnaire method.

Results: The study's findings revealed that the percentage distribution of adults according to their age group of ≤30 was 20%, 31-40 were 26.66%, 41-50 are 33.33%, and 51-60 were 20% of adults. The calculated chi-square value for the socio-demographic variable Age of the Adult is 9.86. The Chi-square table value was 3.846. Here, the Chi-square calculated values are higher than the Chi-square table value.

Conclusion: After obtaining the result of the present study, the researcher noticed a significant association between the age of adults (control group) and risk factors of oral cancer.

Key-words: Cardiovascular diseases, Oral cancer, Risk factors, Adults

INTRODUCTION

Cancer is the second most common cause of death in the Western world, after cardiovascular diseases [1].

How to cite this article
Shreeya, Natekar DS, Manjula, Kamble U, Hadaginal B, et al. Understanding the Invisible Threat: A Study on Oral Cancer Risk Factors among Medical Recipients. SSR Inst Int J Life Sci., 2024; 10(1): 3470-3476.

Access this article online
https://iijls.com/

Worldwide, an estimated cancer incidence of about 10 million was reported for the year 2009, and 1 out of every three persons is estimated to suffer from cancer by the age of 75 years. It is also estimated that about 7.9 million people worldwide will die from cancer this year, accounting for 12% of deaths worldwide [2-5]. In the United States alone, an estimated 569,490 deaths from cancer are projected for 2010. Recently published estimates of the worldwide frequency of the 16 major cancers indicate that in developing countries with a high prevalence of infectious and nutritional diseases, cancer remains a major cause of death [6].

This may account partly for the current statistics whereby more than half the global incidence of cancer is from the so-called developing countries since an estimated 70-80% of the global population resides in these areas. The estimated annual incidence of cancer ranges from 48 to 225 per 100,000 in developing countries [7]. Cancer of the oral cavity is one of the most common malignancies, especially in developing countries but also in the developed world. Squamous cell carcinoma (SCC) is the most common histology, and the main etiological factors are tobacco and alcohol use.

Although early diagnosis is relatively easy, advanced disease presentation is uncommon. The standard of care is primary surgical resection with or without postoperative adjuvant therapy. Over the past decade, improvements in surgical techniques combined with the routine use of postoperative radiation or chemo-radiation therapy have improved survival statistics. Successful treatment of patients with oral cancer is predicated on multidisciplinary treatment strategies to maximize oncologic control and minimize the impact of therapy on form and function [8].

MATERIALS AND METHODS

A retrospective research approach is used in the present study, and the researcher follows a descriptive study design. The sample size was 120 adults. The convenient sampling technique was used to select the study area, and the Proportionate stratified random sampling technique was used to select study participants. The pilot study revealed the feasibility of the study. The reliability of the tool was evident by using the questionnaire method. The reliability coefficient of correlation of the questionnaires was obtained, and the 'r' value was found to be 0.80 and 0.89. The data were collected with the help of structured questionnaires. Data analysis was done using descriptive statistics.

Study participants- The study participants were adults at risk for oral cancer and receiving oral cancer treatment in selected hospitals.

Data Collection Procedure- The data was collected from 30-06-2023 to 16-07-2023. Prior permissions were obtained from the medical superintendent of selected hospitals in Bagalkot, India. All the participants explained the purpose of the study, that the data they provided was not kept confidential, and that their identity was not revealed. They were informed to avoid discussion with other fellow mates. The instruments were given according to their preferred language. Instructions were given regarding the content of data collection instruments. The researcher attained and clarified the doubts of participants during data collection. The filled tools were collected from the participants. On average, adults took 10 to 15 minutes to fill the tools, and the whole process was completed in 2 hours. The researcher thanked all the participants and the concerned staff nurse and superintendent.

Sample size- The sample size was calculated considering the following parameters: Z=1.96 (95% confidence level), the margin of error (e)=5%(0.05), and population proportion (p)=0.5. The population of adolescents in the Bagalkot district was around 18,89,752.

Setting- The study's setting was SNMC, HSK Hospital Navanagar, Bagalkot, and Halamma Kerudi Cancer Hospital Bagalkot. The total sample size is 120. The sampling criteria included the control group and case group.

Data Collection Instrument- The data was collected using a questionnaire format (demographic data: age, gender, religion, type of family, marital status, income, education, and risk factors: occupation, tobacco, alcohol, smoking, betel nut, radiation).

Scoring- The total score was obtained by adding the scores of questions 1 to 7, and the scoring was done based on severity level. The scores of risk factors are added separately to know the factors affecting oral cancer in both the control and case groups.

Structured Questionnaire- The researcher prepared a structured, close-ended questionnaire to assess the data regarding risk factors and determinants of oral cancer among adults.

Validity, Reliability and Translation of data collection instruments- Structured questionnaires screen individuals for the risk factors associated with oral cancer. The tool's content, construct and criterion validity have been supported by its use for four decades in various research, consultation, feedback and revision.

The instruments were translated to Kannada and retranslated to English, and the between the original and tranche slated tools were assertations. Reliability was established by administering the tool to 10 adults. The brown formula was used to calculate the reliability value of 0.80, suggesting the tool was reliable for data collection.

Statistical Analysis- The obtained data was entered into an MS Excel sheet. The data was edited for accuracy and completeness. The categorical responses were coded with numerical codes. The data was presented with frequency and percentage distribution tables and diagrams. The risk for oral cancer was described using arithmetic mean, range, and standard deviation. Binary logistic regression analysis and Odds ratio were used to associate the determinants with adult oral cancer risk.

Ethical Clearance- An ethical clearance certificate was obtained from the Institutional Ethical Clearance Committee, B.V.V.S Sajjalashree Institute of Nursing Sciences, Bagalkot. Participants and their parents obtained Written consent for participation before data collection.

RESULTS

Socio-demographic variables of adults- Table 1 illustrates the socio-demographic characteristics of people in both the control and case groups. Regarding age, the majority in both groups are between 31 and 50 (33.33% in the control group and 38.33% in the case group). Gender distribution showed more men in both groups (76.66% in the control group and 95% in the case group). Regarding religion, Hindus comprise the majority in both groups (85% in the control group and 85% in the case group). Most participants are from nuclear households (81.66% in the control group and 83.33% in the case group). Marital status showed a larger number of married persons in both categories (86.66% in the control group and 96.66% in the case group). Income distribution suggests that a considerable fraction of participants fall in the 15,000-25,000-income range (38.33% in the control group, 40% in the case group). Regarding education, the majority had secondary education in both groups (26.66% in the control group and 53.33% in the case group).

Table 1: Frequency and Percentage distribution of socio-demographic variables of adults. (Control and case groups)

Socio-demographic variables	Frequency	
	Control Group (%)	Case Group (%)
Age		
<30years	12(20)	12(20)
31-40years	16(26.66)	23(38.33)
41-50years	20(33.33)	16(26.66)
51-60years	12(20)	09(15)
Gender		
Male	46(76.66)	57(95)
Female	14(23.33)	03(5)
Religion		
Hindu	51(85)	51(85)
Muslim	06(10)	05(8.3)
Christian	02(3.33)	03(5)
Others	01(1.66)	01(1.66)
Type of family		
Nuclear	49(81.66)	50(83.33)
Joint	11(18.33)	10(16.66)
Marital status		
Married	52(86.66)	58(96.66)
Unmarried	02(13.33)	02(3.33)
Income		
Below 15000	34(56.66)	30(50)
15000-25000	23(38.33)	24(40)
25000-35000	03(5)	03(5)
35000 and above	00(0)	03(5)
Education		
Illiterate	23(38.33)	18(30)
Primary education	12(20)	32(53.33)
Secondary education	16(26.66) 09(15)	07(11.66) 03(5)

Table 2 presents the association between demographic variables and risk factors within the case group. The analysis reveals significant associations with gender (p=0.037), type of family (p=0.003), and marital status (p=0.021), suggesting that these variables may influence the presence of risk factors. Age, religion, income, and education, on the other hand, do not show statistically significant associations with the risk factors in the case group.

Table 2: Association between demographic variables and risk factors (Case group)

Socio-Demographic Variables	p-value*
Age	1.75
Gender	0.03
Religion	0.21
Type of family	0.01
Marital status	0.02
Income	0.15
Education	1.21

***Level of significance p<0.05**

Table 3 presents the chi-square analysis of the association between socio-demographic variables and risk factors for oral cancer in the control group. The calculated chi-square values for each variable—Age, Gender, Religion, Type of family, Marital status, Income, and Education—are reported alongside the chi-square table value of 3.846. The primary objective is to determine whether a statistically significant association exists between these socio-demographic factors and the risk factors for oral cancer. The calculated chi-square values for gender (0.023), Religion (0.847), Type of family (1.001), Marital status (0.324), Income (0.200), and Education (1.847) are all below the chi-square table value of 3.846. This indicates that, for these variables, there is no significant association with the risk factors for oral cancer, as the calculated values fall within the expected range.

Table 3: Association between demographic variables and risk factors (Control group)

Socio-Demographic Variables	Chi-square calculated value	Interpretation*
Age	9.86	Significant
Gender	0.02	Not significant
Religion	0.84	Not significant
Type of family	1.01	Not significant
Marital status	0.32	Not significant
Income	0.20	Not significant
Education	1.84	Not significant

***Level of significance p<0.05; DF= 1**

Association between risk factors and oral cancer are family history of oral cancer, use of substances like tobacco/gutka, smoking, alcohol, betel nuts, exposure to radiation and their results in control groups 8.33%, 38.33%, 51.66%, 45%, 71.66% and 3.33%, respectively. Association between risk factors and oral cancer are family history of oral cancer, use of substances like tobacco/gutka, smoking, alcohol, betel nuts, and exposure to radiation and their results in case groups 10%, 70%, 53.33%, 50%, 70%, and 76.66%, respectively.

Table 4: Association between risk factors and oral cancer

Risk factors	Elements	Control group		Case group	
		f	%	f	%
Family history of oral cancer	0	55	91.66	54	90
	1	5	8.33	6	10
Use of substance	-	23	38.33	42	70
Smoking	0	29	48.33	28	46.66
	1	31	51.66	32	53.33
Alcohol	0	33	55	30	50
	1	27	45	30	50
Betel nuts	0	17	28.33	18	30

f= Frequency; %= Percentage

DISCUSSION

This study aimed to assess the effectiveness of turmeric mouthwash versus routine oral care on radiation-induced oral Mucositis among patients with head and neck cancer treated at Halamma Kerudi Cancer Hospital, Bagalkot, Karnataka**.** This chapter presents the major findings of this study and discussion about similar studies conducted by other researchers [9].

A hospital-based retrospective cross-sectional study was conducted in the Department of Radiotherapy and Oncology, Rural Medical College and Pravara Rural

Hospital, Loni, Maharashtra state, India. The sex-wise distribution revealed 256 (73.25%) among males and 93(26.65%) among females. The mean age of the patients was 54.98 years, ranging from 15-78 years; 31.23% were more than 65 years of age. The most oral cancer sites among the males and females were those of the tongue (37.82%) and buccal mucosa (32.95%), respectively. The study findings suggest that the prevalence of oral cancer is higher among tobacco users, especially those using tobacco quid, which is more common among Indian women, which is in line with most of the epidemiological studies about oral cancer in India [10-13].

A case-control study was conducted in a central India regional cancer institute. The study consists of a total of 124 cases and 124 controls. Cases were newly diagnosed patients of oral cancer confirmed by histopathological examination. For cases, the mean age (years) was 47.62, the range being 23-83 years, while that of controls was 47.89 years, the range being 24-84 years. The majority were males (83.88%). Most cases (79.04%) were past chewers with OR 2.61. A maximum number of cases (19.36%) were past smokers, and the maximum number of controls (12.09%) were current smokers with OR 4.54. A maximum number of cases (30.64%) were former drinkers, and a maximum number of controls (8.87%) were current drinkers, who had OR 2.97 [14].

A case-control study was conducted to determine associations with risk factors. There were significant associations between oral cancer and tobacco smoking (OR=4.47; 95%CI=2.00 to 9.99), alcohol use among women (OR=4.16; 95%CI=1.70 to 10.69), and betel chewing (OR=9.01; 95%CI=3.83 to 21.22), and all three showed dose-response effects. Smoking is rare among Thai women (none of the control women were smokers), but betel chewing, especially among older women, is relatively common. We did not find any association between practising oral sex and oral cancer [15].

A prospective, cross-sectional, epidemiologic survey was performed to evaluate the knowledge and attitudes of dentists working in Primary Health Care Units and the participants were mostly females (81.5%), less than 40 years of age (57.7%), who underwent training 10-20 years ago (47.9%). Most respondents (66.2%) considered their knowledge of oral cancer satisfactory. However, only 26.8% of them felt that they could carry out oral cancer diagnostic procedures [16].

A cross-sectional survey was carried out among the rural population of Dakshina Kannada using a self-administered, pilot-tested questionnaire. The data obtained was tabulated and analysed. Statistical tests used: Descriptive statistics (numbers, percentages) were used. An unpaired t-test was used to compare the mean knowledge scores among males and females. Results were as follows: 504 subjects participated in the survey [17].

A cross-sectional study was conducted among 200 university students in Malaysia. A self-administered questionnaire was used to collect data. It included questions on sociodemographic data, awareness and knowledge of oral cancer. The results were that the mean age of the respondents was 21.5±2.5, and the age ranged from 18 to 27 years [18,19]. The majority of the respondents were aware of oral cancer (92%) and recognized the following as signs and symptoms of oral cancer: ulcer and oral bleeding (71%), followed by swelling (61.5%). A satisfactory knowledge was observed of the following risk factors: smoking (95.5%), poor oral hygiene (90.5%), family history (90%), alcohol (84.5%) and poorly fitting dentures (83.0%). However, unsatisfactory knowledge was observed about hot/spicy food (46.5%), obesity (36%), old age (31.5%), dietary factor (29%) and smokeless tobacco (25.5%) [20-22].

Another study investigated and showed that about 50% of the patients were addicted to tobacco in some form. Only 30% of the participants were aware of the risk factors for oral cancer [23,24]. The median time between symptom onset and seeking any medical consultation was 120 days, whereas the median time between symptom onset and cancer diagnosis was 165 days. About 75% of patients initially consulted an alternative medicine practitioner, and 90% took some form of alternative treatment before consulting a cancer specialist. Around 80% considered alternative medicines an effective cancer treatment form [25].

CONCLUSIONS

In conclusion, the analysis of socio-demographic variables in both the case and control groups revealed that there is no significant association between age, gender, religion, type of family, marital status, income, and education with the risk factors for oral cancer. The calculated chi-square values for these variables were consistently lower than the chi-square table value of

3.84, leading to the rejection of the null hypothesis (H1) that posited an association between these socio-demographic variables and oral cancer risk factors. However, a closer examination of the age variable in the adult population showed a different outcome. In the case group, the chi-square value for age (9.86) exceeded the chi-square table value, indicating a significant association between age and risk factors for oral cancer. This finding supports the acceptance of the hypothesis that there is an association between oral cancer risk factors and age in the adult population. Additionally, the association between specific risk factors and oral cancer, such as family history, tobacco/gutka use, smoking, alcohol consumption, betel nuts, and exposure to radiation, was explored.

CONTRIBUTION OF AUTHORS

Research concept- Shreeya
Research design- Shreeya
Supervision- Shreeya, Deelip S Natekar
Materials- Vidyashree Patil, Kavita Gudihal, Sanjota Hadapad
Data collection- Shreeya, Umesh Kamble, Umesh Kamble, Basavaraj Hadaginal
Data analysis and Interpretation- Deelip S Natekar
Literature search- Shreeya, Umesh Kamble, Manjula, Deelip S Natekar, Manjula
Writing article- Shreeya, Umesh Kamble, Manjula, Deelip S Natekar, Manjula, Basavaraj Hadaginal
Critical review- Shreeya, Deelip S Natekar
Article editing- Shreeya, Deelip S Natekar
Final approval- Shreeya, Deelip S Natekar

REFERENCES

[1] Ogbureke KU, editor. Oral cancer. BoD–Books on Demand, 2012; 10(2): 11-20.
[2] Montero PH, Patel SG. Cancer of the oral cavity. Surgical Oncology Clinics, 2015; 24(3):491-508.
[3] Gothankar J, Doke P, Dhumale G, Pore P, Lalwani S, et al. Reported incidence and risk factors of childhood pneumonia in India: a community-based cross-sectional study. BMC Public Health, 2018; 18(1):1-1.
[4] Dhage D, Patil S, Narlwu U, Ughade S, Adikane H. Case-control study for risk factors associated with oral cancer central India. Int J Community Med Public Health, 2017; 12(2): 11-20.
[5] Loyha K, Vatanasapt P, Promthet S, Parkin DM. Risk factors for oral cancer in northeast Thailand. Asian Pacific J Cancer Prev., 2012;13(10):5087-90.
[6] Leonel AC, Soares CB, de Castro JF, Bonan PR, Ramos-Perez FM, et al. Knowledge and attitudes of primary health care dentists regarding oral cancer in Brazil. Acta stomatologica Croatica: Int. J. Oral Health Dent., 2019; 53(1): 55-63.
[7] Shetty UA, Shetty P, D'Cruz AM. Determination of cusp number and occlusal groove pattern in mandibular molars: A preliminary epidemiological study in an Indian population. *J Forensic Sci* Med., 2016; 2(2): 98-101.
[8] Dubai SA, Ganasegeran K, Alabsi AM, Alshagga MA, Ali RS. Awareness and knowledge of oral cancer among university students in Malaysia. Asian Pac J Cancer Prev., 2012;13(1):165-8.
[9] Singla A, Goel AK, Oberoi S, Jain S, Singh D, et al. Impact of demographic factors on delayed presentation of oral cancers: A questionnaire-based cross-sectional study from a rural cancer centre. Cancer Res Statistics Treatment, 2022; 5(1):45-51.
[10] Chattopadhyay I, Verma M, Panda M. Role of oral microbiome signatures in diagnosis and prognosis of oral cancer. Technol. Cancer Res., 2019; 1(8): 66-81.
[11] Kumar S, Heller RF, Pandey U, Tewari V, Bala N, et al. Delay in presentation of oral cancer: a multifactor analytical study. Natl Med J India, 2001; 14(1): 13-17.
[12] Llewellyn CD, Johnson NW, Warnakulasuriya S. Factors associated with delay in presentation among younger patients with oral cancer. Oral Surgery Med Pathol Oral Radiol Endodontol., 2004; 97(6): 707-13.
[13] Pitiphat W, Diehl SR, Laskaris G, Cartsos V, Douglass CW, et al. Factors associated with delay in the diagnosis of oral cancer. J Dent Dental Res., 2002; 81(3): 192-97.
[14] Saleem Z, Abbas SA, Nadeem F, Majeed MM. The habits and reasons for delayed presentation of patients with oral cancer at a tertiary care hospital of a third world country. Pak J Public Health, 2018; 8(3): 165-79.
[15] Shenoi R, Devrukhkar V, Sharma BK, Sapre SB, Chikhale A. Demographic and clinical profile of oral squamous cell carcinoma patients: A retrospective study. Indian J Cancer, 2012; 49(1): 21-26.
[16] Sharma R, Kaur J, Sekhon AS. Effect of demographic factors on the delayed presentation of oral cancer: A

cross-sectional study. J Adv Med and Dent Sci Res., 2023; 11(10): 10-13.

[17]Thomas A, Manchella S, Koo K, Tiong A, Nastri A, et al. The impact of delayed diagnosis on the outcomes of oral cancer patients: a retrospective cohort study. Int J Oral Maxillofacial Surg., 2021; 50(5): 585-90. doi: 10.1016/j.ijom.2020.08.010.

[18]Akram M, Siddiqui SA, Karimi AM. Patient-related factors associated with delayed reporting in oral cavity and oropharyngeal cancer. Int J Prev Med., 2014; 5(7): 9-15.

[19]Lohe VK, Bhowate RR, Sune RV, Mohod SC. Association of socioeconomic risk factors with patients' delay in oral squamous cell carcinoma presentation. J Datta Meghe Inst Med Sci Univ., 2017; 12(1): 75-88.

[20]Santos LC, Batista OD, Cangussu MC. Characterization of oral cancer diagnostic delay in the state of Alagoas. Braz J Otorhinolaryngol., 2010; 76: 416-22.

[21]Scott SE, Grunfeld EA, McGurk M. The characteristic relationship between diagnostic delay and stage of oral squamous cell carcinoma. Oral Oncol., 2005; 41(4): 396-403.

[22]Memon MA, Ahmed KA, Shaikh AH. Reasons for Delayed Presentation in Patients of Oral Squamous Cell Carcinoma: A Prospective Study. PJMH S, 2020; 14: 1536-39.

[23]Chintala A, Muttagi S, Agarwal C. Reasons for diagnostic delay and association with socioeconomic factors in advanced oral cancer patients. J Adv Med Dent Sci Res., 2014; 2: 111-18.

[24]Anwar N, Pervez S, Chundriger Q, Awan S, Moatter T, et al. Oral cancer: Clinicopathological features and associated risk factors in a high-risk population presenting to a major tertiary care centre in Pakistan. Plos One, 2020; 15(8): 12-20.

[25]Badri P, Baracos V, Ganatra S, Lai H, Samim F, et al. Retrospective study of factors associated with late detection of oral cancer in Alberta: A qualitative study. Plos One, 2022; 17(4): 12-21.