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Original Article

Perceived Stress and Depression Among Oral Cancer Patients - A Hospital Based Cross-Sectional Study

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ABSTRACT

Depression is a significant public health concern that is particularly detrimental to physical health when it coexists with a long-term medical condition. It has a negative impact on an individual's quality of life and can cause problems with healing and recovery. Therefore, the goal of the current study was to assess depression and stress in patients with oral cancer and identify possible factors associated with it. A perceived stress questionnaire (PSS-10) developed by Cohen *et al*. and a standardized structured modified Hospital-based Anxiety and Depression Scale (HADS) consisting of seven items assessed on a Likert scale from 0 to 3 (maximum score=21) to assess the severity of the stress and depression. We used the stress scale (PSS-10) to measure the level of perceived uncontrollable, overloading, and unpredictable aspects of one's life. It consisted of 10 items, six of which were negative and the remaining four positive. Each item was rated on a 5-point Likert scale ranging from 0 (never) to 4 (very often). The mean age of the participants in this study was 53±4.5 years. Depression scores were shown to be higher among the females (12.25±3.91) when compared to males (11.25±4.65). The mean depression scores were insignificantly different when stratified by age groups (P=0.480), socio-economic status (P=0.166), whereas educational status (P=0.023) and marital status (P=0.0.002) had significant results. The current study results indicate that individuals diagnosed with oral cancer have a significantly higher likelihood of experiencing depression and stress.

Keywords: Depression, Oral cancer, Hospital based, Stress

Introduction

Depression is a serious public health concern that is especially destructive to physical health when combined with long-term disorders such as mouth cancer. Oral cancer is one of the most serious worldwide public health crises, and treatment can have a detrimental influence on a person's capacity to function [1]. Oral cancer is one of the most frequent types of cancer in the world, with India accounting for 30% of the total global incidence [2, 3]. High levels of stress and mental discomfort are more prevalent among cancer patients, and patients with an oral cancer diagnosis had a greater risk of suffering depression than healthy persons, according to study data [4]. It also identified psychological consequences such as anxiety and sadness in around half of head and neck cancer patients. Resulting in reduced survival rates and worse treatment results [5-9].

From this background, it is clear that depression negatively impacts a patient's quality of life and might potentially impede treatment and rehabilitation, making it necessary to evaluate the relationship between the prevalence of oral cancer and any potential psychological repercussions on life.

Therefore, the goal of the current study was to assess depression and stress in patients with oral cancer and ident ify possible factors associated with it.

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Materials and Methods

This cross-sectional study included patients diagnosed with oral cancer (n=126) visiting a cancer hospital in the neo-capital district of Andhra Pradesh. Written informed consent was obtained after being informed about the study purpose and procedure. Approval obtained from the institutional ethics committee before the actual start of the study. The duration of the study was from October 2023 to March 2024. A perceived stress questionnaire (PSS-10) developed by Cohen *et al*. and a standardized structured modified Hospital based Anxiety and Depression Scale (HADS) [10-12] consisting of seven items assessed on a Likert scale from 0 to 3 (maximum score=21), to assess the severity of the stress and depression. An increase in scores indicates a higher level of depression. The stress scale (PSS-10) was used to measure the level of perceived aspects of one's life that were uncontrollable, overloading, and unpredictable, consisting of 10 items, of which six were negative and the remaining four were positive. Each item was rated on a 5-point Likert scale ranging from 0 (never) to 4 (very often). While scoring, the four positive items are reverse scored, and summed (ranging from 0 to 40). Higher scores mean more perceived stress.

Data collected were tabulated using a Microsoft Excel spreadsheet and analyzed using the Statistical Package for the Social Sciences (SPSS) for Windows version 25.0 (Armonk, NY: IBM Corp). The Shapiro–Wilk test was used to ensure data normality. Descriptive statistics and comparison of variables were performed using the t- test, chi-square test, and one-way ANOVA to determine the relationship between groups. A P-value $\leq$ 0.05 is considered statistically significant.

Results and Discussion

The average age of the participants in this study (n=126) was 53 ± 4.5 years. **Table 1** shows the distribution of study participants in different socio-demographic variables, which reveals that the majority of the study population was male (79.4%) and married (85.7%).

Table 1. Socio-demographic characteristics of the study participants (n=126)

Variables		Frequency (%)
Age (mean ± SD)	Above 30 years	51 $\pm$ 4.08
	Below 30 years	24 $\pm$ 3.12
Gender	Male	100 (79.4%)
	Female	26 (20.6%)
Marital status	Married	108(85.7%)
	Unmarried	18(14.3%)
Education status	Primary	25(19.8%)
	Secondary	43(34.1%)
	Graduate	58(46%)

*SD = Standard deviation

Table 2 shows the proportion of the study participants based on depression and perceived stress scores, with most of them experiencing mild depression (score 1) and moderate (score 2) stress on the HADS and PSS-10 scales.

When the mean depression scores of the study participants were compared with the demographic characteristics, an insignificant difference was found in relation to gender (P=0.223), socio-economic status (P=0.166), and age groups (P=0.480), whereas education (P=0.023) and marital status (0.002) have shown significant associations in the present study, as shown from **Tables 3 and 4**.

Table 2. Depression and perceived stress in oral cancer patients

Domain	Characteristics	Frequency (%)
Depression	None (0)	29 (23)
	Mild (1)	45 (36)
	Moderate (2)	39 (31)
	Severe (3)	13 (10)
Perceived Stress	Low (1)	34 (27)
	Moderate (2)	62 (49)
	High (4)	30 (24)

Table 3. Comparison of mean depression scores with the demographic characteristics of the participants

Variable		Depression (mean±SD)	P value
Age	Below 30 years	10.18 ± 3.24	0.480
	31-40	10.89 ± 4.05	
	41-50	11.60 ± 5.38	
	51-60	11.95 ± 4.49	
	61 and above	10.91 ± 3.24	
Gender	Male	11.25 ± 4.65	0.223
	Female	12.25 ± 3.91	
Marital status	Married	12.31 ± 3.95	0.414
	Unmarried	09.45 ± 4.60	
Socioeconomic status	Upper	12.65 ± 4.25	0.166
	Middle	11.54 ± 4.70	
	Lower	09.93 ± 4.42	
Education status	Primary	11.11 ± 4.73	0.083
	Secondary	10.62 ± 4.50	
	Graduate	09.44 ± 4.35	

Table 4. Comparison of association of depression scores with demographic findings

Variable	Depression scores				P value
	No depression (0)	Mild (1)	Moderate (2)	Severe (3)	
Age					
below 30 years	3(10.3%)	8(17.8%)	10(25.6%)	3(23.1%)	0.521
31-40	9(31%)	11(24.4%)	6(15.4%)	3(23.1%)	
41-50	5(17.3%)	9(20%)	12(30.8%)	2(15.4%)	
51-60	8(27.6%)	10(22.2%)	9(23.1%)	5(38.5%)	
61 and above	4(13.8%)	7(15.6%)	2(5.1%)	0(00%)	
Gender					
Male	25(25%)	35(35%)	30(30%)	10(10%)	0.780
Female	4(15.2%)	10(38.4%)	9(34.6%)	3(11.5%)	
Marital status					
Married	24(86.2%)	39(86.7%)	38(97.4%)	7(53.8%)	0.002*
Unmarried	5(17.2%)	6(13.3%)	1(2.6%)	6(46.2%)	
Socioeconomic status					
Upper	9(31%)	10(22.2%)	12(30.8%)	4(30.8%)	0.371
Middle	8(27.6%)	25(55.6%)	15(38.5%)	5(38.5%)	
Lower	12(41.4%)	10(22.2%)	12(30.8%)	4(30.8%)	
Education status					
Primary	8(27.6%)	10(22.2%)	5(12.8%)	2(15.4%)	0.023*
Secondary	5(17.2%)	23(51.1%)	12(30.8%)	3(23.1%)	
Graduate	16(55.2%)	12(26.7%)	22(56.4%)	8(61.5%)	

*p<0.05 is considered statistically significant

The stress scores obtained from Cohen *et al*.'s stress questionnaire (PSS-10) are also shown in **Table 5**, where it can be seen that the majority of study participants reported having a moderate amount of stress in their day-to-day lives following the diagnosis of oral cancer, with more or less difference found in terms of gender and socioeconomic status. When a single element, such as gender, was taken into consideration, sadness was shown to be somewhat greater in frequency in females than in males, although stress seemed to be more prevalent in males.

Table 5. Association of stress scores with demographic findings

	Stress scores			P value
	Mild	Moderate	High	
Age				
Below 30 years	4(11.8%)	11(17.7%)	9(30%)	0.193
31-40	8(23.5%)	16(25.8%)	5(16.7%)	
41-50	6(17.6%)	17(27.4%)	5(16.7%)	
51-60	12(35.3%)	10(16.1%)	10(33.3%)	
61 and above	4(11.8%)	8(12.9%)	1(3.3%)	
Gender				
Male	20(20%)	55(55%)	25(25%)	0.002*
Female	14(53.8%)	7(26.9%)	5(19.3%)	

Marital status				
Married	30(88.2%)	55(88.7%)	23(76.7%)	0.268
Unmarried	4(11.8%)	7(11.3%)	7(23.3%)	
Socioeconomic status				
Upper	10(29.4%)	15(24.2%)	10(33.3%)	
Middle	11(32.4%)	32(51.6%)	10(33.3%)	0.301
Lower	13(38.2%)	15(24.2%)	10(33.3%)	
Education status				
Primary	13(38.2%)	6(9.7%)	6(20%)	
Secondary	7(20.6%)	22(35.5%)	14(46.7%)	0.006*
Graduate	14(41.2%)	34(54.8%)	10(33.3%)	

*p<0.05 is considered statistically significant

India is often considered the global cancer epicenter, and an increased prevalence of oral cancers remains one of the main public health concerns, as is evident from the published literature [13-18]. Oral cancer poses significant challenges post-treatment, such as physical disfigurement and functional impairment linked to the disease progression, which may have a substantial impact on an individual's ability to perform daily tasks and disrupt their social functioning, making it difficult for them to go about their daily lives. As a result, oral cancer patients are at a significantly increased risk of developing depression. The current study has mainly focused on various psychological characteristics that may predispose those individuals who were in treatment for oral cancer reported from a patient's perspective.

Depression can occur at any age and in anyone, but it usually occurs in conditions when there is an unsettling or stressful life event. In this case, diagnosing with cancer seems to be one of those unexpected and debilitating events that promotes stress and depression. This study found that individuals diagnosed with oral cancer and undergoing treatment had expressed a lesser tendency to depression and moderate amounts of stress. This was compared with studies done by Cerezo *et al*., Fayanju *et al*. and Ochoa *et al*. [19-21]. They stated that patients diagnosed with breast cancer had shown 35% and 41% of them have symptoms of emotional distress, which is manifested in the form of anxiety, fear, and depression.

Like depression, stress can arise from circumstances that one feels are out of control, unexpected, upsetting, or dangerous. This can lead to tension that one is unable to handle. The present study assessed the felt levels of stress and depression. Folkman indicated that personality, learning, and culture are the primary elements determining an individual's experience of stress [22]. Since men are more likely than women to exhibit a certain stoicism, which may have psychologically led them to accept that they have no control over their circumstances and should instead concentrate on their inner strength to overcome any obstacle, the current study population reported low levels of stress among those diagnosed with oral cancer.

The results of this study could be used by health care professionals to identify and guide oral cancer patients with depression or at risk of depression, which could help advise treatments that have been scientifically proven to be effective in reducing depressive symptoms through the practice of coping skills [23]. Future research should apply these results to enhance the functionality and quality of life of people exhibiting symptoms of depression.

Within the current background, the present study has certain limitations, like the generalizability of study findings as the study was conducted under limited conditions, and in addition, there is a gender specificity as the majority of the study participants were men, which may have constituted unconscious gender bias. Another limitation is a lack of baseline comorbidity reporting and recordkeeping. Despite these disadvantages, the new study also offers certain positives that may balance them out. To fully understand the long-term risks and coping mechanisms of developing depression and stress in patients with oral cancer.

Conclusion

As the treatment for oral cancer requires prolonged surgeries along with adjuvant chemotherapy and radiation, emotional discomfort has an impact on adherence to treatment plans. The current study results indicate that individuals diagnosed with oral cancer have a significantly higher likelihood of experiencing depression and stress, although that could be less in intensity. So efforts need to be concentrated more on developing effective treatment plans that can prevent and manage depression in cancer patients.

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