

Correlation of Depression with Edentulism in Elderly Patients

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ABSTRACT

Aim: Loss of all natural teeth is termed as edentulism. In elderly population with edentulism, depression enhances the risk of poor oral health. Present research was done to assess edentulism in elderly patients and its correlation with depression.

Materials and methods: Present research comprised of 530 completely edentulous subjects. Personal Health Questionnaire-8 (PHQ-8) was subjected to all patients to evaluate the depression status. Parameters such as education, marital position, and socioeconomic position were also noted.

Results: There was 280 (52.8%) males and 250 (47.2%) females out of 530 patients; 280 (52.8%) subjects had low socioeconomic status, 170 (32.0%) had middle, and 95 (17.9%) had high socioeconomic status. Total 275 (51.8%) patients had education up to primary standard, 170 (32.0%) had high, and 105 (19.2%) had secondary standard. Total 502 (94.8%) patients were married and 28 (5.2%) were unmarried. All variables showed statistically significant difference ($p < 0.05$). Patient health questionnaire (PHQ-8) scoring and interpretation with behavioral risk factor surveillance survey (BRFSS) response conversion showed that most of the patients (60.2%) had score more than 15, which suggests that patients had depression symptoms. Edentulism was significantly associated with socioeconomic status (OR 1.02, 95% CI = 0.94–2.06), education level (OR 1.0, 95% CI = 0.98–1.72), marital status (OR 1.14, 95% CI = 1.08–2.34), and depression (OR 1.50, 95% CI = 1.24–2.14).

Conclusion: It was observed in this study that edentulism was more predominant among patients with poor socioeconomic status, married, and patients with education level up to primary level. Maximum number of patients had depression symptoms, thus indicating correlation of depression with tooth loss.

Keywords: Depression, Edentulism, Psychiatric illness.

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INTRODUCTION

Loss of all natural teeth is termed as edentulism. In elderly individual, it is the most prevalent situation. It has been observed to be present in 10% of population aged >50 years.¹ It is also found in socially deprived young individuals. The number of edentulous patients increases exponentially, as there is raise in life anticipation in past several years.²

It has been observed that poor oral health may be the risk factor for coronary artery disease, cerebrovascular accidents (CVAs), and myocardial infarction.³ Factors such as education level, socioeconomic status, physical health, employment status, mental health, and availability of dental care play a significant part in causing loss of teeth.⁴ There is relationship between poor oral health and poor mental health, low self-esteem and poor quality of life. Edentulism has also been found to be more predominant in medically compromised elderly population. Edentulism directly distresses nutrition, facial appearance, speaking eating capacity, and social life.⁵

Depression is rather communal among aged people and there has been increase in cases over last couple of years. It has damaging effect on the oral health. Depression upturns the risk of poor oral health especially in elderly population.⁶ Subjects with psychiatric illness or depression are more prevalent to edentulism. Such subjects are unwilling to their oral health resulting in edentulism. They are on multiple drugs for the psychiatric illness or depression.⁷ Present research aimed to assess edentulism in elderly subjects and its correlation with depression.

MATERIALS AND METHODS

This prospective research was conducted among 530 completely edentulous patients visiting the Department of Prosthodontic,

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Bridge and Crown Work for the replacement of teeth after obtaining the approval from the institutional ethics committee. The informed consent was obtained from all the participants.

The selection of patients was a simple random technique done by the lottery method. In all subjects, gender, age, education level, socioeconomic status, and marital status were noted. A thorough oral examination was performed. All patients were given Personal Health Questionnaire-8 (PHQ-8)⁸ to assess the depression level. It consists of nine questions on which the Diagnostic and Statistical Manual of Mental Disorders-4th Edition-Revised Text (DSM-IV-TR) diagnosis of depressive disorders is based. We used first eight

questions and we recorded the number of days patient experienced depressive symptoms in last 2 weeks. It was interpreted as 0–1 day = not at all, 2–6 days = several days, 7–11 days = more than half the days, and 12–14 days = nearly each day. Aggregate score was considered for PHQ-8. Patients with score that ranged from 0 to 4 were labeled with no significant depressive symptoms, score between 5 and 9 were labeled as mild depressive symptoms, score between 10 and 14 represented moderate depressive symptoms, 15 and 19 as moderately severe, and 20 and 24 showed severe depressive symptoms. The data were tabulated and statistically analyzed with SPSS (IBM, Chicago, Illinois, version 19.0). Two logistic regression models were performed at significance level <0.05.

RESULTS

Table 1 shows that out of 530 patients, males were 280 (52.8%) and females were 250 (47.2%). Total 280 (52.8%) had low socioeconomic status, 170 (32.0%) had middle, and 95 (17.9%) had high socioeconomic status. Total 275 (51.8%) patients had education up to primary standard, 170 (32.0%) had high, and 105 (19.2%) had secondary standard. Total 502 (94.8%) patients were married and 28 (5.2%) were unmarried. All variables showed statistically significant difference ($p < 0.05$). Table 2 shows application of patient health questionnaire (PHQ-8) scoring and interpretation with behavioral risk factor surveillance survey (BRFSS) response conversion; most of the patients (60.2%) had score more than 15, which suggests that patients had depression symptoms. Table 3 shows that edentulism was significantly associated with socioeconomic status (OR 1.02, 95% CI = 0.94–2.06), education level (OR 1.0, 95% CI = 0.98–1.72), marital status (OR 1.14, 95% CI = 1.08–2.34), and depression (OR 1.50, 95% CI = 1.24–2.14).

DISCUSSION

There have been rise in cases of edentulism, with the increase in life expectancy. Older individuals tend to lose teeth more commonly

Table 1: Distribution of patients based on gender

Parameters	Variables	Number (%)
Gender	Male	280 (52.8)
	Female	250 (47.2)
Socioeconomic status	Low	280 (52.8)
	Middle	170 (32.0)
	High	95 (17.9)
Education	Primary	275 (51.8)
	High	170 (32.0)
	Secondary	105 (19.2)
Marital status	Married	502 (94.8)
	Unmarried	28 (5.2)

Table 2: Patient health questionnaire (PHQ-8) scoring and interpretation with BRFSS response conversion

Questions	Limited interest in doing work (%)	Subjects with feeling of depression, hopelessness (%)	Difficulty in sleeping or long sleep (%)	Tiredness (%)	Anorexia or excessive eating (%)	Self bad feeling (%)	Difficulty in concentration in work (%)	Speaking or moving so slowly (%)
0–1 days	20	20	42	22	15	10	25	25
2–6 days	25	32	16	18	16	12	20	18
7–11 days	35	18	22	32	36	23	20	22
12–14 days	20	30	20	28	37	50	35	35

compared to young ones.⁹ Several factors such as marital status, socioeconomic status, psychiatric illness, etc., play a major role.^{10,11} This study aimed to assess the edentulism in elderly subjects and its correlation with depression.

In the present study, we included 530 completely edentulous patients, which comprised of 280 males and 250 females. Total 280 (52.8%) had low socioeconomic status, 170 (32.0%) had middle, and 95 (17.9%) had high socioeconomic status. Total 275 (51.8%) patients had education up to primary standard, 170 (32.0%) had high, and 105 (19.2%) had secondary standard. Total 502 (94.8%) patients were married and 28 (5.2%) were unmarried. Saman et al. did a study to evaluate role of depression and rural residency in edentulism and concluded that depression and rural residency were the important factors related to partial and full edentulism following controlling for possible confounders.¹²

In our study, most of the patients (60.2%) had scored more than 15 suggestive of depression symptoms. Okoro et al. in their survey observed that 56.1% population had tooth loss. They establish that patients with depression had a significantly higher prevalence of nonuse of oral health services the last few years than those without this disorder ($p < 0.001$). It was perceived that adults with depression and anxiety were more likely to have tooth loss. Adults with prevailing depression, lifetime diagnosed depression, and lifetime established anxiety were significantly more likely to have had at least one tooth removed than those without each of these disorders ($p < 0.001$ for all), after fully regulated for estimated confounders.¹³

We established that edentulism was expressively related with socioeconomic status (OR 1.02, 95% CI = 0.94–2.06), education

Table 3: Bivariate analysis of patients

Parameters	Variables	Unadjusted odds ratio (95% CI)	p value
Gender	Male	1.14	0.94
	Female	1.18	
Socioeconomic status	Low	1.56	0.01
	Middle	1.12	
	High	1.02	
Education	Primary	1.12	0.021
	High	1.0	
	Secondary	1.68	
Marital status	Married	2.30	0.001
	Unmarried	1.14	
Scale	PHQ-8 score (depression)	1.50	0.03

level (OR 1.0, 95% CI = 0.98–1.72), marital status (OR 1.14, 95% CI = 1.08–2.34), and depression (OR 1.50, 95% CI = 1.24–2.14). Latif et al.¹⁴ in their study on 5,392 patients, 100 subjects were included. It was observed that smoking prevalence was 73%; hypertension, diabetes, and HIV+ prevalence were 26%, 13, and 5%, respectively. About 41% were found to be with history of depression/psychiatric illness. About 55% were taking three or more medications, 32.8% were taking five or more, and 22.4% were on seven or more. Author found an association between depression and edentulism.

Tyrovolas et al.¹⁵ evaluated the incidence of edentulism and its association with depression and self-rated health. Edentulism was significantly associated with depression (OR 1.57, 95% CI = 1.23–2.00) and deprived self-rated health (OR 1.38, 95% CI = 1.03–1.83) in the younger group with no considerable associations in the older age group.

Ghiță et al. evaluated the prevalence of different types of partial edentulism and the description of the various parameters. They observed increased frequency among the young population for partial edentulism forms (Kennedy III class).¹⁶

Psychiatric illness such as depression is quite common among elderly. Valuation of depression symptoms and suitable management of such symptoms may be supportive in reducing the cases of tooth loss. A large-scale survey emphasizing the evaluation of depression among elderly is required.

The disadvantage of this study is less sample range. Other factors such as smoking, alcoholism, medical illnesses, etc., which have harmful deleterious effect on the body as well as on the oral cavity were not taken under consideration. The inclusion of all such parameters could have been useful in achieving better results.

CONCLUSION

The present study indicates that edentulism was more predominant among patients with poor socioeconomic condition, married, and patients with education status up to the primary level. Depression has harmful effect in patients. Most of the patients had depression; this indicates the association of depression with tooth loss.

PATIENTS CONSENT

Obtained

ETHICAL APPROVAL

Obtained from institutional ethics committee.

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