Evaluation of edentulism in elderly and its association with depression - A survey

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A B S T R A C T

Introduction: Edentulism is loss of all natural teeth. Depression increases the risk of poor oral health especially in elderly population with edentulism. This study was done to evaluate edentulism in elderly subjects and its association with depression.

Materials and Methods: This prospective study included 530 completely edentulous patients. Personal Health Questionnaire-8 (PHQ-8) was administered to all patients to assess the depression level. Parameters such as marital status, education, socio-economic status were also recorded.

Results: Out of 530 patients, males were 270 and females were 260. 265 patients had education up to primary standard, 150 had high and 115 had secondary standard, 270 had low socio-economic status, 180 had middle and 80 had high socio-economic status, 518 were married and 12 were unmarried. The difference was statistically significant (P< 0.05). Patient health questionnaire (PHQ-8) scoring and interpretation with BRFSS response conversion, most of the patients (59.8%) had score more than 15 suggestive of depression symptoms. Edentulism was significantly associated with education level (OR 1.02, 95% CI=1.02–1.18), socio-economic status (OR 1.12, 95% CI= 0.92–2.04), marital status (OR 1.17, 95% CI=1.20–2.38) and depression (OR 1.52, 95% CI=1.26–2.06).

Conclusion: Authors found that edentulism was more prevalent among patients with poor socio-economic status, married and patients with education level up to primary level. Most of the patients had depression symptoms, thus suggesting association of depression with tooth loss.

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1. Introduction

Edentulism is loss of all natural teeth. It is most prevalent condition in elderly. It has been found to be present in 10% of population aged >50 years. It is also seen in socially deprived young adults. Oral health affects overall health. As there is increase in life expectancy in last several years, the number of edentulous patient raises exponentially.

It has been seen that poor oral health may be the risk factors for coronary artery disease, cerebro-vascular accidents (CVA) and myocardial infarction. Factors such as socio-economic status, education level, employment status, physical health, mental health and availability of dental care etc. play an important role in causing loss of teeth. There is association between poor oral health and poor mental health, low self esteem and poor quality of life. Edentulism has also been found to be more prevalent in medically compromised elderly population. Edentulism directly affects facial appearance, nutrition, eating capacity, speaking and social life.

Depression is quite common among age people and there has been rise in cases over last couple of years. It has
harmful effect on the oral health. Depression increases the risk of poor oral health especially in elderly population. Subjects with psychiatric illness or depression are more prevalent to edentulism. Such subjects are reluctant to their oral health resulting in edentulism. They are on multiple drugs for the psychiatric illness or depression. This study aimed to evaluate edentulism in elderly subjects and its association with depression.

2. Materials and Method

This prospective study comprised of 530 completely edentulous patients visiting the department of Prosthodontic, Bridge & Crown work for the replacement of teeth. We commenced the study after getting approval from institutional ethics committee. The purpose of the study was explained to all patients and written consent was taken in their vernacular language.

The selection of patients was simple random technique. In all subjects, age, gender, socio-economic status, education level and marital status was recorded. A through oral examination was performed. Personal Health Questionnaire-8 (PHQ-8) was administered to all patients to assess the depression level. It comprised of 9 questionnaire 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 8 questionnaire and we recorded the number of days patient experienced depressive symptoms in last 2 weeks. It was interpreted as 0 to 1 day = not at all, 2 to 6 days = several days, 7 to 11 days = more than half the days, and 12 to 14 days = nearly each day, with position (0 to 3) allocated to both category, respectively. Based on the total score achieved by the patients on applying Personal Health Questionnaire-8 was aggregated. Patients with score that ranged from 0-4 was labeled with no significant depressive symptoms, score between 5-9 was labeled as mild depressive symptoms, score between 10-14 represented moderate depressive symptoms, 15-19 as moderately severe and 20-24 showed severe depressive symptoms. The data was compiled and statistical analysis (SPSS (IBM, Chicago, Illinois) version 19.0) was performed. Two logistic regression models were performed at significance was level of P< 0.05.

3. Results

Table 1 Shows that out of 530 patients, males were 270 and females were 260. 265 patients had education up to primary standard, 150 had high and 115 had secondary standard, 270 had low socio-economic status, 180 had middle and 80 had high socio-economic status, 518 were married and 12 were unmarried. The difference was statistically significant (P< 0.05). Table 2 shows patient health questionnaire (PHQ-8) scoring and interpretation with BRFSS response conversion, most of the patients (59.8%) had score more than 15 suggestive of depression symptoms. Table 3 shows that edentulism was significantly associated with education level (OR 1.02, 95% CI=1.02–1.18), socio-economic status (OR 1.12, 95% CI= 0.92–2.04), marital status (OR 1.17, 95% CI=1.20–2.38) and depression (OR 1.52, 95% CI=1.26–2.06).

Table 1: Distribution of patients based on gender

| Gender   | Number |
|----------|--------|
| Male     | 270 (50.9%) |
| Female   | 260 (49.1%) |

| Education | Number |
|-----------|--------|
| Primary   | 265 (50%) |
| High      | 150 (28.3%) |
| Secondary | 115 (21.7%) |

| Socio-economic status | Number |
|-----------------------|--------|
| Low                   | 270 (50.9%) |
| Middle                | 180 (33.9%) |
| High                  | 80 (15.1%) |

| Marital status | Number |
|----------------|--------|
| Married        | 518 (97.7%) |
| Unmarried      | 12 (2.3%) |

4. Discussion

With the increase in life expectancy, there have been rise in cases of edentulism. Elderly people tend to lose teeth more frequently than young one. Several factors such as socio-economic status, marital status, psychiatric illness etc. play an important role. This study aimed to evaluate edentulism in elderly subjects and its association with depression.

In this study, we included 530 completely edentulous patients which comprised of 270 males and 260 females. 265 (50%) patients had education up to primary standard, 150 (28.3%) had high and 115 (21.7%) had secondary standard, 270 (50.9%) had low socio-economic status, 180 (33.9%) had middle and 80 (15.1%) had high socio-economic status, 518 (97.7%) were married and 12 (2.3%) were unmarried.

Saman et al conducted a study to assess role of depression and rural residency in edentulism and found that depression and rural residency were the important factors related to partial and full edentulism following controlling for possible confounders.

We found that most of the patients (59.8%) had scored more than 15 suggestive of depression symptoms. Okoro et al in their survey found that 56.1% population had tooth loss. They found patients with depression had a significantly higher prevalence of nonuse of oral health services in the last few years than those without this disorder (P < 0.001). It was observed that adults with depression and anxiety were more likely to have tooth loss. Adults with existing depression, lifetime diagnosed depression and
Table 2: Patient health questionnaire (PHQ-8) scoring and interpretation with BRFSS response conversion

| Questionnaire                                      | 0-1 day Not at all | 2-6 days Several days | 7-11 days More than half days | 12-14 days Nearly everyday |
|----------------------------------------------------|--------------------|-----------------------|-------------------------------|---------------------------|
| 1. Limited interest in doing work                  | 15%                | 20%                   | 40%                           | 30%                       |
| 2. Subjects with feeling of depression, hopelessness| 20%                | 35%                   | 15%                           | 30%                       |
| 3. Difficulty in sleeping or long sleep             | 40%                | 13%                   | 25%                           | 22%                       |
| 4. Tiredness                                       | 20%                | 17%                   | 35%                           | 28%                       |
| 5. Anorexia or excessive eating                     | 14%                | 15%                   | 37%                           | 34%                       |
| 6. Self bad feeling                                | 10%                | 10%                   | 30%                           | 50%                       |
| 7. Difficulty in concentration in work             | 30%                | 15%                   | 15%                           | 40%                       |
| 8. Speaking or moving so slowly                     | 23%                | 20%                   | 25%                           | 32%                       |

Table 3: Bivariate analysis of patients

| Gender         | Unadjusted odds ratio (95% CI) | P value |
|----------------|-------------------------------|---------|
| Male           | 1.12                          | 0.91    |
| Female         | 1.20                          |         |
| Education      |                               |         |
| Primary        | 1.10                          |         |
| High           | 1.02                          | 0.042   |
| Secondary      | 1.78                          |         |
| Socio-economic status |               |         |
| Low            | 1.57                          |         |
| Middle         | 1.13                          | 0.021   |
| High           | 1.02                          |         |
| Marital status |                               |         |
| Married        | 2.31                          | 0.001   |
| Unmarried      | 1.16                          |         |
| PHQ-8 Score (Depression) |            | 1.52 | 0.021 |

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.\textsuperscript{13}

We found that edentulism was significantly associated with education level (OR 1.02, 95% CI=1.02–1.18), socio-economic status (OR 1.12, 95% CI= 0.92–2.04), marital status (OR 1.17, 95% CI=1.20–2.38) and depression (OR 1.52, 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.

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

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

5. Conclusion

Authors found that edentulism was more prevalent among patients with poor socio-economic status, married and
patients with education level up to primary level. Depression has deleterious effect in patients. The majority of the patients had depression indication, thus imply the connection of depression with tooth loss.

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8. Conflict of Interest

None.

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