



CORRELATION OF MENTAL HEALTH AND QUALITY OF LIFE OF COMPLETELY EDENTULOUS PATIENTS IN SUBURBAN CHENNAI POPULATION – A QUESTIONNAIRE STUDY.

Dental Science

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ABSTRACT

Aims: To evaluate the oral, systemic conditions and health-related quality of life following complete denture usage with a series of standardized questionnaires. **Methods and Material:** Data was collected from 100 patients within the age range of 49-80 years who had undergone oral rehabilitation with complete denture prosthesis. **Statistical Analysis Used:** Paired t-test was used for intragroup (pre- vs. post-procedure) comparisons. A P value of 0.05 or less was considered for statistical significance. SPSS (version,17, IBM) software was used for data analysis. **Results:** In HUI3, significant improvements were observed in speech (pre- vs. post-procedure: 1.1 ± 0.4 vs. 1.0 ± 0.1 , $p < 0.05$) and in the global score (pre- vs. post-procedure: 7.1 ± 0.4 vs. 7.0 ± 0.1 , $p < 0.05$) The overall scores obtained for lifestyle showed significant improvements (pre- vs. post-procedure: 4.1 ± 0.4 vs. 4.0 ± 0.2 , $p < 0.05$) as concentration and frequency of going out showed significant improvements. Among the scores obtained for oral amenities, pronunciation, esthetics, sensation, chewing showed positive response and the overall scores of Oral amenities (pre- vs. post-procedure: 6.9 ± 1.3 vs. 4.6 ± 0.8 , $p < 0.001$) showed highly significant improvement. **Conclusions:** Patients restored with complete denture prosthesis showed an overall improvement in psychological well being and quality of life.

KEYWORDS

Quality of life, Mental health, Completely edentulous, denture satisfaction

INTRODUCTION:

Oral health-related quality of life (OHRQoL) reflects on the individual's comfort during routine activities such as eating, sleeping, social interaction, self-esteem as well as satisfaction concerning their oral health[1].

In the geriatric patients with missing teeth, the ability to ingest food orally has a large impact both physically and mentally on the general health condition of an individual. Edentulism leads to impaired masticatory function, social disability, and a poor health-related quality of life which makes oral health mandatory for their health and well-being[2,3].

The United Nations - World Population Prospects recorded an improvement in life expectancy at birth for Indians which was 35.21 years in 1950, growing to 69.96 years in 2021[4,5]. According to the Population Census of 2011, the size of the elderly population has increased from 5.6% in 1961 to 8.6% in 2011, whereas Tamil Nadu is at 10.4% [6]. Along with an increase in the life expectancy come a larger number of edentulous patients in all communities, and is expected to steadily increase in the coming years as well [7].

Various socio-dental indicators are used to assess the impact of the oral disorder on the patient's quality of life (QOL)[8]. The OHRQoL measures the degree to which oral health interrupts the social functioning and normal life of an individual[9]. Several generic instruments such as Health Utilities Index (HUI)[10], EuroQol (EQ 5D)[11], and MOS 6-Item Short-Form Health Survey (SF-6D)[12] are known to be used for the quantitative evaluation of various health statuses that enables us to give a sense of their general health like the physical functioning in day to day activities, their mental health, and various other social life functions of a patient. Due to this, generic instruments can be applied in local health surveys after which the results obtained can be compared across various treatments and conditions, or can also be applied to a variety of diseases. The utility and validity of these generic instruments indicate that health utility and other studies of medical economics should be conducted in each country [13].

Both patients and dentists need to be able to make a quality assessment

of all types of oral rehabilitation without using any special equipment or consuming a lot of time. The following study evaluates the oral, systemic conditions and health-related quality of life following complete denture usage with a series of standardized questionnaires.

Subjects And Methods:

The study was conducted among the south Indian population who had undergone oral rehabilitation with complete dentures. The data were collected from 100 patients who came to Department of Prosthodontics and Crown and Bridge, Madha Dental College, Kundrathur, Chennai between August 2019 and January 2020.

Subjects:

Completely edentulous subjects within the age of 49–80 years who could provide informed consent and with denture wearing experience were preferred. Patient selection was done at random without bias. Patients were given a verbal explanation of the study, and informed consent obtained.

Uncooperative, partially edentulous and patients rehabilitated with other methods such as overdentures, etc were excluded from the study.

The Questionnaire:

The questionnaire formulated was filled by the clinician as answered by the patient. The changes in oral condition, mental health, and health utility level were assessed using:

- Questionnaire on lifestyle and oral amenity (Rieko Takemae)
- The General Health Questionnaire 12 (D.P. Goldberg)
- The Health Utilities Index Mark 3 (G. Torrance)

Questionnaire on lifestyle and oral amenity

A total of 8 questions, with 4 questions on lifestyle and 4 on oral amenities were included. The patients were asked to complete the questionnaires on their daily living habits (lifestyle) and the state of associated dental disease. The questions on lifestyle were based on basic habits such as sleep, ability to concentrate, fatigue, and frequency of going out. The responses were rated on a scale of 1–4, where the higher total scores indicated a tendency towards poor living habits. The Lifestyle outcome was evaluated from the total scores of

living habits. Questions on “Oral amenities” covered pronunciation, esthetics, sense (foreign body sensation), and chewing ability (satisfaction of chewing and eating). These outcomes were also rated on a scale of 1–4 where a higher total score suggested a tendency towards higher dissatisfaction.[14]

The General Health Questionnaire 12

The 12-item version of the General Health Questionnaire (GHQ12) was used to measure the mental health condition of the patients. The level of mental health was determined from 12 questions. In this study a four-point Likert scale (1 to 4) was used where each item was rated on a four-point scale; less than usual, no more than usual, rather more than usual, and much more than usual. The positive items are recorded from 1 (less than usual) to 4 (much more than usual) and negative items from 4 (less than usual) to 1 (much more than usual). The ratings were summed to a global score (range 12–48), with a higher score representing more psychiatric morbidity. The total scores were directly analyzed.

The Health Utilities Index Mark 3

The HUI Mark 3 (HUI3) is the later version of the HUI Mark 2 comprising of 8 questions that were based on the quality of well-being (QWB). The utility scores were designed to be an interval scale where complete good health scored as 1. The HUI was used to measure health utility with the help of 8 attributable aspects using a profile approach to determine subordinate concepts that constituted QOL. A single score of each aspect was obtained.

RESULTS:

Statistical Analysis:

Results are presented as Mean $\pm$ SD. Paired t-test was used for intragroup (pre- vs. post-procedure) comparisons. A P value of 0.05 or less was considered for statistical significance. SPSS (version, 17, IBM) software was used for data analysis.

Out of the 100 subjects included in this study, 53 were males and 47 females. The average age between 49–80 years was 63.5 ± 7.4 .

In HUI3, significant improvements were observed in speech (pre- vs. post-procedure: 1.1 ± 0.4 vs. 1.0 ± 0.1 , $p < 0.05$) and in the global score (pre- vs. post-procedure: 7.1 ± 0.4 vs. 7.0 ± 0.1 , $p < 0.05$)

The overall scores obtained for lifestyle showed significant improvements (pre- vs. post-procedure: 4.1 ± 0.4 vs. 4.0 ± 0.2 , $p < 0.05$) under which concentration (pre- vs. post-procedure: 1.02 ± 0.2 vs. 1.01 ± 0.1 , $p < 0.05$) and frequency of going out (pre- vs. post-procedure: 1.10 ± 0.4 vs. 1.03 ± 0.2 , $p < 0.05$) showed significant improvements. Among the scores obtained for oral amenities, Pronunciation (pre- vs. post-procedure: 1.7 ± 0.5 vs. 1.1 ± 0.3 , $p < 0.001$), Esthetics (pre- vs. post-procedure: 1.8 ± 0.6 vs. 1.1 ± 0.3 , $p < 0.001$), Sensation (pre- vs. post-procedure: 1.6 ± 0.5 vs. 1.2 ± 0.4 , $p < 0.001$), Chewing (pre- vs. post-procedure: 1.8 ± 0.6 vs. 1.2 ± 0.4 , $p < 0.001$) showed positive response and the overall scores of Oral amenities (pre- vs. post-procedure: 6.9 ± 1.3 vs. 4.6 ± 0.8 , $p < 0.001$) showed highly significant improvement.

Characteristic	Before	After	t value	P value
HUI (Overall)	7.1 ± 0.4	7.0 ± 0.1	2.76	0.007, S
Vision	1.0 ± 0.0	1.0 ± 0.0	No diff.	
Hearing	1.0 ± 0.0	1.0 ± 0.0	No diff.	
Speech	1.1 ± 0.4	1.0 ± 0.1	2.76	0.007, S
Ambulation	1.0 ± 0.0	1.0 ± 0.0	No diff.	
Dexterity	1.0 ± 0.0	1.0 ± 0.0	No diff.	
Emotion	1.0 ± 0.0	1.0 ± 0.0	No diff.	
Pain	1.0 ± 0.0	1.0 ± 0.0	No diff.	
Paired t test				
P < 0.05, Sig.				
P > 0.05, Not sig.				

Characteristic	Before	After	t value	P value
Lifestyle (Overall)	4.1 ± 0.4	4.0 ± 0.2	2.60	0.011, S
Sleep	1.0	1.0	NS	
Concentration	1.02 ± 0.2	1.01 ± 0.1	0.99,	0.32, NS
Fatigue	1.0	1.0	NS	
Frequent	1.10 ± 0.4	1.03 ± 0.2	2.39	0.019, S
Paired t test				

P < 0.05, Sig.
P > 0.05, Not sig.

Table 3: Scores Obtained For Oral Amenities : Before And After Therapy

Characteristic	Before	After	t value	P value
Oral amenities (Overall)	6.9 ± 1.3	4.6 ± 0.8	29.23	< 0.001, HS
Pronunciation	1.7 ± 0.5	1.1 ± 0.3	11.69	< 0.001, HS
Esthetics	1.8 ± 0.6	1.1 ± 0.3	11.45	< 0.001, HS
Sensation	1.6 ± 0.5	1.2 ± 0.4	7.63	< 0.001, HS
Chewing	1.8 ± 0.6	1.2 ± 0.4	12.71	< 0.001, HS

Paired t test
P < 0.001, HighSig.

Table 4: Scores Obtained For GHQ12 : Before And After Therapy

Characteristic	Before	After	t value	P value
GHQ (Overall)	23.6 ± 3.7	21.0 ± 3.1	26.53	< 0.001, HS
CONCENTRATION	0.0 ± 0.0	0.0 ± 0.0	NS	
LOSS OF SLEEP	0.9 ± 0.4	0.9 ± 0.4	NS	
STRESS	1.9 ± 0.5	1.9 ± 0.5	NS	
OVERCOME DIFFICULTIES	2.3 ± 1.1	2.3 ± 1.1	NS	
DEPRESSION	1.0 ± 1.4	1.0 ± 1.4	NS	
SELF CONFIDENCE	1.9 ± 1.3	1.9 ± 1.3	NS	
WORTHLESSNESS	1.5 ± 1.3	1.5 ± 1.3	NS	
USEFULNESS	1.8 ± 1.1	1.8 ± 1.1	NS	
DECISIVE	2.1 ± 1.2	2.1 ± 1.2	NS	
ENJOY EVERYDAY	2.2 ± 1.2	2.2 ± 1.2	NS	
FACE PROBLEMS	2.9 ± 0.4	2.9 ± 0.4	NS	
HAPPINESS	2.6 ± 1.0	2.6 ± 1.0	NS	

Paired t test P < 0.001, High Sig.

DISCUSSION:

In a developing nation like India, the reach for oral health care is still in its limited access. The elderly who are completely edentulous requiring prosthodontic care are one of the most neglected groups. This study has taken the above group for evaluation for its overall improvement in psychological and social well being following restoration.

This study has evaluated the various aspects of the post rehabilitation effects of complete denture wearers. In this study, questionnaires were used as a mode of evaluation, which is a simple, direct and recently popularized method of checking utility of dental services. [15]

The following questionnaires specifically evaluates the overall effect of complete denture rehabilitation on general health and oral satisfaction

- Questionnaire on lifestyle and oral amenity (Rieko Takemae)
- The General Health Questionnaire 12 (D.P. Goldberg)
- The Health Utilities Index Mark 3 (G. Torrance)

Rieko Takemae constructed an original questionnaire on daily living habits and state of associated dental disease. Their total scores assessed the lifestyle and oral amenities of the respective individuals [14].

The General Health Questionnaire (GHQ) is one of the most common generic tools that measures current mental health. It was developed by D.P. Goldberg in the 1970s and has been extensively used in different settings and cultures [16–20]. GHQ originally a 60-item instrument has shorter versions, including the GHQ30, GHQ28, GHQ20, and GHQ12, as well. The most common scoring methods are bimodal (0–0–1–1) and Likert scoring style (0–1–2–3).

HUI is a health utility measurement instrument that was developed by G. Torrance based on the utility theory of von Neumann–Morgenstern [21, 22], in which states of being that are worse than death are indicated by negative utility values [23]. Scoring functions are based on a direct method of utility measurement, such as timetrade-off or standard gambling method. The reliability of HUI questionnaire was reported by O'Brien [24], Luo et al. [25], and Naglie et al. [26].

Outcome Of The Study

The outcome of the study reveals that due to significant improvement in esthetics, chewing efficiency, phonetics, and the ability to socialize following complete denture rehabilitation, there is an overall improvement in the psychological well being of the patient along with

an with enhanced lifestyle. This indicates that oral function of elderly patients can be recovered satisfactorily with complete dentures.

Heydecke et al. [27] reported that the patient's oral health QOL was improved with dentures and a simultaneous improvement in HRQOL as well. As a result, there was an improvement in the lifestyle of the elderly people in terms of the ability to concentrate along with frequency of going out and oral global assessment.

The quality of life is assessed by the sense of well being. Though this factor is evaluated subjectively, it is a key factor in geriatric individuals. As a person ages the sense of well being plays an important role in the overall health of the patient.

Matsuoka et al. [28] reported that subjective happiness was high and a tendency towards dejection was low; therefore, the high intra-oral satisfaction and the number of surviving teeth is related to the physical balance and function in elderly persons.

Naito et al. [29] reported that the maintenance of the oral cavity function contributes to physical QOL, as observed from their findings that the greater the number of residual teeth, the higher the physical QOL; as bite and tooth alignment worsen, physical QOL decreases and the degree of intraoral health will show a decline together with a decline in mental health. According to these reports it is thought that the number of remaining teeth is related to aging of the oral mucosa and the aging of the whole body in elderly persons and that mental health aspects were improved significantly in GHQ12 for elderly persons with residual teeth still in place.

Limitations And Scope Of Improvement Of This Study:

The sample size in this study was small, and it will be necessary to conduct further studies with a larger number of subjects involving more dentists to ascertain the validity of our findings and the efficacy of an intervention.

CONCLUSION

The study analyzing the suburban south Indian population shows that completely edentulous elderly patients who were restored with prosthesis had an improvement in the quality of life and were able to be more socially adaptable. Replacement with complete dentures improves the overall psychological and social well being of elderly patients.

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