

Impact of Complete Denture Rehabilitation on Oral Health-related Quality of Life in Completely Edentulous Patients

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Abstract

Background: Complete edentulism is a long-term oral health consequence that can be caused by the pathologies of dental caries, periodontal disease. Edentulism increases by 4% every ten years in young adults, while it increases by >10% every ten years in people over 70. Evidence is overwhelming that edentulism has a detrimental impact on oral health-related quality of life (OHRQoL) in the form of functional, psychological, and social impairment, which has an impact on daily living. The OHRQoL has been linked favorably to oral rehabilitation

Aim: To evaluate and compare the impact of complete denture insertion on OHRQoL at three times in time, namely preinsertion, 6 months after insertion, and 12 months after insertion.

Methods and Materials: The Hindi version of the Geriatric Oral Health Assessment Index (GOHAI) was used to measure OHRQoL. There are a total of 12 items in it, and they measure three different aspects of function—physical, psychological, and pain or discomfort. Assessing tooth sensitivity as the 12th item was deemed useless and hence removed from the instrument. As a result, the 11-item GOHAI was employed. A single researcher administered the GOHAI, which had six possible outcomes: "always - 5," "very often - 4," "often - 3," "sometimes - 2," "seldom - 1," and "never - 0." A lower score was linked to

better dental health in the current study. A single investigator administered the GOHAI at the beginning of the study (preinsertion), as well as six and twelve months thereafter. Age and gender were two sociodemographic factors that were gathered.

Results: The mean GOHAI scores at preinsertion was 26.19 ± 1.297 . The mean GOHAI scores at 6 months postinsertion was 16.77 ± 1.623 . The mean GOHAI scores at 12 months post insertion was 9.03 ± 1.347 . The difference in findings was significant statistically with overall decrease in scores after insertion of complete denture.. ($p < 0.001$). On analyzing the GOHAI score according to gender, it was observed that mean score in males at preinsertion stage was 26.13 ± 1.45 while mean score at 12 months preinsertion stage was 8.95 ± 1.37 . The decrease in scores among males was significant statistically. ($p = 0.001$). The mean score in females at preinsertion stage was 26.20 ± 0.99 while mean score at 12 months preinsertion stage was 9.16 ± 1.31 . The decrease in scores among females was significant statistically ($p = 0.001$).

Conclusion: The current study showed that oral rehabilitation enhances OHRQoL in the elderly by demonstrating a statistically significant difference between pre and post GOHAI scores

Keywords: Oral Health-related Quality of Life, Complete Denture Rehabilitation:

Introduction

The WHO predicts that by 2050, there will be 1.5 billion individuals who are 65 years of age or older, up from 524 million in 2010. Noncommunicable diseases (NCDs), with their high societal and economic costs, are a new disease pattern that comes along with this trend.³⁻⁵ One of the most prevalent NCDs worldwide is the burden of oral disease. Their effects are significant in terms of discomfort, suffering, functional impairment, disability, and eventually decreased quality of life (QoL).

Complete edentulism is a long-term oral health consequence that can be caused by dental caries, periodontal disease. Edentulism increases by 4% every ten years in young adults, while it increases by >10% every ten years in people over 70. However, it has been noted that the prevalence of edentulism is declining every ten years due to more widespread and improved oral health services globally.^{6,7} Edentulism has a direct connection to masticatory and nutritional issues, and some authors consider it to be a reliable predictor of mortality.⁸ Complete edentulism is a serious problem that affects overall health (lower intake of fruits and vegetables and low-nutrient diet) and reduces quality of life.^{9,10}

There is sufficient evidence to support the fact that edentulism has a detrimental impact on oral health-related quality of life (OHRQoL) in the form of functional, psychological, and social impairment, which has an impact on daily living. Elderly people who have lost their teeth experience low self-esteem, a deterioration in psychological well-being, limited social engagement, and social isolation.¹¹⁻¹³ OHRQoL has been prioritized as a multidimensional complex of interconnected dimensions.¹⁴ OHRQoL has significance for dental clinical practice and can complement clinical results and play a critical role in clinical decision-making. By measuring OHRQoL, it is possible to move ahead from traditional medical/dental standards and toward evaluations that concentrate on a person's social and environmental context.¹⁵

The OHRQoL is also affected by oral rehabilitation in completely edentulous patientd. One of the main applications of measurement of OHRQoL in clinical practice is monitoring changes in response to treatment. The term "sociodental indicators" was popularized by Cohen and Jago, and over time, more instruments for evaluating OHRQoL in various contexts and groups emerged.

The self-reported GOHAI oral health assessment index is usually used in older population.¹⁶⁻¹⁹ It measures health according to a patient-centered definition rather than a disease-centered epidemiological definition. Atchinson and Dolan created GOHAI in 1990, and it was later applied to the geriatric

population in North America. GOHAI is reliable, widely used, and verified in several languages, including Hindi.²⁰

A prevalidated Hindi GOHAI questionnaire was used in the present study to evaluate and compare the impact of complete denture insertion on OHRQoL at three times in time, namely preinsertion, 6 months after insertion, and 12 months after insertion.

Methodology

The current study was carried out in tertiary care hospital. All patients who reported to the Prosthodontics Outpatient Department during the study period were scrutinized for eligibility. Although 256 patients initially qualified for the trial, only 200 ended up taking part (loss due to incomplete treatment, refusal to take part in the 12-month follow-up, etc.). Patients were disqualified if they had a temporomandibular joint disorder, a mental illness, a partial denture, wore dentures for a long time, were elderly, or had only one complete denture.

Although small case-based adjustments to the process and materials were made during the whole denture manufacture, traditional methods were used. All dentures have been processed in the same laboratory utilizing the compression molding technique and conventional laboratory practices.

The Hindi version of the Geriatric Oral Health Assessment Index (GOHAI) was used to measure OHRQoL.²⁴ There are a total of 12 items in it, and they measure three different aspects of function—physical, psychological, and pain or discomfort. Assessing tooth sensitivity as the 12th item was deemed useless and hence removed from the instrument. As a result, the 11-item GOHAI was employed.^{11,26} A single researcher administered the GOHAI, which had six possible outcomes: "always - 5," "very often - 4," "often - 3," "sometimes - 2," "seldom - 1," and "never - 0." Thus, the scores may be between 0 and 55. A lower score was linked to better dental health in the current study. A single investigator administered the GOHAI at the beginning of the study (preinsertion), as well as six and twelve months thereafter. Age and gender were two sociodemographic factors that were gathered.

Statistic evaluation

SPSS 21.0 (Statistical Package for Social Sciences, IBM Corporation) was used to analyze the data. Using the paired t-test and repeated measures ANOVA, pre- and post-insertion findings were compared and examined.

1	How often you limit the kind of foods or amounts of food you eat because of problems with your teeth or denture?
2	How often did you have difficulty biting or chewing any kinds of food, such as firm meat or apples?
3	How often were you able to swallow comfortably?
4	How often have your teeth or dentures prevented you from speaking the way you wanted?
5	How often were you able to eat anything without feeling discomfort?
6	How often did you limit contacts with people because of the condition of your teeth or dentures?
7	How often were you pleased or happy with the looks of your teeth and gums, or dentures?
8	How often did you use medication to relieve pain or discomfort from around your mouth?
9	How often were you worried or concerned about the problems with your teeth, gums, or denture?
10	How often did you feel nervous or self-conscious because of problems with your teeth, gums, or dentures?
11	How often did you feel uncomfortable eating in front of people because of problems with your teeth or denture?

Figure 1: List of questions in the questionnaire

Results:

In this study 200 study participants were included. 126 study participants were males while 74 study participants were females.

Table 1: Descriptive statistics of the general oral health assessment index score at preinsertion and 6 months and 12 months postinsertion of the denture (n=200).

n	200
Pre	26.19 ±1.297
12th	9.03 ±1.347
P	P<0.001 t=97.95

The mean GOHAI scores at preinsertion was 26.19 ±1.297. The mean GOHAI scores at 6 months postinsertion was 16.77 ±1.623. The mean GOHAI scores at 12 months post insertion was 9.03 ±1.347.

The difference in findings was significant statistically with overall decrease in scores after insertion of complete denture.. (p<0.001). (table 1)

Table 2: Comparison of preinsertion and 12 months postinsertion general oral health assessment index scores with respect to age and gender

Patient characteristics		Gender		Age	
		Male	Female	<60 years	>60 years
GOHAI	Pre	26.13±1.45	26.20±0.99	25.09 ±0.09	29.27 ±1.45
	12 months	8.95±1.37	9.16±1.31	8.93 ±1.39	9.11±1.31
P value		0.001		0.001	

On analyzing the GOHAI score according to gender, it was observed that mean score in males at preinsertion stage was 26.13±1.45 while mean score at 12 months preinsertion stage was 8.95±1.37. The decrease in scores among males was significant statistically .(p=0.001).The mean score in females at preinsertion stage was 26.20±0.99 while mean score at 12 months preinsertion stage was 9.16±1.31. The decrease in scores among females was significant statistically (p=0.001).

On analyzing the GOHAI score according to age, it was observed that mean score in study participants of age less than 60 years at preinsertion stage was 25.09 ±0.09while mean score at 12 months preinsertion stage was 8.93 ±1.39. The decrease in scores was significant statistically . (p=0.001).The mean score in study participants with age more than 60 years at preinsertion stage was 29.27 ±1.45while mean score at 12 months preinsertion stage was9.11±1.31. The decrease in scores was significant statistically (p=0.001). (table 3)

Discussion

The physical, mental, and emotional health of the patient has an impact on how satisfied they are with their dental care. The field of dentistry has seen an increase in the number of different tools and scales designed to evaluate the OHQoL or simply the QoL of patients with a range of oral disorders.^{21,22} Various factors influence how older adults view oral health's importance to life quality, and a recent meta analysis provides compelling evidence that tooth loss is linked to a decline in OHRQoL.²³⁻²⁴

GOHAI was one of the most widely used tools in terms of studies researched and applications by authors other than the original authors, according to a critical appraisal done to evaluate several techniques to assess OHRQoL in old.²⁹

GOHAI has been validated in Hindi and used in the Indian context to compare clinical outcomes and therapies to OHRQoL.²⁵⁻²⁸ The current study concentrated on the 12-month follow-up of patients who had undergone total denture rehabilitation.

When compared to baseline ratings, it was shown that the sample's total OHRQoL scores considerably increased at 6 and 12 months postinsertion (P 0.001). At one month after the complete denture was inserted, Shigli and Hebbal reported on their findings from a pilot study and noted a comparable improvement in OHRQoL.²⁶ In a 6 month follow up post-denture implantation, Dable et al. similarly observed a substantial change in GOHAI score and greater OHRQoL.¹¹

In the study by Karmacharya et al., carried out in Lucknow, India, complete denture patients' OHRQoL improved from baseline through the first and third months after denture placement.³³ In comparison to the current study, which followed patients for 12 months, the majority of studies conducted in India investigated OHRQoL over a shorter time span. According to a study from Turkey, dental rehabilitation led to significant improvements in GOHAI scores and higher OHRQoL among senior patients three months following dental rehabilitation.³⁴ In a research with 26 patients who received new prosthesis,

Veyrune et al. used GOHAI. However, when initial evaluation values were contrasted with denture installation scores six weeks later, no statistically significant difference was seen. However, 12 weeks after the patients received their new dentures, the GOHAI score increased.³⁵ Koshino et al.'s study similarly revealed comparable outcomes following dental or denture rehabilitation.³⁶

The mean GOHAI score in the current study was 26.19 ± 1.29 , which was comparable to the results of a study by Agarwal et al. in Northern India (30.176 ± 0.88).³² According to a study by Marya et al., there was no discernible variation in mean GOHAI scores between gender and age categories.³¹ Elderly people's quality of life has been measured in a variety of contexts, but only a small number of studies in India offer a long-term assessment following oral rehabilitation.

Even though the present investigation concentrated on OHRQoL following rehabilitation at a 12-month follow-up, it had constraints of its own. In this study GOHAI was used however it has been determined that GOHAI primarily evaluates a person's functional limitations. Since dental care is offered at the organization where the current study was conducted for free or at significantly reduced costs, the participants in the study were from poor socioeconomic class.

Conclusion

The current study showed that oral rehabilitation enhances OHRQoL in the elderly by demonstrating a statistically significant difference between pre and post GOHAI scores. Therefore, routine GOHAI assessment may act as a substitute for clinical examination and a supplemental measure, allowing a clinician to make a thorough assessment that takes into account both clinical outcomes and the perception of oral health by the individual.

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