

A study of relationship between partial edentulism and oral health related quality of life (OHRQoL) and effect of removable partial denture treatment on OHRQoL

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Abstract

Edentulism can lead directly to impairment, functional limitation, physical, psychological, and social disability, and handicap and this study was aimed to evaluate the relationship between partial edentulism and oral health impact profile of the patients by using OHIP-14 questionnaire and to test the instrument reliability and validity of OHIP-14 Myanmar version (OHIP-14 mm) to use among the Myanmar population. OHIP-14 Myanmar version was produced through the systematic process of instrument translation and adaption from English version of OHIP-14. Eighty five partially edentulous patients were selected among the patients enrolled to Department of Prosthodontics, University of Dental Medicine, Mandalay during January and February, 2018. The dentition status and prosthodontic treatment need were recorded and the patients were asked to answer OHIP-14 questionnaire (Myanmar version). Thirty patients were rehabilitated with removable partial dentures and their OHIP scores before and after rehabilitation were recorded. The results showed that there were significantly different OHIPs ($p < 0.05$) between male and

female (male=8.7, female=19.9) and arch with missing teeth to be replaced (both arches=20.8, maxilla only=10.6, mandible only=10.9). There was only weak association between the number of missing teeth and OHIP ($r=0.259$). Significant reduction of OHIP scores was found after rehabilitation with removable partial dentures ($p < 0.05$). The reliability coefficient (Cronbach's alpha) of the OHIP-14mm was excellent ($\alpha=0.94$). In conclusion, removable partial denture rehabilitation can significantly improve the oral health related quality of life of partially edentulous patients and OHIP-14mm is a reliable and valid instrument to evaluate the oral health impact profile in Myanmar subjects.

Introduction

Oral health is always an inseparable part of general health and tooth loss often substantially reduces the quality of life [1]. Edentulism is a debilitating and irreversible condition and is described as the "final marker of disease burden for oral health" [2]. Edentulism can lead directly to impairment, functional limitation, physical, psychological, and social disability, and handicap (3). In Prosthodontics, criteria based on standardized clinical

parameters, including prosthesis fit, retention, stability, occlusion (vertical dimension and centric relation) have been traditionally used to assess the success or failure of treatments. However, the clinical parameters do not take into consideration other intrinsic factors which directly affect the patients' own judgments and attitudes about their dentures. Patient satisfaction with dentures does not depend on the clinical parameters assessed by the dentist, but on a patient's own perceptions regarding comfort, aesthetics, self-confidence or oral sensations which directly impact their quality of life [4, 5]. Variables such as number of missing teeth and position of missing teeth can influence how patients perceive treatment to replace missing teeth [6]. Extent of tooth loss, local factors, and systemic factors are important considerations in the planning of prosthodontic treatment [7].

The oral health-related quality of life indicators are increasingly used to measure the impact of oral conditions on quality of life to complement clinical data in cross-sectional and longitudinal studies. The Oral Health Impact Profile (OHIP-14) is a 14-items questionnaire designed to measure self-reported functional limitation, discomfort and disability attributed to oral conditions. It is derived from an original extended version of 49-items based on a theoretical model developed by the World Health Organization (WHO) and adapted for oral health by Locker [8]. In this model the consequences of oral disease are hierarchically linked from a biological level (impairment) to a behavioural level (functional limitation, discomfort and disability) and lastly to the social level (handicap). The OHIP-14, in spite of being a short-questionnaire, has been shown to be reliable, sensitive to changes and

to have adequate cross-cultural consistency. The OHIP-14 is one of the most internationally spread OHRQoL indicators, available in several languages (Chinese, Finish, French, German, Japanese, Malaysian, Portuguese, Sinhalese, Somalian, Swedish, Spanish and so on). The objectives of the present study were to test the instrument reliability of Oral Health Impact Profile Questionnaire (OHIP-14) Myanmar version (OHIP 14mm) and to use among the Myanmar population and to evaluate the relationship between partial edentulism and oral health related quality of life of the patients and effect of removable partial denture treatment on OHRQoL.

Materials and methods

Subjects

The study included 85 partially edentulous subjects, both genders, 28-96 years old, attended to Dept. of Prosthodontics, University of Dental Medicine, Mandalay, Myanmar.

Development of OHIP-14 Myanmar Version (OHIP-14 mm)

OHIP-14 English version was linguistically and culturally adapted to Myanmar setting by using the back translation technique in order to maintain cross-cultural equivalence. Translation was made by a bilingual dentist, and it was translated back into English by a professional English teacher at the university who had never seen the original version. The conceptual equivalence between the original instruments and the back-translated versions was then discussed and produced a consensus Myanmar version of OHIP-14.

Data Collection and analysis

The dentition status and prosthodontic treatment need were recorded and the patients were asked to answer OHIP-14 questionnaire (Myanmar version). Relationship between partial edentulism and oral health impact profile of the patients was evaluated by Chi-square test. Reliability of OHIP-14 mm was analyzed by internal consistency which was calculated using standardized Cronbach’s alpha, inter-item and item-total correlation coefficients. Among 85 participants, 55 patients received removable partial denture treatments completely during the study period and their OHIP scores before and after rehabilitation were recorded and analyzed by using paired t test. Patient satisfaction was also determined by using patient evaluation questionnaire and intra-group comparison was done by using one-way ANOVA.

Results

Mean OHIP of partially edentulous patients was 8.7 for male and 19.9 for female and it was significantly different between male and female ($p < 0.05$) (figure 1).

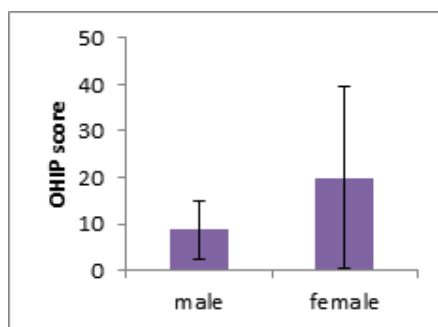


Figure 1. Comparison of OHIP scores in male and female

When missing teeth to be replaced were located in both upper and lower arches, the OHIP was 20.8, in maxilla only was 10.6, and in mandible only was 10.9 respectively (figure 2). OHIP in patients requiring replacement in both

arches was about twice of each arch and it was statistically significant ($p < 0.05$).

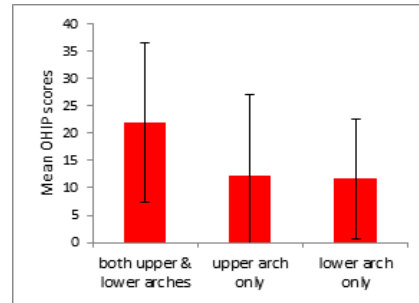


Figure 2. Comparison of OHIP between different arch categories with missing teeth

Regarding the relationship between OHIP and the number of missing teeth, there was only weak association between the number of missing teeth and OHIP ($r = 0.259$) (figure 3).

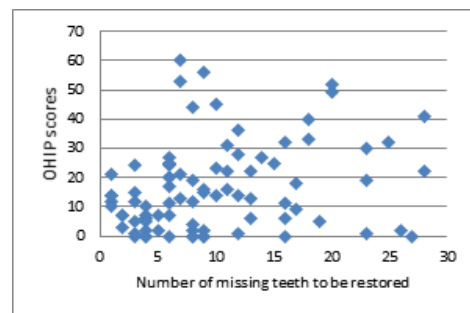


Figure 3. Relationship between OHIP scores and number of missing teeth to be restored

Significant reduction of OHIP scores was found after rehabilitation with removable partial dentures ($p < 0.05$) in all three categories. The OHIP was reduced by about half after rehabilitation with removable partial dentures (figure 4).

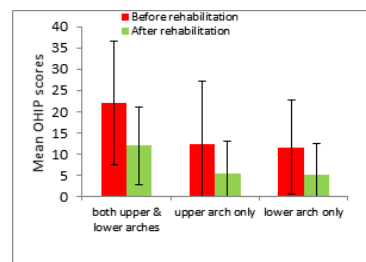


Figure 4. Comparison of OHIP scores before and after rehabilitation

The patient satisfaction with removable partial dentures was in average more than 75% (figure 5).

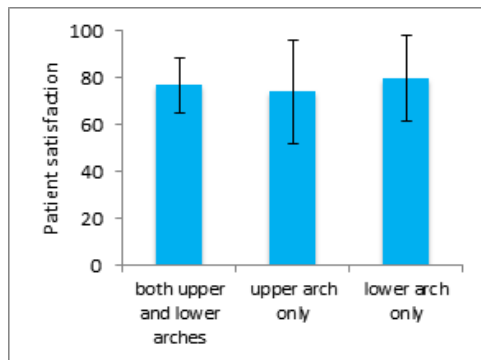


Figure 5. Comparison of patient satisfaction after rehabilitation with removable partial dentures

The reliability coefficient (Cronbach's alpha) of the OHIP-14mm was excellent (alpha=0.94).

Discussion

The present study observed the impact of partial edentulism on the oral health-related quality of life (OHRQoL) and effect of removable prosthodontic treatments to replace missing teeth on OHRQoL changes. More recently there has been a growing interest on the influences of tooth loss on life quality, not only its physical, functional consequences but also its social and psychological influences [8]. The indicator for OHRQoL used in the present study was the Oral Health Impact Profile (OHIP-14) which is one of the most internationally spread indicators [9-12]. It is a 14-items questionnaire designed to measure self-reported functional limitation, pain, psychological discomfort, physical disability, psychological disability, social disability and handicap attributed to oral conditions.

There was significantly higher OHIP scores in females than in males ($p < 0.05$) which indicates that partial edentulism impacts the

OHRQoL much more in females. It is also logical that the OHIP scores in patients with missing teeth in both jaws were about two times higher than those with partial edentulism at one jaw only. This finding may be important in oral health rehabilitation in terms of assessing patient's needs, evaluating outcomes and prioritizing care.

McGrath and Bedi (2001) reported that patients with fewer than 20 natural teeth have worse OHRQoL than those with 20 teeth or more [13]. However, it cannot be concluded that direct strong relation between number of missing teeth and OHRQoL since there was only weak association between the number of missing teeth and OHIP ($r = 0.259$) in the present study.

In the study of McGrath and Bedi, it was found that those with less than 20 teeth who did not wear dentures were less than half as likely to enjoy enhanced oral health related quality of life compared to those with a similar number of teeth who had recourse to a denture or those with more than 20 teeth [13]. This would suggest the importance and value of oral rehabilitation for people who have experienced considerable tooth loss. In agreement with their finding, a significant reduction of OHIP scores was found after rehabilitation with removable partial dentures in the present study ($p < 0.05$). High patient satisfaction was also observed for removable partial denture treatment reflecting the improved oral health related quality of their lives.

Concerning the reliability of the translated version of OHIP-14, standardized Cronbach's alpha, inter-item and item-total correlation coefficients were analyzed. Cross-cultural adaptation procedures are critical steps in the validation process of an instrument that has

been developed among other target population. In the present study, the translation process from English to Myanmar was straightforward and the comparison between the original OHIP and the back translated English version did not reveal conceptual nor content differences. The equivalent words needed for translation of the questionnaire were not difficult to find because of the simple structure of the OHIP-14, and the universal nature of its contents. The reliability coefficient (Cronbach's alpha) of the OHIP-14mm was excellent (alpha= 0.94) and there was moderate to strong inter-item correlation and strong inter-item & item-total correlations (correlation coefficient ranged from 0.41 to 0.903). Since the validity of the OHIP-14 instrument in all aspects, such as construct validity, criterion validity, face and content validity have already been confirmed [14-16], it can be effectively used in further studies in the Postodontics.

In conclusion, OHIP-14mm is a reliable instrument in assessment of oral health related quality of life of the patients from study population and removable partial denture treatment can improve the OHRQoL and priority should be given to those who have lost natural teeth in both jaws.

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