REVIEWS

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Oral Health-related Quality of Life of Patients Using Removable Dentures – Review of Literature

Jakość życia związana ze zdrowiem jamy ustnej pacjentów użytkujących protezy ruchome – przegląd piśmiennictwa

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A – research concept and design; **B** – collection and/or assembly of data; **C** – data analysis and interpretation; **D** – writing the article; **E** – critical revision of the article; **F** – final approval of article

Abstract

Metal-based and acrylic partial and complete dentures constitute the treatment of choice in many cases of prosthetic rehabilitation. Loss of teeth and using a removable denture significantly affect patients' quality of life. The introduction of the term 'oral health-related quality of life' (OHRQoL) and availability of instruments that can be used for its determination allowed evaluating patient's satisfaction with this type of restoration. The aim of this study is to review literature on this subject and to investigate how removable dentures affect the quality of life of their users as well as to identify factors influencing patient satisfaction. The search of Pubmed revealed 49 articles related to the subject and the most relevant publications were included in the review. It was demonstrated that a removable denture may contribute to the improvement of patient's quality of life after an adaptation period. Clinicians should make every effort to design aesthetic dentures with good retention and stabilization. Patients should be instructed in detail on maintaining oral and denture hygiene and informed about possible difficulties they may experience when adapting to the prostheses (**Dent. Med. Probl. 2015, 52, 2, 222–226**).

Key words: quality of life, oral health, removable partial denture, complete denture.

Słowa kluczowe: jakość życia, zdrowie jamy ustnej, proteza całkowita, proteza ruchoma.

Prosthetic treatment with removable dentures has long been, and still remains, one of the most important methods for rehabilitation of partially and completely edentulous patients. The introduction of dental implants made it possible to replace traditional dentures with implant-retained prostheses in some patients. However, removable, partial or complete dentures remain the method of choice in many cases of prosthetic treatment for the elderly for a number of reasons. These include: failure by the state to provide funding for implantoprosthetic therapy, financial limitations on the part of the patient, local contraindications (insufficient bone quantity and quality) and general contraindications (poor general health, physical and manual limitations, more problematic cooperation of the patient with the doctor, concomitant systemic diseases and medication taken).

A few methods assessing the functionality of removable dentures have so far been designed and validated. In 2002, Corrigan et al. [1] introduced the Functional Assessment of Dentures (FAD) index, which is an instrument based on 10 criteria, among them interocclusal distance, occlusion, articulation, upper denture retention and upper and lower denture stability. These parameters are assessed and scored by a clinician to evaluate the quality of complete prostheses. The literature shows that the outcomes of prosthetic treatment are often judged differently by patients and dentists [2]. It must be noted that the patient's satisfaction and denture acceptance are very important determinants of therapeutic success. Dental loss affects the quality of life not only by compromising oral functions such as mastication or

speech, but also by producing negative changes to facial aesthetics. Subsequently, worsened appearance causes personal depreciation related to self-image and self-esteem and finally restricts the patient's social relations. It seems obvious that only patients themselves can evaluate the impact the removable denture exerts on their quality of life when daily activities are performed, as well as the reaction of people to the change in the patient's appearance. Therefore, it must be stated that there is a need to evaluate the influence that prosthetic treatment has on the patient's well-being by means of specific instruments that assess the impact of prostheses on oral functions and daily performance.

Concept of Oral Health-Related Quality of Life

The term oral health-related quality of life (OHRQoL) introduced by Gift and Redford [3] in 1992, is a multidimensional measure. Locker states that "when talking about oral health, our focus is not on the oral cavity itself but on the individual and the way in which oral diseases, disorders and conditions, whether confined to the oral cavity or linked to the other medical conditions, threaten health, well-being and the quality of life" [4]. Defining ORHQoL is nowadays an essential part of research evaluating the outcomes of prophylactic and therapeutic programs that aim to improve oral health [5]. Several indicators have been created to assess oral health-related quality of life and most of them are questionnaire instruments. Some of them refer to the issue in a general manner and can be used in all patients, for example the GOHAI – General Oral Health Assessment Index; others are indicated for specific groups of patients, like the Child Oral Impacts on Daily Performances (Child-OIDP). Two of the most commonly used indicators are the Oral Health Impact Profile (OHIP) and Oral Impacts on Daily Performances (OIDP). The OHIP questionnaire consists of 49 elaborate questions, for example: "Have you had to interrupt meals because of problems with your teeth, mouth or dentures?" or "Have you been a bit embarrassed because of problems with your teeth, mouth or dentures?" Statements are divided into seven areas: psychological discomfort, functional limitations, pain, social disability, physical disability, psychological disability, and handicap. Respondents are requested to specify on a 0 to 4 scale how often they experienced each difficulty within a reference period choosing from five possible answers: "never", "hardly ever", "occasionally", "fairly often" and "very often". The disadvantage of this type of OHIP is the long time required to fill in the questionnaire (approximately 15 minutes), therefore a shortened (14-point) version of the indicator has also been created. OIDP evaluates the impact of oral health-related problems on daily activities like eating and savoring food, speaking, pronouncing clearly, relaxing and sleeping, showing one's teeth without embarrassment, enjoying contact with other people, smiling and laughing. The questionnaire consists of 9 items like "In the past 6 months, have you had any difficulty eating due to problems with your mouth, teeth or dentures?" and "In the past 6 months, how often have you had this difficulty?" The perceived severity of impacts in the OIDP is determined by asking patients to choose from 0 to 5. "0" indicates lack of influence in the past six months while "5" relates to "daily" or "almost daily" problems in the same period [5].

Impact of Removable Dentures on OHRQoL

Reports in the literature on the influence of prosthetic treatment on oral health-related quality of life were investigated using the Pubmed database. The search was carried out by entering the key terms "removable dentures" and "OHRQoL" and revealed 49 articles related to the subject. The 24 most relevant publications were included in this review. Articles on prosthetic treatment with implant-retained overdentures were excluded. The final update of the electronic search was performed on November 18th, 2014. The aim of this research is to determine how removable dentures affect patients' quality of life and to evaluate the factors that influence the patient's satisfaction with the prostheses, both dentist-related (for example adequate instructions given to the patient) and unrelated (like the number and alignment of the remaining teeth). The study groups in the included articles were mainly elderly patients wearing removable partial or complete dentures over a long period time, requiring replacement of the old prostheses.

Complete Dentures

Regarding prosthetic rehabilitation with conventional complete dentures, it was observed that the provision of new prostheses results in an overall upgrade in patients' quality of life [6–10] by restoring their self-esteem and self-image, improving comfort during food mastication [6] and bringing back the feeling of completeness and social integrity [9]. It should be noted that the increase in

OHRQoL is observed not sooner than after the adaptation period, which can last for three months [6], a year [11] and even up to two years [12]. Most studies revealed that the adaptation period is particularly challenging to a large number of patients, especially in the first month of use when they experience the most difficulties with speaking and cleaning the denture [6, 7, 9]. These results indicate the necessity of giving the patient clear and comprehensive instructions about denture hygiene, and informing them about all the difficulties that may occur during the adaptation process.

Sufficient retention of the lower complete denture seems to be one of the vital factors influencing the patient's satisfaction. According to the study published by Komagamine et al. [9] replacement of the lower denture and improvement in its retention results in a significant increase in the comfort of its users. Other authors confirm that inappropriate retention and stability of the mandibular denture can be an obstacle to achieving positive results in prosthetic treatment [10, 13]. De Souza et al. [10] and Bae et al. [13] report that satisfactory retention of dentures is crucial for the patient's ability to chew properly which, in turn, has a major effect on their acceptance of the prosthesis. These findings indicate the need for particular accuracy when functional impressions are taken or when old complete dentures are periodically relined or replaced. Albaker et al. [14] reported that patients wearing a denture for one jaw only with their natural teeth in the opposite one, are relatively more satisfied than those using both maxillary and mandibular appliances. It was also found that the level of dissatisfaction is higher in elderly subjects.

Albaker et al. [14] also noted that the outcome of conventional complete denture therapy depends mainly on the patient's attitude and their ability to accept initial problems and limitations of the treatment and to adapt to them via a training process. Heydecke et al. [15] report that there are certain psychological factors and coping styles that affect oral health-related quality of life during the adaptation period. These authors list behavioral disengagement, denial and substance abuse as negative predictors of OHRQoL, and consider emotional support to be a significant positive predictor. De Souza et al. [10] revealed that a patient who is not adequately informed and looked after when facing difficulties using prostheses assumes that the denture is incorrectly fabricated, nor will they understand the point of check-ups. These authors conclude that it is crucial for the dentist to provide all the necessary information about the condition of the tissues supporting the prostheses and possible complications that may occur in order to avoid a patient's excessive expectations and potential dissatisfaction [10].

Comparison Between Complete and Partial Dentures

Studies comparing the OHRQoL of removable partial and complete denture users have reported conflicting results. Reissmann and John report that removable denture users are more satisfied with their oral health than edentulous individuals due to the presence of remaining teeth [8, 16]. Knezovic Zlataric et al. [17] noted that clasps and other retentive elements in RPDs improve the retention and stability of the dentures while the existence of mechanoreceptors in the periodontal ligament of the remaining teeth results in higher awareness of occlusal forces. On the other hand, research conducted by other authors revealed that RPDs users are less satisfied than complete denture users [13, 18]. In the study by Bae et al. [13], patients using RPDs reported "food catching", "stale breath", difficulties with maintaining good oral hygiene and "irritation and impatience with other people". These authors suggest that better adaptation to complete dentures than to partial ones might be associated with the fact that edentulous subjects are more conscious of their disability and better adapted to dentures because they had transitioned to complete edentulism through RPD status. These authors conclude that patients with residual dentition may compare the dentures to the natural teeth and therefore, have unrealistic expectations [13]. Montero et al. [18] found that edentulous individuals tend to present with low OHRQoL output before the onset of treatment. Moreover, these researchers noticed that the higher the clinical disability felt by patients, the more demonstrable the increase in OHRQoL after the therapy.

John et al. [16] point out that the moment of transition from the status of having natural dentition to wearing removable dentures is a relevant cut point for psychological and functional well-being. The second important moment is the transition from being partially to completely edentate [16, 19]. Given this data, it seems fair to suggest that the strategies in prosthetic treatment should focus on preserving the patient's natural teeth, not only to avoid the necessity of using removable denture at all, but also to improve the stabilization of removable denture by its retention on the remaining teeth [16, 19].

Removable Partial Dentures

Reissmann et al. [8] and Preshaw et al. [20] noted the positive effect of removable partial dentures

on a patient's quality of life and satisfaction; however, they pointed out that further in-depth studies in this area are needed to confirm this finding. In contrast, Bae et al. [13] revealed that a large number of patients experience deterioration in the quality of life after receiving RPDs due to chewing problems. According to research conducted by Montero et al. [18] and Frank et al. [21, 22], similar findings concern those patients who have never used a removable denture. Wakabayashi et al. [23] noted that the longer the patients used their partial denture, the more their neuromuscular control of the appliance developed, and their speaking ability improved. It was also noted that the pain and discomfort caused by using an appliance tended to decrease over time. Knezovic Zlataric et al. [17] found that a patient's attitude, personality and motivation for wearing the RPD all have a positive effect on the outcomes of treatment. These authors stress that the ability to masticate, good retention and aesthetics are the major factors influencing the patient's satisfaction. According to the same study, patients who have had no prior experience with RPDs, those who had been wearing RPDs in the opposite jaw, subjects younger than 60 and/or in poor health are the most dissatisfied with their prostheses. It was also noted that men were less satisfied with mastication with mandibular dentures than women. Knezovic Zlataric et al. [17] revealed that patients with higher education assessed their RPDs aesthetics and the ability to maintain good oral hygiene with lower grades, although they cleaned their dentures more frequently than less educated subjects. This finding can be interpreted by the fact that better educated patients may have higher standards for their appearance and are more realistic in their judgment.

Research on the number and position of the remaining teeth and their influence on a patient's OHRQoL revealed interesting data. It was shown that a large number of patients' complaints are related to mandibular bilateral distal extension dentures [24]. It was also shown that subjects with a significant number of teeth missing in the mandible found their RPDs more uncomfortable in comparison with patients with fewer teeth missing [17]. Several studies revealed that patients who have natural anterior teeth and premolar pairs present and only molar teeth missing are satisfied with their oral health [23–25] and many of them decide not to use their RPDs [25]. Some authors repeatedly emphasize that it is the absence of anterior teeth that motivates the patient to wear a denture [25].

Findings on the influence of the material and construction of dentures on patients' quality of life are conflicting. Montero et al. [18] noted that metal-based removable partial dentures are more acceptable by patients than acrylic partial dentures because they enable better oral hygiene. On the other hand, studies conducted by Knezovic Zlataric et al. [17] and Wakabayashi et al. [23] revealed no influence of the denture's material, shape, construction and support on the patient's comfort and satisfaction.

In Preshaw's [20] review on the influence of a removable partial denture on systemic health, it was shown that there is an increased occurrence of high plaque levels and gingivitis among denture users; however, no correlation between denture use and the risk of periodontitis was revealed. It was reported that even if RPDs wearers maintain good oral hygiene, they are still more susceptible to root caries and gingival recession of abutment teeth, compared to controls. It was emphasized that a denture's open design without gingival coverage decreases the risk of complications. Given this data, it seems reasonable to conclude that frameworks should be designed to make them comfortable and aesthetic but also to permit optimal oral hygiene. It must be remembered that the patient's motivation for cleaning the denture decreases in time; therefore, subjects using RPDs should receive regular recall with prophylactic procedures and oral hygiene instruction. Preshaw et al. revealed no influence of removable dentures on nutrition; however, the authors point out that further studies in this area should be conducted to confirm this finding.

Conclusions

Treatment with removable dentures improves patients' quality of life in many cases of prosthetic rehabilitation. Clinicians should make every effort to design dentures that are comfortable, aesthetic and permit optimal hygiene, with good retention and stabilization. The studies covered by this review draw a conclusion that there is a need for giving the patient all the necessary instructions concerning denture use and oral hygiene, and informing them of possible complications during the adaptation period. As for dentists, providing care to their patients is crucial not only in the first months after the denture has been delivered but for the whole period of prosthetic treatment. Particular attention should be paid to patients who have not used a removable appliance before. Removable partial and complete dentures are no substitute for natural teeth; however, they can constitute an effective and predictable method of prosthetic rehabilitation satisfying both the doctor and the patient.

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