Original Article

ORAL HEALTH RELATED QUALITY OF LIFE (OHRQoL) AND ASSOCIATED FACTORS IN ADULT PATIENTS

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ABSTRACT

The aim of the study was to evaluate the impact of the oral health on Oral Health Related Quality of Life (OHRQoL) among patients looking for dental treatment at the Department of Periodontology, dental prophylaxis and oral pathology in University Dental Clinic (UDC) in Kraków. 250 adult patients were involved in a cross-sectional study consist of intraoral clinical examination and a questionnaire survey. There was a statistically significant negative correlation between self-assessment of OHRQoL and OHIP-14 in relation to teeth, oral mucosa and dentures. OHRQoL in patients complaining about caries was lower than in patients without these complaints. Among patients seeking prosthetic treatment their self-assessment of OHRQoL was worse than patients without these needs. Self-assessment of OHRQoL in patients visiting the clinic for follow-up visit was better compare to patients looking for treatment. There was a negative and statistically significant correlation between OHRQoL and 1) DMFT index, 2) number of decayed teeth and 3) number of missing teeth. The main aim for health care providers in dentistry should remain prophylaxis to maintain as many as possible healthy teeth in patients. Regular visits at the dental office seem to influence less patients' well-being.

Key words: OHRQoL, OHIP-14, Periodontal diseases, Oral mucosal diseases, Caries, DMFT.

Introduction

As the World Health Organization [1] established a definition of health as "a complete state of physical, mental, and social well-being and not just the absence of disease", researchers and clinicians changed their way of describing the disease. For dental clinicians, it has become important to assess not only clinical parameters, allowing to make a proper diagnosis and objectively describe the stage and severity of the oral disease, but also to consider patient-oriented outcomes (e.g. Health-Related Quality of Life – HRQoL, Oral Health-Related Quality of Life - OHRQoL [2]). Inclusion in the diagnostic process of the individual's expectation and experience may influence the therapeutic decision-making process and allow to respect the patient's social and mental well-being. It should positively affect the patient-dentist relationship, patient's trust, and compliance. The proper treatment plan should also consider cost-effectiveness with the benefit of the whole health care system [3].

OHRQoL is a complex and broad-ranging concept evaluating the impact of oral conditions on well-being and Quality of Life (QoL). Cohen and Jago [4] were the first authors who promoted the development of subjective indicators and one of them is the Oral Health Impact Profile (OHIP). This is an instrument assessing the impact of oral complaints on one's well-being in his or her evaluation during the last year. The OHIP-14 questionnaire was developed by G. Slade [5] as a short version of previously developed by G. Slade and A. Spencer [6] a longer form of this questionnaire (OHIP-49), both in English language. They are based on a theoretical model of oral health assessing seven dimensions: functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and handicap. The shorter version consists of 14 items (2 for each dimension). To make sure that an instrument assesses the set aim accurately, it is particularly important to use a questionnaire adapted and validated in a specific population considering cultural and language differences. Up till now, many studies of OHIP-14 validations and their modifications have been carried out [7-10].

The study aimed to investigate the impact of oral health on OHRQoL among patients with periodontal diseases, oral mucosa diseases, and caries, treated in University Dental Clinic (UDC) in Kraków, Poland using a questionnaire validated in this group of patients [11].

Materials and Methods

Procedures

Ethical approval from the Ethics Committee of the Jagiellonian University Medical College in Kraków was acquired (No. 122.6120.354.2016). Adult patients looking for dental treatment at the Department of Periodontology, dental prophylaxis, and oral pathology in the UDC in Kraków took part in this cross-sectional study. All of them obtained verbal and written information about the study and gave their informed consent. Exclusion criteria of the study were: lack of consent for involvement in the study and age below 18 years.

250 patients were involved in the study. All of them underwent intraoral clinical examination and fulfilled a questionnaire survey. Clinical data were collected by one calibrated dentist, examining artificial light with the use of a periodontal probe WHO and a dental mirror, including oral mucosa and periodontal examination, number of decayed, missed (regardless of the reason; without counting third molar teeth), and filled teeth. Questionnaire data included: self-assessment of QoL, self-assessment of OHRQoL, OHIP-14, the reason for visiting UDC, and information, if the patient is continuing the treatment or is a new one in UDC.

Questionnaire

In this study, the authors used a modified Polish language version of the OHIP-14 questionnaire, which was validated in a group of patients seeking treatment in the Department of Periodontology, dental prophylaxis, and oral pathology of the UDC in Kraków [11]. The modifications were introduced to determine the OHRQoL in a detailed way and consisted in, firstly, questioning about each item independently concerning teeth (subscale 1), oral mucosa and oral soft tissue (subscale 2) and dentures (subscale 3), and, secondly, adding two answers 'I don't know and 'not applicable. The items of OHIP-14 were rated on a five-point Likert-type frequency scale as never (0), almost never (1), sometimes (2), fairly often (3), and almost all of the time (4). The higher the OHIP-14 score, the more often disorders related to teeth, oral mucosa, or dentures, and the worse OHRQoL, existed.

Respondents were additionally asked about their self-assessment of QoL and OHRQoL directly. The answers (with rating) were: very bad (0), bad (1), satisfactory (2), good (3), very good (4).

Statistical analysis

The significance level for all statistical tests was set to 0.05. Program R 4.1.1. was used for computations. Chi-squared test (with Yates' correction for 2x2 tables) was used to compare qualitative variables among groups. In case of low values in contingency tables, Fisher's exact test was used instead. Mann-Whitney test was used to compare quantitative and ordinal variables between two groups, while the Kruskal-Wallis test (followed by Dunn post-hoc test) was used for more than two groups. The relationship between two quantitative and/or ordinal variables was assessed with Spearman's coefficient of correlation. Quantitative variables were summarized with median (quartiles).

Results and Discussion

A group of 250 individuals (age: 18-82 years, mean age: 52.16 years, SD = 15.85; man: 34.80%) enrolled in the study filled out the questionnaire and underwent an intraoral examination.

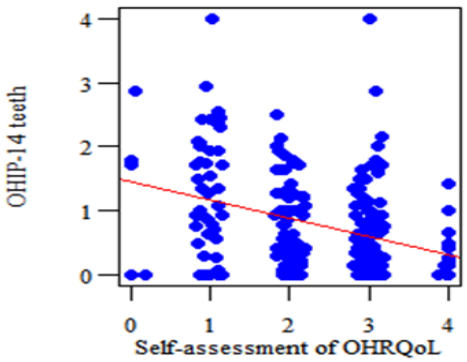

Figure 1. Correlation between self-assessment of OHRQoL and OHIP-14 in relation to teeth (r=-0.3, p<0.001).

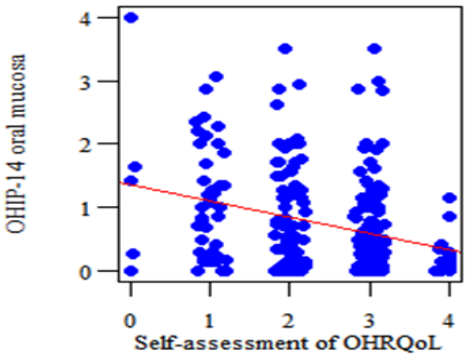

Figure 2. Correlation between self-assessment of OHRQoL and OHIP-14 in relation to oral mucosa (r=-0.274, p<0.001).

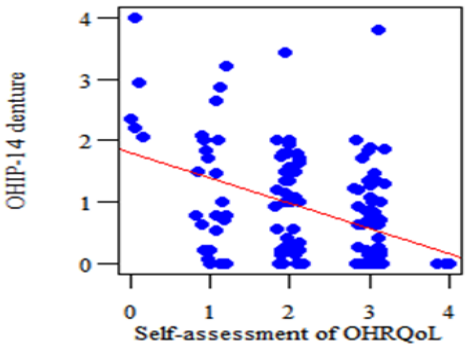

Figure 3. Correlation between self-assessment of OHRQoL and OHIP-14 in relation to dentures (r=-0.388, p<0.001).

In this paper, the authors made a comparison between the OHIP-14 questionnaire and directly asked questions about OHRQoL and QoL. The objective was to check if any relationship between the validated instrument and simple questions exists. There was a statistically significant negative correlation between self-assessment of QoL and OHIP-14 only within subscale 2 ($p<0.05$, $r<0$). It means that the fewer problems with oral mucosa measured by OHIP-14, the better self-assessment of overall QoL. There was a

statistically significant negative correlation ($p<0.05$, $r<0$) between self-assessment of OHRQoL and OHIP-14 within subscale 1 **(Figure 1)**, 2 **(Figure 2)**, and 3 **(Figure 3)**. It suggests that the lower OHIP-14 score and less disorders in relation to teeth, oral mucosa, and dentures, the better self-assessment of OHRQoL.

It means that the OHIP-14 questionnaire was as much understandable for respondents as simple questions. In this study, 78.6% of patients with oral mucosa diseases suffered from systemic diseases. Many oral mucosal diseases are influenced by medications and can cause severe painful symptoms that can affect individuals' assessment of overall QoL.

Patients were divided into five groups according to the reason for visiting the UDC: group 1 - periodontal diseases (n=114, 46.8%), group 2 - oral mucosal diseases (n=95, 38%), group 3 - caries and other dental problems (n=33, 13.2%), group 4 - prosthetic treatment (n=12, 4.8%) and group 5 - follow-up (n=25, 10%).

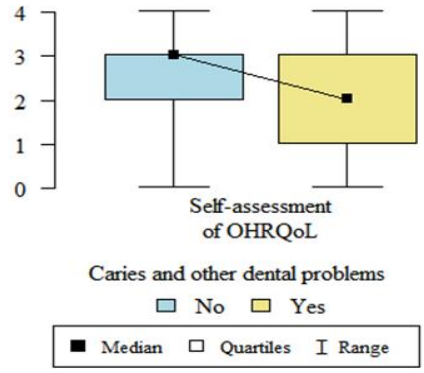

Figure 4. Self-assessment of OHRQoL in patients with vs without caries and dental problems.

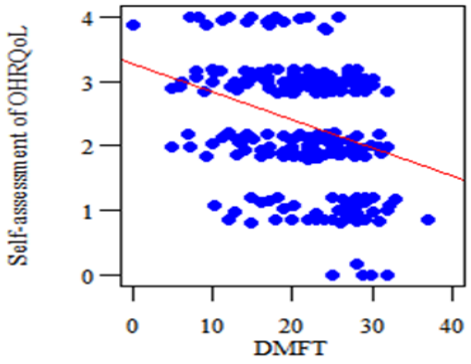

Figure 5. Correlation between self-assessment of OHRQoL and DMFT index (r=-0.28; p<0.001).

In the group of patients complaining about caries (group 3) self-assessment of the OHRQoL was lower than in patients without these complaints (2 (1-3) vs 3 (2-3); p=0.013) **(**Error! Reference source not found.**4)**. Among all of the r espondents, the DMFT index ranged 21.72 (SD=6.63, min. 0, max. 37) with on average 1.98 (SD=3.02) teeth decayed, 8.34 (SD=8.36) teeth missed and 11.4 (SD=5.67) teeth filled. There was a negative ($r<0$) and statistically significant ($p<0.05$) correlation between self-assessment of OHRQoL and 1) DMFT index **(Figure 5)**, 2) number of decayed teeth and 3) number of missing teeth. The higher these scores, the worse self-assessment of OHRQoL.

Previous studies have confirmed that decayed teeth have a negative impact on the OHRQoL [12, 13]. Coles *et al*. state that decayed and missed teeth may affect depression [14]. Neelakantan *et al*., in their systematic review, confirm that endodontic treatment improves OHRQoL [15]. On the other hand, Dahl *et al*. do not confirm in their paper that decayed teeth affect the OHRQoL, probably because of low severity of caries in patients [16]. In our study a negative correlation between DMFT index, carious and missing teeth, and self-perception of the OHRQoL existed. Moreover, patients suffering from caries rated their OHRQoL worse than patients who did not report caries and its symptoms. Batista *et al*. have obtained data consistent with our results stating that tooth loss affects OHRQoL [17]. Furthermore, they emphasize that not only some missing teeth influences this parameter but also the position (anterior or posterior region) of the lacking teeth in the mouth. The number of filled teeth does not affect the perception of OHRQoL in this study.

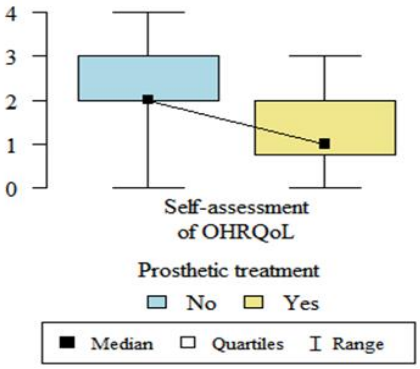

Figure 6. Self-assessment of OHRQoL in patients with vs without prosthetic complaints.

Among patients looking for prosthetic treatment, (e.g. making a new denture, adjusting or replacing the old one; group 4) self-assessment of the OHRQoL was worse than in patients without these needs (1 (0.75-2) vs 2 (2-3); p<0.001) **(**Error! Reference source not found.**6)**. Other authors c onfirm the improvement of the OHRQoL after prosthetic treatment with the use of conventional [18] and implant-supported dentures [18-20]. Reissmann *et al*., in their systematic review, state that the prosthetic treatment improves the OHRQoL [21]. They claim that statistically none of the treatment methods (conventional or implant-supported fixed dental prosthesis) is superior in partially dentate patients, but in some edentulous patients, implant treatment may significantly improve OHRQoL because of the patient's personality traits and clinical situation. In the

group of patients using prosthetic restorations in this study, 49.62% of them were using only removable, 15.79% removable and fixed and 34.59% only fixed dental prostheses. Each of these prosthetic treatment options has its advantages and disadvantages and influences the OHRQoL. There is a strong correlation between masticatory satisfaction and OHRQoL in patients with removable partial dentures [22]. Kurosaki *et al*., following prosthetic treatment, conclude that only in patients treated with implant-supported fixed dentures the OHRQoL score remains significantly higher 6 years after therapy, compared with conventional fixed and removable partial dentures users [23]. In this study only 3 patients were implant-supported fixed dental prostheses users which constitute 2.3% of prosthetic restorations users.

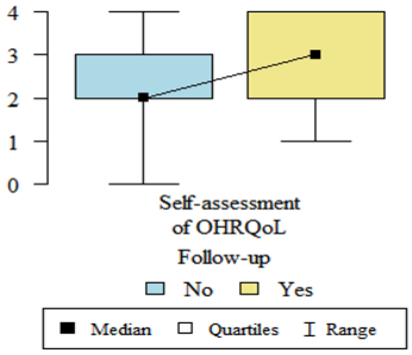

Figure 7. Self-assessment of OHRQoL in patients visiting UDC for follow-up visit vs looking for treatment.

In the group of patients visiting UDC for follow-up visit (group 5) self-assessment of the OHRQoL was better than in patients seeking treatment for the first time (3 (2-4) vs 2 (2-3); p=0.003) **(Figure 7)**. It may be related to the patient's awareness of the cause and prevention of the disease, change of bad habits, smaller number of worrying symptoms (e.g. pain), and a satisfactory effect of the treatment (e.g. better stability of teeth as a result of periodontal therapy, the esthetic effect of caries or teeth wear treatment). In the group of patients continuing the treatment (60% of the respondents), there was a better self-assessment of OHRQoL than in first-time patients (3 (2-3) vs 2 (1-3); p=0.042). Undoubtedly, visiting the clinic and dentist already known may positively influence the patient's attitude and reduce fear. Collins *et al*. confirm in their study, that patients who visit the dentist regularly have better OHRQoL [24]. Another study shows link between postponing dental visits, due to financial constraints, and self-reporting of moderate or poor oral health [25]. According to Keir *et al*. [26], the statistically significant association between dental anxiety and time lapse since the previous dental visit exists.

Surprisingly, in this study, there are no statistically important correlations in patients complaining about periodontal and oral mucosal diseases (groups 1 and 2) and OHRQoL perceived by them (p>0.05). It may be related to conducting the study in a specialized department of the UDC where the patients are referred for specialistic treatment and the fact that most of the patients continued the treatment. Probably the patients have already been aware of the problem which was developing for a longer time and coped with the fear. Eltas *et al*. and Machado *et al*. show in their studies differences in OHRQoL in patients with gingivitis and/or periodontitis compared to periodontal healthy individuals [27, 28]. Two systematic reviews confirm that, respectively, non-surgical and both non-surgical and surgical periodontal treatment significantly improve the OHRQoL [29, 30]. The domains of OHIP-14 which changed significantly after non-surgical periodontal therapy were: physical disability, psychological discomfort, and functional limitation [29]. Oral mucosa diseases such as burning mouth syndrome – BMS [31], Sjögren's syndrome [32], xerostomia [33], autoimmune bullous diseases [34] decrease OHRQoL. According to previous studies, proper treatment of BMS improves OHIP-14 scores [35, 36]. On the other hand, Parlatescu *et al*. did not observe differences in the OHRQoL assessed by the OHIP-14 questionnaire between different forms of oral lichen planus (OLP) and healthy control group [37].

Conclusion

This study confirms that poor oral health affects OHRQoL. As OHRQoL is influenced by DMFT index, number of decayed and missing teeth, some of the main patient-oriented goals for dentists should be: prophylaxis of caries and maintenance of as many as possible healthy teeth in patients' oral cavity. A focus on prevention remains still one of the crucial strategies recommended by WHO [38]. Patients continuing the treatment had better OHRQoL than the respondents who were starting the treatment. It means that regular dental visits are essential for patients' future well-being.

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Conflict of interest: None

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Ethics statement: Ethical approval from the Ethics Committee of the Jagiellonian University Medical College in Kraków was acquired (No. 122.6120.354.2016).

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