QUALITY OF LIFE IN PATIENTS REHABILITATED WITH IMPLANT-SUPPORTED PROSTHESES – A SYSTEMATIC REVIEW

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Abstract: *Oral health-related quality of life can be defined as the perception of the impact that oral health has on the quality of life. The quality of life is characterized by a person's perception of his/her social status and the activities he/she carries out in daily life, in relation to his/her standards, objectives, concerns and expectations, as well as the system of values and cultural conditions within he/she lives in. Objective: The objective of this study was to systematically review the dental literature to identify and classify relevant articles on the quality of life associated with the oral health of patients rehabilitated with implant-supported prostheses. Materials and methods: A systematic search of the literature on PubMed was performed for articles published between 2000 and 2021. The main method used was the electronic search using keywords such as: "quality of life", "dental implant". The articles found were subject to inclusion and exclusion criteria. Results: Following a systematic search, a total of 249 publications were identified, of which only 9 met the inclusion criteria. Discussions: A small number of studies were found to meet the inclusion criteria and to present high levels of evidence. Therefore, more research in the field is recommended, as current research on quality of life in patients rehabilitated with implant-supported prostheses is still in the development phase. Conclusions: The quality of oral health could have an impact on patients' daily lives and dental satisfaction (satisfaction with dental appearance, pain perception levels, oral comfort, functional performance and chewing capacity). Patients' satisfaction with their dentition has a definite impact on the quality of daily life and perceptions of oral health.*

INTRODUCTION

Oral health-related quality of life can be defined as the perception of the impact that oral health has on the quality of life.(1) The quality of life is characterized by a person's perception of his/her social status and the activities he/she carries out in daily life, in relation to his/her standards, objectives, concerns and expectations, as well as the system of values and cultural conditions within he/she lives in.(2)

Thus, over time, some studies have been conducted that have shown that there is a significant relationship between an increased quality of oral health and an increased quality of life in general, although this association is considered to require more evidence.(3,4,5) However, partial or total edentations, as well as completely conventional dental treatment have been shown to have a negative impact on quality of life. Still, the number of partially or totally edentulous patients, of all ages, is steadily declining due to the new dental techniques currently in use.(6)

The success or failure of oral treatment using conventional dentures depends on many factors, including the technical abilities of the physician and unfavourable oral conditions.(7) The psychological aspect of edentation treatment is of great importance, and a relationship based on trust between the patient and the doctor is essential.(8) Therefore, if this relationship is not strengthened, despite the efforts of the doctor

and the full cooperation of the patient, it is still impossible for the expectations of the two to be fully met.(9)

Researchers in the field can rely on a series of tools for assessing the quality of life associated with oral health, among which the most used are: the Oral Health Impact Profile (OHIP), the Oral Impact on Daily Performances (OIDP), the Dental Impact on Daily Living (DIDL) and the Geriatric Oral Health Assessment Index (GOHAI).(10) These questionnaires explore the functional, social and psychological impact of oral health on quality of life.

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Fifty years after the first oral treatment with titanium dental implants, the parameters that condition the process of osseointegration of the dental implant, such as occlusal force and type of implant as well as oral hygiene, appear to be well controlled.(11) Success rates and surgical procedures have been described in detail. Moreover, many studies have explored the effectiveness of implant treatment using objective parameters

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(retention, stability, occlusal parameters): implants have been shown to improve the stability and retention of prostheses, thus improving oral comfort and the patients' oral health quality.(12)

AIM

The aim of this study was to systematically review the dental literature to identify and classify relevant articles on oral health-related quality of life in patients rehabilitated with implant-supported prostheses.

MATERIALS AND METHODS

A systematic search of the literature was performed on PubMed for articles published between 2000 and 2021. The main method used was the electronic search using keywords such as: "quality of life", "dental implant". The articles found were subject to inclusion and exclusion criteria.

Inclusion criteria:
- Studies conducted after the year 2000;
- Studies that measure the quality of life of patients with dental implants;
- Studies that use tools with a high degree of validity and fidelity;
- Studies performed on at least 50 subjects.

Exclusion criteria:
- Studies conducted before the year 2000;
- Studies that do not measure the quality of life of patients with dental implants;
- Studies that do not use tools with a high degree of validity and fidelity;
- Studies performed on less than 50 subjects.

RESULTS

Following the systematic search, 249 publications were identified, of which only 9 met the inclusion criteria.

In 2001, Melas et al. conducted a study on the impact of oral health on daily performance in patients with implant-stabilized overdenture and in patients with complete conventional dentures. This comparative study (n = 83) investigated whether patients with implant-stabilized overdenture would have a higher quality of daily life, have less difficulty in chewing different types of food, and would generally be more satisfied than the patients with complete conventional dentures. The two groups of patients were comparable in terms of gender, age of the prosthesis and duration of edentation. Patients were interviewed using a questionnaire, which included the Oral Impact on Daily Performances (OIDP).

Patients with implant-stabilized overdenture were more satisfied with the comfort of their dentures, could eat a wide range of foods with less effort, with less impact on activities of daily living than the patients with complete conventional dentures. The results of this study support the need to consider implant-stabilized overdenture in the treatment of edentulous patients in order to increase their quality of life.(13)

In 2003, Awad et al. conducted a study on the quality of oral health and treatment satisfaction with implant-supported mandibular overdentures and conventional dentures in the elderly population. This randomized clinical trial aimed at comparing the satisfaction of elderly patients and oral health-related quality of life regarding the treatment with implant-supported mandibular overdentures and conventional prostheses.

Sixty edentulous patients aged 65 to 75 years participated in this study, and were randomly assigned to two groups: one group treated with either maxillary or mandibular conventional prostheses (n = 30), and the other group treated with mandibular overdentures supported by two implants with ball abutments (n = 30). The two groups were assessed for overall satisfaction, as well as other characteristics of dentures (comfort, stability, chewing capacity, speech, aesthetics and hygiene capacity), before treatment and 2 months after it. Also, changes in the assessments in the Oral Health Impact Profile (OHIP) and its short form (OHIP-EDENT) were used as indicators of the quality of life related to oral health, before and 2 months after treatment.

The main result of this study, the evaluation of general satisfaction at 2 months after treatment, was significantly higher in the group treated with two-implant supported mandibular overdenture (P = 0.001). In addition, the group treated with implants gave significantly higher assessments in terms of comfort, stability and chewing. Moreover, using OHIP-EDENT, patients who received a mandibular overprosthesis supported by two implants had significantly fewer quality of life issues related to oral health than patients in the group with conventional prostheses. These results suggest that two-implant supported mandibular overdentures combined with conventional maxillary dentures provide better functioning and an increased quality of life related to oral health than conventional dentures.(14)

Also in 2003, Awad et al. conducted another study on the quality of oral health of treatment with implant-supported mandibular overdentures and conventional dentures in edentulous middle-aged patients: satisfaction and functional evaluation. This randomized clinical trial aimed at comparing the efficacy of implant-supported mandibular overdentures and conventional dentures in adults.

This study involved 102 edentulous patients aged between 35 and 65 years, who were randomly assigned to two groups: one group treated with conventional mandibular prosthesis (n = 48), and the other group treated with mandibular overdenture supported by two endosseous implants with a connecting bar (n = 54). Both groups of patients assessed their overall satisfaction and other characteristics of their original prostheses and their new prostheses (comfort, stability, chewing capacity, speech, aesthetics and hygiene capacity) on analogue visual scales of 100 mm, before treatment and 2 months after treatment. Oral health quality of life was also assessed before and 2 months after treatment.

Multiple regression analysis showed that the average overall satisfaction was significantly higher in the implant group than in the conventional prosthesis group (P = 0.001). Gender, age, marital status and income were not significantly associated with overall satisfaction scores. Moreover, the group with implants gave significantly higher evaluations to three additional characteristics of prostheses (comfort, stability and ease of mastication; P <0.05). Thus, a mandibular overdenture supported by two endosseous implants is a more effective treatment than conventional prostheses for edentulous middle-aged adults, leading to an increased quality of life related to oral health.(15)

The literature has shown that certain personality profiles are associated with the satisfaction of patients with dentures. It is important to study such associations in patients with dental implants, because they increase the quality of life of patients.

In 2006, Abu Hantash et al. conducted a study on the psychological impact on the quality of life related to the oral health of patients with dental implants. Fifty patients (28 men and 22 women), aged 22 to 71 years, who were partially edentulous and engaged in dental implant therapy, were included in this study. Patients were asked to answer two questionnaires with a high degree of validity and fidelity: The Dental Impact on Daily Living (DIDL) and Big Five Inventory (NEO-FFI), which measures five major personality factors: Neuroticism, Extraversion, Openness, Agreeableness and

Conscientiousness. The two questionnaires were applied to patients before implant treatment and 2-3 months after implant-prosthetic rehabilitation therapy.

It was found that certain personality traits have a significant relationship with the satisfaction of patients with dental implants both before and after implant therapy (p <0.05). The score obtained on the neuroticism factor had significant values in predicting the total degrees of patient satisfaction: neuroticism was associated with the satisfaction dimension of dental appearance, neuroticism was associated with the satisfaction dimension of oral comfort and the satisfaction dimension of overall patient performance.

Personality traits have an impact on the satisfaction of patients receiving dental implant therapy. In addition, personality traits provide valuable information for predicting the satisfaction of implant-prosthetic rehabilitation of patients. The five personality factors (neuroticism, extraversion, openness, agreeableness and conscientiousness) are very useful in this regard. Neuroticism has been found to be the main predictor of patients' quality of life related to oral health after dental implant therapy.(16)

In 2009, Torres et al. conducted a study on the association between personality traits and quality of life in patients treated with conventional mandibular dentures or implant-supported mandibular overdentures.

This study included 100 patients, of whom 50 patients with conventional mandibular dentures and 50 patients with implant-supported mandibular overdentures. All participants provided clinical and demographic data of interest and were asked to fill out two questionnaires: Oral Health Impact Profile 14 (OHIP-14), which assesses oral health-related quality of life and Big Five Inventory (NEO FFI-R), which measures five major personality factors.

The influence of the studied variables on the quality of life related to oral health was tested by univariate analyses and multiple linear regression. Patients with conventional mandibular dentures reported higher levels regarding the impact on quality of life compared to patients with implant-supported mandibular overdentures. The multivariate regression model for the quality of life included the variables gender, neuroticism, and conscientiousness for the conventional mandibular prosthesis group (p <0.05), while the variables education, neuroticism, and openness were included in the model of the group of patients with implant-supported mandibular overdentures.

Patients with implant-supported mandibular overdentures had a lower impact on quality of life than the patients with conventional mandibular overdenture. Personality traits, mainly neuroticism, had a significant influence on oral health-related quality of life in both modalities of prosthetic therapy chosen by patients.(17)

In 2011, Al-Omiri et al. conducted a study on the impact of dental implant treatment on the quality of daily life. This study investigated the association between dentition satisfaction and personality profiles in patients who benefited from implant-supported overdentures. Eighty patients (42 men and 38 women, with a mean age of 41 years), who wanted dental implant therapy, participated in this study.

They were asked to answer two questionnaires: a questionnaire on the dental impact on daily life which was used to assess dental satisfaction and the effects of the implant in everyday life and the NEO-FFI Inventory with the five personality factors (neuroticism, extraversion, openness, agreeableness and conscientiousness), whcih was used to assess the personality profiles of the participants. Participants filled out the questionnaires before implant insertion and 3 months after implant-prosthetic rehabilitation.

It was found that patients were more satisfied with their dentition after implant treatment. In terms of personality factors, extraversion had a significant relationship with patient satisfaction and impact on daily life only before treatment, while openness and agreeableness had significant relationships with patient satisfaction and impact on daily life only after treatment. implant. Moreover, neuroticism and conscientiousness had significant relationships with patient satisfaction and impact on daily life, both before and after implant therapy. After implant therapy, neuroticism was a predictor of total satisfaction, as well as in terms of dental appearance satisfaction, pain, oral comfort, functional performance and nutrition. Conscientiousness was a predictor of dental appearance satisfaction, and openness was a predictor of satisfaction with pain. Prior to implant treatment, neuroticism was helpful in predicting overall satisfaction as well as satisfaction with appearance, oral comfort, and functional performance.

Thus, implant-supported prostheses had a positive impact on the daily life of the participants and the satisfaction regarding the dentition. Personality traits (such as neuroticism, extraversion, openness, agreeableness, and conscientiousness) affect the daily lives and satisfaction of patients with implant-supported prostheses. Selected personality traits could be predictive of satisfaction of patients with implant-supported prostheses.(18)

In 2012, Al-Omiri et al. conducted another study on the relationship between personality and the impact of implant treatment on patients' quality of daily life. The main objective of this comparative study was to investigate the relationship between satisfaction with dental implants, its impact on daily life and the personality profiles of patients. Fifty patients (15 men and 35 women, with a mean age of 44 years) with a dental implant and 50 partially edentulous patients in the control group, approximately the same age as those in the implant group, participated in this study. Both groups were asked to answer two questionnaires: a questionnaire on the dental impact on daily life was used to assess dental satisfaction and the effects of the implant in daily life and the NEO-FFI Inventory with the five personality factors (neuroticism, extraversion, openness, agreeableness and conscientiousness) was used to assess the personality profiles of the participants. Pearson correlation, variance analysis and linear regression tests were used for statistical data analysis.

It was found that the patients in the dental implant group were more satisfied with their dentition than the patients in the control group (p <0.05). Dental implant patients and patients in the control group demonstrated different relationships between personality, impact on daily life, and satisfaction. Neuroticism, extraversion and conscientiousness had significant relationships with satisfaction and impact on daily life in both groups. Openness and agreeableness had significant relationships with satisfaction and impact on daily life only in the group of patients with dental implants. Thus, the dental implant had a positive impact on the daily life of the participants and in terms of dental satisfaction. Personality traits (neuroticism, extraversion, openness, agreeableness and conscientiousness) have an impact on daily life and satisfaction with the dental implant and could be predictors of the satisfaction generated by the dental implant and its impact on the quality of daily life.(19)

Tooth loss is a serious event in life that affects two important functions, namely, nutrition and speech, and has significant side effects on various aspects of quality of life. These effects are internalized by the individual. In 2015, Sargozaie et al. conducted a study comparing the quality of life of patients requesting dental implants before and after dental implant therapy. This cross-sectional analytical study was

conducted in Mashhad, Iran on 73 patients (42 men and 31 women) who requested a dental implant in 2015. The patient's quality of life was assessed before and one month after implant therapy using the questionnaire Oral Impact on Daily Practice (OIDP), and the data obtained were analysed using the SPSS program.

Prior to implant therapy, the most common problems reported by patients were related to diet (78%) and embarrassment and discomfort with smiling or laughing (53%). After implantation, quality of life associated with diet, clear speech, smile and laughter without discomfort and embarrassment, oral hygiene, light physical activities such as housework, going to work or meeting other people, emotional conditions such as the joy brought by interpersonal relationships with relatives (family, friends and neighbours) and work-related activities, increased significantly after implant-prosthetic therapy. However, the quality of life associated with the amount of sleep and rest did not improve. Also, no significant association was observed between the quality of life after implant therapy and gender, education or place of residence of the patients.(20)

In 2016, Cardoso et al. conducted a study on the impact of conventional mandibular dentures and implant-supported mandibular overdenture on masticatory efficiency and quality of life. The aim of this non-randomized controlled clinical trial was to evaluate the quality of life related to oral health and masticatory efficiency of patients with implant-supported prostheses and those with conventional prostheses in Brazil, between 2011 and 2014.

Fifty fully edentulous patients wearing bimaxillary conventional prostheses for at least one year participated in this study. The patients were then assigned to either of the two treatment groups: the group with mandibular overdenture supported on two implants and maxillary conventional prosthesis (n = 25) or the group with conventional bimaxillary, mandibular and maxillary dentures (n = 25). The masticatory efficiency and the quality of oral health were evaluated before the insertion of the prosthesis and at 3 months after the insertion of the prosthesis. The Brazilian version of the OHIP-Edent questionnaire was used to assess oral health-related quality of life. The masticatory efficiency was evaluated by a colorimetric method, with the help of chewing capsules.

It was found that patients in the group of mandibular overdentures supported on two implants and maxillary conventional prosthesis have fewer quality of life issues related to oral health compared to the group with bimaxillary conventional prostheses. In addition, the implant group showed a significant improvement in masticatory efficiency (p = 0.001). There was no significant correlation between masticatory efficiency and OHIP in the dental implant group (p> 0.05). Therefore, these results suggest that mandibular overdentures supported on two implants combined with a maxillary conventional denture provides better masticatory efficiency and a better quality of life related to oral health than conventional mandibular prostheses.(21)

DISCUSSIONS

A small number of studies were found to meet the inclusion criteria and to present high levels of evidence. Thus, the weak point of the study is the low number of studies found, due to the restricted search area of the keywords used. Therefore, more research in the field is recommended, as current research on quality of life in patients rehabilitated with implant-supported prostheses is still in the development phase.

The strong point of the study is to provide an overview of the quality of life in patients rehabilitated with implanted-supported prostheses by summarizing and explaining the most significant sources in the field of dentistry. Moreover, the degree of topicality of the sources used is of particular importance for highlighting the gaps in dentistry today.

The implications of the study in current dental practice refer to the advantages of using the dental implant as an alternative to conventional dentures. Implant-prosthetic therapy brings good long-term results and improved quality of oral health that leads to increased quality of life in general.

Personality profiles (neuroticism, extraversion, openness, agreeableness and conscientiousness) can influence the quality of life through their perceptions of oral health. They play a significant role in shaping the satisfaction with dentition and help predict the dental impact on daily life.

Patient satisfaction and psychological profiles must be taken into account when formulating a treatment plan, in order to obtain the patient's acceptance of the recommended treatment.

CONCLUSIONS

The quality of oral health could have an impact on patients' daily lives and satisfaction with dentition (satisfaction with dental appearance, pain perception levels, oral comfort, functional performance and chewing capacity). Patients' satisfaction with their dentition has a definite impact on the quality of daily life and perceptions of oral health.

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