

THE ASSOCIATION BETWEEN SEXUAL QUALITY OF LIFE AND PERIODONTAL STATUS IN ADULT MEN

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ABSTRACT

Introduction: Periodontal diseases are highly prevalent and complex diseases that pose a significant oral health challenge and have a negative impact on individuals' lives. Sexual quality of life (SQoL) includes comfort with sexual and emotional intimacy, body image and self-esteem. SQoL is a key aspect of human beings' lives and plays a fundamental role in general well-being and quality of life. Despite the high prevalence of periodontal diseases, discussing sexual quality is uncommon in clinical encounters. The aim of this study was to gain insight on the association between SQoL and the periodontal status of adult men.

Methods: The study consists of clinical examination and a Sexual Quality of Life Questionnaire–Male Version (SQoL–M). The study participants were grouped, according to the 2017 classification system, into healthy, reduced periodontium, gingivitis, and periodontitis categories. The periodontitis patients were further subdivided into stages and grades.

Results: The mean age of 154 men included was 36.06 ± 4.51 . The means of total scores on the SQoL–M questionnaire for Stages III (60.35 ± 1.76) and IV (57.52 ± 1.89) participants were significantly lower than those of other individuals. The mean total score of participants in the Grade C (60.28 ± 3.41) group was significantly lower than the mean total score of participants in Grade A and B groups.

Conclusion: Stages III and IV periodontitis have a negative impact on SQoL, and Grade C periodontitis patients have lower SQoL than do patients in Grades A and B.

Key words: Men, periodontal diseases, sexuality, quality of life.

Introduction

The association between periodontal disease and health has been examined in several studies¹. Periodontal diseases are prevalent worldwide and are characterized by inflammation that leads to destruction of the supporting tissues of teeth with progressive attachment and bone loss.² Periodontal disease progression is marked by symptoms like gingival bleeding, halitosis, chewing difficulties, tooth loss, and an unaesthetic appearance leading to serious complaints in patients.³ Accumulating evidence on long-term health risks associated with periodontal diseases indicates that they may also have a negative impact on psychosocial well-being.⁴ The diagnosis of periodontitis has been found to be associated with feelings of frustration and anxiety.⁵ In addition, it has been shown that periodontal diseases can negatively affect individuals' quality of life in important emotional, social, and functional aspects.^{6,7}

Sex plays a fundamental role in reproductive life and is associated with overall well-being and quality of life.⁸ It has been suggested that satisfaction with sexual life is

associated with improvements in general health.⁹ Sexual quality of life (SQoL) is a multidimensional construct that includes physical, psychological, and emotional factors related to sexuality and deserves more attention in clinical practice and research.¹⁰ The Sexual Quality of Life–Male (SQoL–M) questionnaire has been proven to yield good discriminant and convergent validity; it is an instrument that specifically assesses the relationship between male sexual health and quality of life.¹¹

The impact of periodontal diseases on SQoL is an underexplored area, and understanding the importance of periodontal diseases in SQoL and sexuality is limited. The aim of the current study was to explore the relationship between SQoL and periodontal status in adult male individuals.

Materials and Methods

This study was conducted from February 2019 to October 2019 at the Faculty of Dentistry of Usak University. The participants were informed about the purpose of the

investigation and the signed informed consent forms were obtained. This study was approved by the human subjects' ethics board of Usak University and was conducted in accordance with the Helsinki Declaration. The study consisted of a clinical examination to determine the diagnosis of periodontal condition of each participant, as well as the statistical analysis of the results of the SQoL–M questionnaire completed by all participants.

The participants who met the following inclusion criteria were enrolled in the study: adult men, ages 25–45 years (to minimize the effect of aging and gender on sexuality); sexually active; heterosexual; and had not received periodontal treatment during the previous six months. The exclusion criteria were: having a disease associated with sexual dysfunction (e.g., diabetes, hypertension, coronary artery disease, cancer); being a smoker; and the use of sexual enhancement supplements.

A comprehensive periodontal diagnosis was undertaken in the participant assessment procedure including periodontal charting and full-mouth radiography. The participants were evaluated by a calibrated investigator according to the 2017 classification system and divided into groups as follows: healthy, reduced periodontium, gingivitis, and periodontitis. The participants were diagnosed as having periodontitis according to these criteria: interdental clinical attachment loss (AL) detectable at ≥ 2 non-adjacent teeth; buccal or oral AL of ≥ 3 mm with pocketing > 3 mm detectable at ≥ 2 teeth; and the observed AL could not be attributed to non-periodontitis causes.¹² The periodontitis patients who did not have a probing pocket depth (PPD) of 4 mm or more, and with bleeding on probing (BoP) lower than 10%, were diagnosed with reduced periodontium. If periodontitis patients had a PPD of 4 mm or more, periodontitis was further assessed as to stage and grade.¹³

If interdental AL was not detected and no PPD was greater than 3 mm with BoP lower than 10%, the patient was diagnosed as healthy. If BoP was higher than 10%, the patient was diagnosed as having gingivitis.¹⁴

Periodontitis was subdivided into four stages (I, II, III, and IV) according to severity of the disease, and three grades (A, B, and C) to differentiate disease susceptibility. The stages are based primarily on the worst-affected tooth' interdental AL. The complexity score depends on the difficulty of treating the case, considering factors like vertical defects, furcation involvement, and deep probing depths. Grade is based on the assessment of bone loss at the worst-affected tooth as a function of age. It is measured as radiographic bone loss in a percentage of root length divided by the patient's age.¹²

The participants completed the SQoL–M questionnaire, which is recognized as having good psychometric

properties, reliability, and convergent validity, after the diagnoses of their periodontal status. The SQoL–M is a short, self-reporting questionnaire developed to measure SQoL among male populations. It consists of 11 items scored using a 6-point Likert-type response scale ranging from 1, completely agree, to 6, completely disagree. Total scores range from 1 to 66; a higher score indicates better SQoL.¹¹

Kolmogorov–Smirnov and Shapiro–Wilk tests were used to determine the statistical method and to test whether the variables were compatible with normal distribution. Nonparametric Kruskal Wallis was used for comparison of the SQoL–M scores. Data were presented as mean and standard deviation, with $p = 0.05$ established as the level of statistical significance.

Results

The mean age of 154 male participants was 36.06 ± 4.51 . Table 1 presents the mean age of participants according to periodontal health, gingivitis, reduced periodontium, and stage of periodontitis.

The mean total SQoL–M score and each item's score are shown for each group in Table 2. There was a statistically significant difference between the groups in terms of the mean of the score on Item 2 ($p < 0.05$). The mean Item 2 score of participants in the Stage III group (5.05 ± 0.94) was significantly lower than the mean score of participants in the periodontal health, gingivitis, reduced periodontium, Stage I, and Stage II groups, and significantly higher than the mean score of the participants in the Stage IV group.

There was a statistically significant difference between the groups in terms of Item 3's mean score ($p < 0.05$). The Item 3 mean score of participants in the Stage IV group (3.76 ± 1.04) was significantly lower than the mean score of the other groups. There was a statistically significant difference between the groups in terms of Item 4 mean score ($p < 0.05$). The Item 4 mean score of participants in the Stage IV group (4.24 ± 1.09) was the lowest; the mean score of participants with reduced periodontium was the highest.

There was a statistically significant difference between the groups in terms of the means of Item 7 and Item 11 scores ($p < 0.05$), and a statistically significant difference between the groups in terms of the mean of total SQoL–M scores ($p < 0.05$). The mean total SQoL–M score for participants in the Stage IV group (57.52 ± 1.89) was significantly lower than the mean total score of the other groups.

The individuals with periodontitis were also evaluated according to their grade levels. The mean age of participants in Grade A was 36.06 ± 3.80 , in Grade B it was 37.0 ± 4.10 , and in Grade C, 38.36 ± 4.69 . The mean total

SQoL–M scores and each item's score are shown for each Grade level in Table 3. There was a statistically significant difference between groups in terms of the means of Items 2 and 3 and of total SQoL–M scores ($p < 0.05$). The mean total score of the participants in the Grade C group (60.28 ± 3.41) was significantly lower than the mean total score of participants in Grade A and B groups.

Discussion

Periodontal diseases cause significant oral health problems with a measurable and perceptible negative impact on the lives of individuals.^{15, 16} Although there are significant negative effects of periodontal diseases on the quality of daily life, little is known about their effect on SQoL. Regarding this point, this study was designed to explore how psychological and physical problems caused by periodontal diseases affect human sexuality and sexual health. The findings herein cannot be directly compared to similar previous investigations, because, to our knowledge, this is the first study to investigate the relationship between the new classifications of periodontal diseases and SQoL.

The mean total SQoL–M score of Stage III and IV patients was significantly lower than those of participants with other periodontal diseases and the healthy individuals. There was no significant difference between periodontally healthy individuals and diseased individuals in terms of mean total SQoL–M score until the severity of the disease reaches Stage III and IV levels. Thus, it can be said that Stage III and IV are the threshold, in terms of declining SQoL, and the individuals with Stage III and IV periodontitis have diminished SQoL. This can be explained by the fact that the clinical signs of early periodontal diseases are largely imperceptible to patients, and periodontal diseases in the early stages usually do not produce symptoms that disturb individuals' daily lives.³ As the disease progresses, complaints like bleeding gums, tooth drifting, and tooth loss that do have an adverse influence on self-esteem and the social aspects of patients' lives will appear.¹⁷⁻¹⁹ Logically, it may be assumed that changes, like bad breath and non-aesthetic appearance in Stage III and IV individuals, due to advanced periodontal destruction may cause body-image distress associated with poor SQoL.^{20, 21} When each item on the SQoL–M questionnaire was examined individually, it was observed that nearly half of the answers of individuals in Stages III and IV were significantly lower than those of other individuals, suggesting that individuals in Stages III and IV felt dissatisfied about their sexual life and may consider themselves less manly, unlike those with other periodontal diseases and healthy individuals. These results may be due

to the fact that periodontitis is related to some physical and psychosocial impairment and higher levels of psychological stress.²² In addition, periodontitis causes bad breath, tooth loss, and tooth mobility that can cause psychosocial problems, like shame and diminished self-esteem, thus increasing the risk of depression.^{23, 24} Anxiety and depression are known to be negatively associated with sexual function and SQoL.^{25, 26} In this study, the psychological factors caused by Stage III and IV periodontitis are likely the explanation for lower levels of SQoL and the reason those participants felt depressed about their sexual life. The reason that individuals do not feel themselves as fully masculine regarding their sexual life can be associated with the negative impact of periodontitis on self-image and self-perception.^{27, 28} The feeling of being less a man seems to be related to their perception of how other people see them, and the perception of others, especially females, regarding their poor oral health may lead individuals to see themselves in a more negative way.

It was determined that individuals in Stages III and IV were worried about their future sexual lives, had lost their confidence as a sexual partner, and had a sense of losing something related to their sexual lives. These results are consistent with other studies reporting that physical attractiveness is a key determinant of interest in a potential romantic or sexual partner, and the physically attractive individuals are preferred as romantic and sexual partners.²⁹⁻³¹ It can be said that certain aspects of periodontal health are readily understood to be linked to greater sexual confidence; healthy gums and teeth in men can be linked to greater attractiveness perceived by members of the opposite sex. In addition, periodontal health is an important source of self-esteem, and an individual's feelings about oral health can be directly linked to general feelings about the self and the sexual self. It has been reported that individuals with a positive body image have more positive attitudes toward sex and higher SQoL while individuals with dissatisfaction about body image tend to experience less sexual satisfaction.^{32, 33}

When periodontitis patients were examined according to their grade levels, the participants diagnosed as Grade C felt depressed about their sexual life and considered themselves less of a man. The mean total SQoL–M scores for Grade C individuals were significantly lower than Grades A and B individuals, meaning that SQoL of individuals declines as the rate of progression of periodontitis increases. Considering the high degree of destruction in individuals with Grade C, this can be explained by the fact that periodontitis is associated with decreased testosterone level, and a decrease of testosterone in men is also related to a decline in sexual desire.^{34, 35} This

may be explained by the association between periodontitis and erectile dysfunction that contributes to an increased level of endothelial dysfunction.^{36, 37} It may be considered that a high rate of progression of periodontitis can cause physical and psychological stress and body image distress which are associated with poor SQoL.^{22, 38}

This study has several limitations, the most important of which is the small sample size and the lack of ethnic diversity of participants; and the results should be replicated in other contexts within different sociocultural landscapes. Second, underreporting is possible because sexuality is a sensitive issue and can be considered socially unacceptable in some cultural settings. Third, the SQoL–M questionnaire is self-reported.

Conclusion

The current study contributes to science by assessing multiple items of SQoL in periodontal diseases versus healthy patients and by examining associations between sexual and psychosocial outcomes. We concluded that individuals with higher severity of periodontitis and a higher progression rate have poor SQoL. Larger sample sizes and more detailed studies are needed to investigate the effects of periodontal health and disease on SQoL.

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	Disease classification	n	Mean±sd.
Age	Healthy	23	33.61±5.46
	Gingivitis	24	34.67±4.59
	Reduced periodontium	21	36.10±5.03
	Stage I	23	35.87±4.03
	Stage II	22	38.05±4.23
	Stage III	20	35.95±4.72
	Stage IV	21	38.19±3.57

Table 1: The mean age of the participants

SQoL-M scores	Disease classification	n	Mean±sd.	p	Difference
Item 1 (When I think about my sexual life. I feel frustrated)	Healthy	23	6.00±0.00	0.999	-
	Gingivitis	24	6.00±0.00		
	Reduced Periodontium	21	6.00±0.00		
	Stage I	23	6.00±0.00		
	Stage II	22	6.00±0.00		
	Stage III	20	6.00±0.00		
	Stage IV	21	6.00±0.00		
Item 2 (When I think about my sexual life. I feel depressed)	Healthy	23	5.91±0.29	0.001*	6-1
	Gingivitis	24	5.92±0.28		6-2
	Reduced Periodontium	21	5.86±0.36		6-3
	Stage I	23	5.87±0.34		6-4
	Stage II	22	5.86±0.35		6-5
	Stage III	20	5.05±0.94		6-7
	Stage IV	21	3.90±0.83		7-1
Item 3 (When I think about my sexual life. I feel like less of a man)	Healthy	23	5.91±0.29	0.001*	7-2
	Gingivitis	24	5.92±0.28		7-3
	Reduced Periodontium	21	5.90±0.30		7-4
	Stage I	23	5.91±0.42		7-5
	Stage II	22	5.86±0.35		6-1
	Stage III	20	4.55±0.94		6-2
	Stage IV	21	3.76±1.04		6-3
Item 4 (I have lost confidence in myself as a sexual partner)	Healthy	23	5.87±0.34	0.001*	6-4
	Gingivitis	24	5.92±0.28		6-5
	Reduced Periodontium	21	5.95±0.22		7-1
	Stage I	23	5.87±0.46		7-2
	Stage II	22	5.77±0.53		
	Stage III	20	4.70±0.98		

					7-3
	Stage IV	21	4.24±1.09		7-4
					7-5
Item 5 (When I think about my sexual life. I feel anxious)	Healthy	23	5.96±0.21	0.52	-
	Gingivitis	24	5.88±0.34		
	Reduced Periodontium	21	5.90±0.30		
	Stage I	23	5.96±0.21		
	Stage II	22	5.95±0.21		
	Stage III	20	6.00±0.00		
	Stage IV	21	5.81±0.51		
Item 6 (When I think about my sexual life. I feel angry)	Healthy	23	6.00±0.00	0.787	-
	Gingivitis	24	5.92±0.28		
	Reduced Periodontium	21	6.00±0.00		
	Stage I	23	5.96±0.21		
	Stage II	22	5.95±0.21		
	Stage III	20	5.95±0.22		
	Stage IV	21	5.95±0.22		
Item 7 (I worry about the future of my sexual life)	Healthy	23	5.91±0.29	0.001*	6-1
	Gingivitis	24	5.92±0.28		6-2
	Reduced Periodontium	21	5.95±0.22		6-3
	Stage I	23	5.91±0.29		6-4
	Stage II	22	5.91±0.29		6-5
	Stage III	20	5.35±0.67		7-1
	Stage IV	21	5.29±0.78		7-2 7-3
				7-4 7-5	
Item 8 (When I think about my sexual life. I am embarrassed)	Healthy	23	5.96±0.21	0.63	-
	Gingivitis	24	5.92±0.28		
	Reduced Periodontium	21	5.90±0.30		
	Stage I	23	5.96±0.21		
	Stage II	22	5.91±0.29		
	Stage III	20	5.85±0.37		
	Stage IV	21	6.00±0.00		
Item 9 (When I think about my sexual life, I feel guilty)	Healthy	23	5.96±0.21	0.995	-
	Gingivitis	24	5.96±0.20		
	Reduced Periodontium	21	5.95±0.22		
	Stage I	23	5.96±0.21		
	Stage II	22	5.95±0.21		
	Stage III	20	5.95±0.22		
	Stage IV	21	5.95±0.22		
Item 10 (When I think about my sexual life. I worry that my partner feels hurt or rejected)	Healthy	23	5.96±0.21	0.856	-
	Gingivitis	24	5.96±0.20		
	Reduced Periodontium	21	6.00±0.00		
	Stage I	23	5.91±0.29		
	Stage II	22	5.95±0.21		

	Stage III	20	5.95±0.22		
	Stage IV	21	5.90±0.30		
Item 11 (When I think about my sexual life. I feel like I have lost something)	Healthy	23	5.96±0.21	0.001*	6-1 6-2
	Gingivitis	24	5.92±0.28		6-3
	Reduced Periodontium	21	5.95±0.22		6-4
	Stage I	23	5.87±0.34		6-5
	Stage II	22	5.82±0.39		7-1
	Stage III	20	4.95±0.89		7-2 7-3
	Stage IV	21	4.62±0.74		7-4 7-5
	Total score	Healthy	23		65.43±0.79
Gingivitis		24	65.21±0.78	6-4	
Reduced Periodontium		21	65.38±0.80	6-5	
Stage I		23	65.17±0.94	6-7	
Stage II		22	64.95±1.05	7-1	
Stage III		20	60.35±1.76	7-2 7-3	
Stage IV		21	57.52±1.89	7-4 7-5	

*p<0.05

Table 2: The mean SQoL-M total and each item scores

SQoL-M Item scores	Grade of periodontitis	n	Mean±sd.	p	Difference
Item 1 (When I think about my sexual life. I feel frustrated)	Grade A	35	6.00±0.00	0.999	-
	Grade B	26	6.00±0.00		
	Grade C	25	6.00±0.00		
Item 2 (When I think about my sexual life. I feel depressed)	Grade A	35	5.57±0.81	0.002*	1-3 2-3
	Grade B	26	5.27±0.96		
	Grade C	25	4.60±1.15		
Item 3 (When I think about my sexual life. I feel like less of a man)	Grade A	35	5.29±1.13	0.024*	1-3 2-3
	Grade B	26	5.27±1.00		
	Grade C	25	4.52±1.26		
Item 4 (I have lost confidence in myself as a sexual partner)	Grade A	35	5.37±1.03	0.053	-
	Grade B	26	5.31±0.93		
	Grade C	25	4.76±1.13		
Item 5 (When I think about my sexual life, I feel anxious)	Grade A	35	5.89±0.40	0.654	-
	Grade B	26	5.96±0.20		
	Grade C	25	5.96±0.20		
Item 6 (When I think about my sexual life. I feel angry)	Grade A	35	5.91±0.28	0.29	-

	Grade B	26	6.00±0.00		
	Grade C	25	5.96±0.20		
Item 7 (I worry about the future of my sexual life)	Grade A	35	5.74±0.51	0.309	-
	Grade B	26	5.62±0.64		
	Grade C	25	5.48±0.71		
Item 8 (When I think about my sexual life. I am embarrassed)	Grade A	35	5.91±0.28	0.754	-
	Grade B	26	5.96±0.20		
	Grade C	25	5.92±0.28		
Item 9 (When I think about my sexual life. I feel guilty)	Grade A	35	5.91±0.28	0.295	-
	Grade B	26	5.96±0.20		
	Grade C	25	6.00±0.00		
Item 10 (When I think about my sexual life. I worry that my partner feels hurt or rejected)	Grade A	35	5.94±0.24	0.93	-
	Grade B	26	5.92±0.27		
	Grade C	25	5.92±0.28		
Item 11 (When I think about my sexual life. I feel like I have lost something)	Grade A	35	5.46±0.82	0.104	-
	Grade B	26	5.42±0.81		
	Grade C	25	5.08±0.81		
Total score	Grade A	35	63.03±3.33	0.009*	1-3 2-3
	Grade B	26	62.69±3.41		
	Grade C	25	60.28±3.41		

*p<0.05

Table 3: The mean SQoL-M total and each item scores for each grade levels