ТЕРАПЕВТИЧНА СТОМАТОЛОГІЯ

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ASSESSMENT OF ORAL HEALTH-RELATED QUALITY OF LIFE IN PERIODONTITIS

Purpose of the study. *Study of the quality of life of patients with periodontitis of varying severity.* ***Material and methods of the study.*** *200 residents of Baku city with periodontal diseases took part in the study The quality of life indicators were studied according to the Nottingham Health Profile system, which includes the following parameters: vigour, pain, emotional reactions, sleep, social isolation, physical activity and health status. Additionally, a special questionnaire was used for the subjective assessment of oral health, including the following aspects: bleeding gums, breath odour (halitosis), tooth mobility, gum pain, tooth hypersensitivity, changes in tooth position and plaque.* ***Results.*** *The mean score for the general assessment of quality of life (QoL) among patients with mild, moderate, and severe periodontitis was 4.4±0.69, 7.4±1.25, and 23.2±1.791, respectively. The highest score, exceeding 30 points, was observed in patients with severe periodontitis. The most pronounced effects were observed in the domains of pain, physical activity, and health status. The items vitality and social isolation were less affected. The total score for oral health-related quality of life (OHRQoL) as assessed by patients was 3.85±0.192 for mild periodontitis, 5.63±0.190 for moderate periodontitis and 11.43±0.499 for severe periodontitis. Comparatively elevated scores were observed in patients with severe periodontitis. The highest mean scores were observed for items such as bleeding, tooth mobility, tooth hypersensitivity and plaque.* ***Conclusions.*** *As the degree of periodontitis worsened and the QoL worsened also. This was particularly reflected in such indicators as pain, physical activity, health status and sleep. Assessment of oral health-related QoL is necessary to determine the effectiveness of interventions aimed at improving and maintaining health. The results of the self-assessment study can be used to determine patients' subjective perceptions of the impact of periodontal disease on oral health.*
Key words: *quality of life, oral cavity, periodontitis, questionnaire.*

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ОЦІНКА ЯКОСТІ ЖИТТЯ, ПОВ'ЯЗАНОГО ЗІ ЗДОРОВ'ЯМ ПОРОЖНИНИ РОТА, ПРИ ПАРОДОНТИТІ

Мета дослідження. *Вивчення якості життя пацієнтів з пародонтитом різного ступеня тяжкості.* ***Матеріали та методи дослідження.*** *У дослідженні взяли участь 200 жителів м Баку із захворюваннями пародонту. Показники ЯЖ (якість життя) вивчені за Ноттінгемською системою (Nottingham Health Profile): енергійність, больові відчуття, емоційні реакції, сон, соціальна ізоляція, фізична активність і стан здоров'я. Для суб'єктивної оцінки стану ротової порожнини використовували спеціальний опитувальник, що включає: кровоточивість ясен, запах з рота, рухливість зубів, біль в яснах, гіперестезія, зміни форми зуба і наявність зубного нальоту.* ***Результати****. Середній бал загальної оцінки ЯЖ серед пацієнтів з легким, середнім та тяжким ступенями пародонтиту становив 4,4±0,69, 7,4±1,25 та 23,2±1,791 відповідно. При цьому максимальний бал (>30 балів) відзначався у пацієнтів з тяжким ступенем пародонтиту. Найбільш виражені були больові відчуття, фізична активність і стан здоров'я. Пункти енергійність, соціальна ізоляція були порушені в меншій мірі. За результатами самооцінки пацієнтами ЯЖ, пов'язаного зі здоров'ям порожнини рота, загальний бал склав при легкому ступені пародонтиту склав 3,85±0,192, при середньому і тяжкому ступені – 5,63±0,190 і 11,43±0,499 балів відповідно. Порівняно високі бали виявлені при важкому пародонтиті. Найбільш високі середні бали відзначалися за такими пунктами, як кровоточивість, рухливість зубів, гіперестезія, зубний наліт.* ***Висновки.*** *З обтяженням ступеня пародонтиту ЯЖ погіршується. Особливо це відбивалося на таких показниках, як больові відчуття, фізична активність, стан здоров'я і сон. Оцінка ЯЖ, пов'язаного зі здоров'ям порожнини рота, необхідна для визначення ефективності заходів, спрямованих на поліпшення і збереження здоров'я. Результати дослідження з самооцінки можуть бути використані для визначення суб'єктивних уявлень пацієнтів про вплив захворювання пародонту на стан порожнини рота.*
Ключові слова: *якість життя, порожнина рота, пародонтит, анкетування.*

Periodontal disease has a serious impact on overall health and quality of life (QoL). The most common cause of tooth loss in oral diseases is periodontitis. It is one of the etiological factors contributing to tooth loss associated with QoL [1, 2]. In most cases, the disease is untreated as it does not cause any signs of discomfort in its early stages. Detectable symptoms occur only after extensive disease progression.

Progressive periodontitis can lead to deterioration of chewing ability, word pronunciation and aesthetic functions [3, 4].

Oral health-related quality of life (OHRQoL) represents an individual's self-assessment of the impact of oral diseases and conditions on their overall quality of life [5]. Oral health-related quality of life reflects the consequences of good or poor oral health and helps to identify patients' concerns, expectations and satisfaction with the dental care received [6]. The use of this multidimensional approach along with clinical assessments reflects a change in the traditional approach to patient care in the dental clinic. OHRQoL scores, along with determining health status, determine its impact in emotional, social and psychological aspects [5].

Quality of life is, essentially, a measure of human well-being. In accordance with the World Health Organization's Global Oral Health Programme, oral health-related quality of life (QoL) is acknowledged as a crucial component of the overall human well-being and health. The dynamics of current clinical practice are based on patients' subjective assessment of treatment rather than on traditional methods such as clinical parameters. This is particularly evident in the case of chronic diseases such as periodontal disease [7].

In assessing overall quality of life (QoL), patients frequently evaluate their well-being from a combination of physical and psychological perspectives. In evaluating overall quality of life (QoL), patients frequently adopt a dualistic approach, considering both physical and psychological well-being. It is not uncommon for patients to exhibit a lack of concern about their oral health status, regardless of its condition, and to fail to recognize the association between oral health and overall quality of life (QoL). Several studies have indicated that there is a strong correlation between oral health and overall quality of life, with poor oral health having a negative impact on overall quality of life. Furthermore, it has been suggested that oral health problems can impair an individual's physical functioning, social status and well-being, which highlights the relationship between oral health and general health in terms of impact on QoL [3, 8].

Despite the lack of consensus on the definition of oral health-related quality of life (OHRQoL), there is a general agreement that OHRQoL is a subjective concept and that it is best described from the patient's perspective.

The aim of the study is to investigate the quality of life of patients with periodontitis of varying severity.

Material and methods of the study. The study was conducted among 200 residents of Baku city with periodontal diseases. A dental examination was conducted using an 'oral cavity examination card'. The presence of periodontitis was determined based on the presence of specific clinical symptoms, including tooth mobility, gingival inflammation, the existence of periodontal pockets of varying depths, tooth root exposure at different levels, and characteristic atrophy of the alveolar process. The degree of lesion was determined in accordance with the criteria generally accepted in modern dentistry: depth of periodontal pocket, tooth mobility, and atrophy of the interdental septum.

The QoL indicators were studied according to the Nottingham Health Profile [9]. The questionnaires were completed by the patients during their visits to the clinic, in the form of personal interviews. The quality of life indicators were evaluated in accordance with 7 criteria: vigour, pain, emotional reactions, sleep, social isolation, physical activity and health status. A specialized questionnaire was employed for the subjective evaluation of the condition of the oral cavity, which was filled in independently by the patients. The questionnaire on periodontal diseases comprised 7 items: bleeding gums, breath odour (halitosis), tooth mobility, gum pain, tooth hypersensitivity, changes in tooth shape and plaque. The statistical analysis of the obtained data was conducted using the variation statistics method via the Statistica software package (StatSoft Inc., USA). The reliability of differences was determined by means of both parametric and non-parametric methods, including the t-test (Student's t-test), the χ^2 test, and the U-test (Wilcoxon-Mann-Whitney).

Results. The quality of life (QoL) parameters were examined in patients divided into 3 groups according to the severity of periodontitis: mild (Group I, n=95), moderate (Group II, n=68) and severe (Group III, n=37). The results of the Nottingham Health Profile (NHP) questionnaire are presented in Table 1.

From the given data we can see that on the scale 'vigour' respondents with this indicator above the mark '0' in Group I made up 12.6 %, in Group II – 41.2 %, in Group III – 91.9 %, which was 7.3 times ($p<0.001$) higher than in Group I and 2.2 times ($p<0.05$) higher than the number of persons in Group II. The mean score on this scale for individuals with severe disease was 7.1 times ($p<0.001$) higher than for those with mild disease and 2.1 times ($p<0.05$) higher than for those with moderate disease.

The number of individuals who reported experiencing pain at an 8-point rating was observed exclusively in Groups II and III. The number of individuals in this category was 19.6 times ($p<0.001$) higher in Group III than in Group II. Individuals with a

Table 1

Quality of life indicators in patients with periodontal diseases

Assessment criteria		I group n=95	II group n=68	III group n=37
Vigour	Above 0	12 (12.6 %)	28 (41.2 %) *	34 (91.9 %)*,**
	Mean score	0.35±0.096	1.16±0.174 *	2.5±0.158 *,**
Pain	8 points	0	2 (2.9 %)	21 (56.8 %)*,**
	1 point	8 (8.4 %)	7 (10.3 %)	8 (21.6 %)
	Mean score	0.15±0.045	0.63±0.184*	5.35±0.55*,**
Emotional reactions	2 points and more	5 (5.3 %)	14 (20.6 %)*	35 (94.6 %)*,**
	1 point	16 (16.8 %)	9 (3.2 %)	2 (5.4 %)
	Mean score	0.27±0.057	0.54±0.099*	2.49±0.234*,**
Sleep	More than 2 points	4 (4.2 %)	9 (13.2 %)*	22 (59.5 %)*,**
	Mean score	0.63±0,103	0.90±0,148	3.38±0.316*,**
Social isolation	3 points and more	10 (10.5 %)	12 (17.6 %)	19 (51.4 %)*,**
	1-2 points	4 (4.2 %)	6 (8.8 %)	7 (18.9 %)*
	Mean score	0.44±0.123	0.75±0.173	2.41±0.301*,**
Physical activity	8 points	6 (6.3 %)	8 (11.8 %)	10 (27.03 %)*,**
	1 point	2 (2.1 %)	2 (2.9 %)	11 (29.7%)*,**
	Mean score	1.48±0.267	1.79±0.333	3.57±0.525*,**
Health status	3 points and more	15 (5.8 %)	17 (25.0 %)	23 (62.2 %)*,**
	1-2 points	11 (11.6 %)	12 (17.6 %)	12 (32.4 %)*
	Mean score	1.12±0.216	1,66±0.289	3.57±0.341*,**
Overall assessment	More than 30 points	0	5 (7.35 %)*	18 (48.7 %)*,**
	20-30 points	0	9 (13.2 %)*	7 (18.9 %)*
	Mean score	4.4±0.69	7.4±1.25*	23.2±1.791*,**

*Note: Statistical reliability of difference of values p<0.05 – 0.001; * – relative to group I; ** – relative to group II*

mild degree of disease severity who indicated a pain sensation with a 1-point mark exhibited a quality of life (QoL) associated with pain in 8.4 % of cases. As the severity of the disease increased, the number of individuals meeting this criterion also increased. In group II, the number was 10.3 %, representing an increase of 1.9 % in comparison with a mild degree of severity. In group III, the number reached 21.6 %, which significantly exceeded the percentage of such individuals in group I and II, respectively, by 2.6 and 2.1 times (p<0.05). The mean score of this index in group II was significantly higher than in group I, with an average of 4.2 times (p<0.01). Furthermore, in Group III, the mean score was found to be 35 and 8.5 times (p<0.001) higher than in the first two groups, respectively. A total of 5.3 % of individuals in Group I exhibited emotional reactions of 2 points or more. In Group II, this figure increased by a factor of 3.9 (p<0.01), while in Group III, the majority (94.6 %) of patients associated emotional reactions with the disease, which was significantly higher than in Groups I and II, respectively, by 17.8 and 4.6 times (p<0.001). The mean score on the "Emotional reactions" scale increased in proportion to the severity of the disease. Thus, the average score on this scale in patients with a severe degree of the disease was significantly higher than that observed in patients with a mild degree of the disease (9.2 times higher, p<0.001) and in those with a moderate degree of severity (4.6 times higher, p<0.001). Testing on the "sleep" scale showed that the negative effect of sleep disturbance on QoL was found in 4.2 % of patients in Group I, 13.2 % in Group II and significantly increased by 3.1 times (p<0.01) in Group III. 59.5 % of patients reported sleep disturbance, which was 14.2 times (p<0.001) more than in group I and 4.5 times (p<0.01) more than in group II. The mean score in patients with severe degree was 5.4 and 3.7 times (p<0.01) higher than those with mild and moderate degree, respectively. The results of the study on the scale of "social isolation" show that this indicator, estimated at 3 and more points, was found in 10.5 % of persons with a mild degree of the disease, in 17.6 % of cases with a moderate degree of the disease and in 51.4 % of cases with a severe degree of the disease, which was significantly higher by 4.9 and 2.9 times, respectively (p<0.01), with the indicators of Groups I and II. A score of 1-2 on this criterion

was reported by 4.2 % of group I, 8.8 % of Group II and 18.9 % of Group III. The increase in the number of people examined in groups II and III also demonstrated the relationship between QoL and disease severity and influenced the value of the mean score in the examination groups. Thus, the mean score in group III was 5.5 and 3.2 times higher than in the first two groups, respectively ($p<0.01$). Low physical activity, estimated at 8 points, was found more often in group III respondents – in 27.03% of cases, which was 4.3 times ($p<0.01$) higher than in group I and 2.3 times ($p<0.05$) higher than in group II. The results of the study showed that those with mild disease were more physically active than those with moderate and severe disease. The number of patients with 1 point of physical activity was 2.1 % in Group I, 2.9 % in Group II and 29.7 % in Group III. As we can see, the number of patients with this index was significantly higher in Group III than in groups I and II by a factor of 14.1 and 10.2, respectively ($p<0.001$). The mean score on the physical activity scale, as in the previous criteria, was high in patients with severe disease and significantly exceeded the values of the mean score in patients with mild disease by 2.4 times ($p<0.05$) and in patients with moderate disease by 2.0 times ($p<0.05$). The health state assessed on the scale as 3 points and higher, i.e. low, was observed in 5.8 % of cases in Group I, in 25.0 % of cases in Group II and in 62.2 % of cases in Group III. As can be seen, the number of cases in the group with a severe degree of illness was greater than in Group I by 10.7 times ($p<0.01$) and greater than in Group II by 2.5 times ($p<0.05$). The health condition assessed in 1-2 points was also more frequent among patients of Group III and was 2.8 times ($p<0.01$) more than in group I and 1.8 times more than in Group II. The obtained mean score on this scale in Group III individuals was higher than in group I by 3.2 times ($p<0.01$) and 2.1 times ($p<0.05$) higher than in group II. According to the results obtained, a total score of more than 30 points on the defined criteria indicating low QoL was not found in Group I patients, in Group II it was noted in 7.35% of cases and in Group III – in 48.7 %. A total score of 20-30 points was also not found in respondents with a mild degree of severity, while in those with a moderate degree of the disease it was found in 13.2 % of cases and in 18.9 % of cases with a severe degree. Attention is drawn to the average score obtained in the general evaluation. It was 4.4±0.69 points in Group I, 7.4±1.25 points in Group II and 23.2±1.791 points in Group III, which was 5.3 times ($p<0.01$) higher than in Group I and 3.1 times ($p<0.01$) higher than in Group II.

The results of the patients' self-assessment of oral health are shown in Table 2.

During the questionnaire survey, 37.9±4.98 % of the respondents in Group I noted the presence of bleeding, in Group II the number of such respondents increased by 4.7 % on average, and in Group III gingival bleeding was observed in almost all the examined patients – 97.3±2.67 %, which was 2.6 times ($p<0.05$) higher than in Group I and 2.3 times ($p<0.05$) higher than in Group II.

The average bleeding rate was 0.76±0.11 for mild disease, 0.88±0.13 for moderate disease and 1.95±0.17 for severe disease.

In Group III, the mean value of this index was 2.6 times ($p<0.05$) higher than in Group I and 2.2 times ($p<0.05$) higher than in Group II.

Halitosis was reported by 41.0±5.05% of those with mild disease, 64.7±5.80 % of those with moderate disease and more than half of those with severe disease – 83.8±6.06 %. In Group II the percentage of patients with halitosis increased on average 1.6 times ($p<0.05$), in Group III the difference was 2.0 times ($p<0.05$) and in Group II 1.3 times.

On average, the index of this scale had the maximum value in persons with severe degree and exceeded that of Group I and Group II by 2.0 times ($p<0.05$) and 1.3 times, respectively. At self-assessment of dental health by the examined patients, tooth mobility in Group I was noted by 3.16±1.79 % of patients, in Group II, with increasing severity of the disease the percentage increased in 6.0 times ($p<0.001$) and in Group III the difference was 19.7 ($p<0.001$) and 3.2 times ($p<0.05$), respectively, the indicators of Groups I and II. The mean value was also high in Group III, being 26.6 and 4.5 times ($p<0.001$) higher than in the first two groups ($p<0.001$). The highest number of subjects with gingival pain was found in the group with severe disease. In percentage, the difference with Group I was 3.0 times ($p<0.01$), with Group II – 2.4 times ($p<0.05$). An identical pattern was observed for the mean score, which was significantly higher in patients with severe disease than in those with mild and moderate disease. Tooth hypersensitivity was found in 48.4±5.13 % of cases in Group I, 61.8±5.89 % of cases in Group II and 81.1±6.44 % of cases in Group III. Respondents with severe degree of the disease had 1.7 ($p<0.05$) and 1.3 times more cases of tooth hypersensitivity than those with mild and moderate severity, respectively. The results of the mean index also showed an increased value of the latter in the severe degree compared to the mild and moderate degrees, 2.8 ($p<0.01$) and 1.8 times ($p<0.05$), respectively.

Table 2

Self-assessment indicators of the examined patients with periodontal diseases

Indicators		I group n=95	II group n=68	III group n=37
Bleeding	Presence	36 (37.9±4.98 %)	29 (42.6±6.0 %)	36*,** (97.3±2.67 %)
	On average	0.76±0.11	0.88±0.13	1.95±0.17*,**
Breath odour (halitosis)	Presence	39 (41.0±5.05 %)	44* (64.7±5.80 %)	31*,** (83.8±6.06 %)
	On average	0.41±0.051	0.65±0.058*	0.84±0.061*,**
Tooth mobility	Presence	3 (3.16±1.79 %)	13* (19.1±4.77 %)	23*,** (62.2±7.97 %)
	On average	0.07±0.043	0.41±0.105*	1.86±0.296*,**
Gum pain	Presence	25 (26.3±4.52 %)	22 (32.3±5.67 %)	29*,** (78.4±6.77 %)
	On average	0.26±0.045	0.32±0.057	0.78±0.069*,**
Tooth hypersensitivity	Presence	46 (48.4±5.13 %)	42 (61.8±5.89 %)	30*,** (81.1±6.44 %)
	On average	0.91±0.11	1.40±0.17*	2.54±0.27*,**
Changes in tooth position.	Presence	0	9* (13.2±4.11 %)	16*,** (43.2±8.14 %)
	On average	0	0.29±0.696*	0.86±0.18*,**
Dental plaque	Presence	44 (46.3±5.12 %)	38 (55.9±6.02 %)	32*,** (86.5±5.62 %)
	On average	1.44±0.04	1.68±0.218	2.59±0.234*,**
Overall	More than 5	16 (16.8±3.84 %)	12 (17.7±4.62 %)	33*,** (89.2±5.10 %)
	On average	3.85±0.192	5.63±0.190*	11.43±0.499*,**

*Note: Statistical reliability of difference of values p<0.05 – 0.001; * – relative to group I; ** – relative to group II.*

In severe periodontal disease, changes in tooth position occur. The results of self-assessment analysis showed that this parameter was not observed in Group I, in Group II it was observed in 13.2±4.11 % of cases and in Group III – in 43.2±8.14 % of patients, meaning that in severe course of periodontal diseases tooth position changes in comparison with the average degree of disease – 3.3 times (p<0.01). On average, this parameter was 3.0 times (p<0.01) higher in Group III than in Group II. The presence of plaque was more frequent in patients with severe disease than in those with mild and moderate disease – 1.9 times (p<0.05) and 1.5 times, respectively. Similar results were obtained with regard to the mean index. The mean value of this index for individuals in Group III was 1.8 times (p<0.05) and 1.5 times higher than in Groups I and II, respectively.

Estimating the total value of all indicators, it was found that among the respondents of Group I more than 5 points were observed in 16,8±3,84 % of cases, in Group II – in 17,7±4,62 % and in group III – in 89,2±5,10 % of cases, which exceeded the indicators of the first two research groups 5,3 times (p<0,01) and 5,0 times (p<0,01), respectively. On average, the rates in Group III were 3.0 times (p<0.01) higher than those in Group I and 2.0 times (p<0.05) higher than those in Group II.

Consequently, periodontal tissue diseases reduce patients' QoL.

Discussion. Health-related quality of life (HRQoL) is a complex and multidimensional construct made up of a number of concepts. It refers to a person's perception of their physical and mental health and their ability to respond to factors in their physical and social environment.

The impact of periodontitis on QoL has received relatively little attention, perhaps because patients with periodontal disease experience few symptoms in the early stages of the disease, unlike other oral diseases [10]. However, the number of studies on the impact of periodontitis on oral health-related QoL has increased in recent decades [11, 12].

The mean scores of the total assessment of QOL in patients with mild, moderate and severe periodontitis were 4.4±0.69, 7.4±1.25 and 23.2±1.791, respectively. The maximum score (>30 points) was observed in patients with severe periodontitis. The most affected domains were pain, physical activity

and health status. Vigour and social isolation were less affected in the current study. Our results are comparable with other studies [10, 13]. Patients with severe periodontitis had higher scores on all items of the questionnaire compared with mild and moderate periodontitis.

According to the results of the patients' self-assessment of oral health, the total score was 3.85±0.192 for mild periodontitis, 5.63±0.190 and 11.43±0.499 for moderate and severe periodontitis, respectively. The highest mean scores were observed for items such as bleeding (1.95±0.17), tooth mobility (1.86±0.296), tooth hypersensitivity (2.54±0.27), plaque (2.59±0.234). This shows that patients with severe periodontitis are more affected by oral health related QoL. Our results are consistent with the literature dates [10, 14, 15]. The effects on pain, physical activity and health status indicate that periodontitis has a significant impact on the QoL of patients with severe periodontitis. The results of the study showed that periodontitis has a significant impact on health by causing pain and reducing physical activity. The results showed that self-rated health on all measures worsened with disease severity. The patients with mild disease had higher mean scores for plaque (1.44±0.04), tooth hypersensitivity (0.91±0.11) and bleeding (0.76±0.11) in compared to other items.

Conclusions. The study of QoL allowed us to establish that QoL worsens with increasing severity of periodontitis. This was particularly reflected in indicators such as pain, physical activity, health status and sleep. Assessment of oral health-related QoL is necessary to determine the effectiveness of interventions to improve and maintain health. The results of the self-assessment study can be used to determine patients' subjective perceptions of the impact of periodontal diseases on oral health.

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