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CHANGES IN ORAL HEALTH–RELATED QUALITY OF LIFE IN OLDER ADULTS FOLLOWING PROSTHETIC REHABILITATION: AN OHIP-14–BASED ASSESSMENT

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Abstract. This article assesses oral health-related quality of life in elderly patients requiring orthopedic rehabilitation using the validated OHIP-14 questionnaire. The survey was administered before prosthetic treatment and on day 33 after prosthesis placement. Within-group and between-group comparisons were performed, including total score dynamics and distribution across quality-of-life categories ("good", "satisfactory", "unsatisfactory"). The results demonstrated marked improvement after treatment, with a substantial decrease in total OHIP-14 scores in Groups 1 and 2, indicating a shift toward "good" quality of life. Group 3 also showed positive changes, although the magnitude of improvement was smaller and overall outcomes more frequently remained within the "satisfactory" range. The findings emphasize the clinical and psychosocial value of orthopedic rehabilitation in elderly patients.

Keywords: OHIP-14, quality of life, orthopedic rehabilitation, prosthetic treatment, elderly patients, social factors, gender analysis.

Introduction. Oral health is closely linked to an individual's overall well-being and daily social functioning, directly influencing quality of life through mastication, speech, aesthetics, and psycho-emotional status (Petersen, Yamamoto, 2005). In older age, partial or complete tooth loss may lead to dietary restrictions, reduced self-confidence in communication, and an increased risk of social isolation (WHO, 2013). Therefore, the effectiveness of prosthetic rehabilitation should be assessed not only using clinical indicators but also by evaluating patient-reported perceptions and the dynamics of quality of life (Allen, 2003).

Modern approaches to quality-of-life assessment in dentistry are based on patient-centered criteria, particularly patient-reported outcomes. One of the most widely used instruments in this field is the Oral Health Impact Profile (OHIP), which enables comprehensive evaluation of how oral health affects daily limitations, pain, psychological discomfort, and social barriers (Slade, Spencer, 1994). Subsequently, the shortened OHIP-14 version was developed, and its reliability and sensitivity for use in clinical research were demonstrated (Slade, 1997).

In national practice and Russian-language clinical settings, the use of the validated Russian version of the OHIP-14 questionnaire has been expanding (Barer et al., 2007). Determining quality-of-life dynamics in patients before and after prosthetic treatment, as well as conducting a comparative analysis of rehabilitation outcomes in older patients living under different social conditions, is of scientific and practical importance for individualizing orthopedic dental care (Petersen, Yamamoto, 2005).

Aim of the Study. To comparatively assess oral health–related quality of life in older patients requiring prosthetic rehabilitation using the validated OHIP-14 questionnaire before prosthetic treatment and after prosthesis/prostheses placement (day 33), as well as to analyze quality-of-life dynamics across groups (social living conditions) and by sex.

Materials and Methods. This study had a clinical observational and comparative design and involved older patients requiring prosthetic rehabilitation. According to living conditions, patients were divided into three groups:

Group 1 — patients residing in the "Muruvvat" care home;

Group 2 — patients living under the care of relatives;

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Group 3 — patients living independently (alone).

Quality of life was assessed using the validated Russian version of the OHIP-14 questionnaire (Barer et al., 2007). The questionnaire consists of 14 items and reflects the impact of oral health on daily life across several domains (difficulties related to eating, discomfort in communication/speech, and limitations in everyday activities) (Slade, 1997). Each item was rated using a 5-point Likert scale; a higher total score indicated a stronger negative impact on quality of life.

The questionnaire was administered twice:

before initiation of prosthetic treatment;

during the follow-up visit on day 33 after placement of the prosthesis/prostheses.

Based on the collected data:

total OHIP-14 scores (M±m) were calculated;

patients were categorized according to their self-assessment of quality of life as "good," "satisfactory," or "unsatisfactory";

within-group and between-group comparisons were performed, including a separate analysis by sex.

Statistical processing was performed using Student's t-test; differences were considered significant when $t > 2$. The level of reliability was expressed as probability P (%).

Results. To assess oral health–related quality of life, the study employed the validated OHIP-14 questionnaire (Barer G.M. et al., 2007). This questionnaire includes 14 questions and is divided into three main domains: eating-related problems, communication difficulties, and discomfort in everyday life. The sum of the scores obtained from all responses reflects the patient's overall quality-of-life level.

The questionnaire was administered to all patients before the start of prosthetic treatment and during the follow-up examination on day 33 after prosthesis/prostheses placement.

To explore the impact of oral health on quality of life in greater depth, patients were analyzed separately within each group and comparatively between groups. For this purpose, mean scores for OHIP-14 before treatment and after prosthetic rehabilitation were calculated for each group. In addition, the number of patients who rated their quality of life as "good," "satisfactory," or "unsatisfactory" was determined.

The OHIP-14 questionnaire results of Group 1 and the corresponding quality-of-life assessment data are presented in Tables 3.21–3.23

According to the questionnaire results obtained before the initiation of treatment in Group 1, 7.9% of men and 11.9% of women rated their quality of life as "good." A "satisfactory" quality of life was reported by 42.1% of men and 33.3% of women. At the same time, the majority of Group 1 patients assessed their quality of life as "unsatisfactory," accounting for 50.0% of men and 54.8% of women.

Table 3.21

Distribution of quality-of-life levels in Group 1 patients before and after prosthetic treatment

Quality-of-life level	Before prosthetic treatment	After prosthetic treatment
	Men, %	Women, %
Good	3 (7.9%)	5 (11.9%)
Satisfactory	16 (42.1%)	14 (33.3%)
Unsatisfactory	19 (50.0%)	23 (54.8%)

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As shown after prosthetic treatment there was a marked increase in the number of both men and women in Group 1 who rated their quality of life as "good." Specifically, this proportion reached 73.7% among men and 76.2% among women. The proportion of patients who assessed their quality of life as "satisfactory" was 23.7% among men and 19.0% among women. The number of patients reporting an "unsatisfactory" quality of life decreased substantially, accounting for only 2.6% of men and 4.8% of women.

Table 3.22

OHIP-14 questionnaire scores in Group 1 patients before and after prosthetic treatment

Question No.	Men		Women	
	Before treatment	After treatment	Before treatment	After treatment
1	4.05 ± 0.15	2.26 ± 0.12	3.95 ± 0.16	2.17 ± 0.14
2	4.21 ± 0.11	2.21 ± 0.11	4.17 ± 0.12	2.24 ± 0.15
3	3.92 ± 0.12	2.08 ± 0.17	3.95 ± 0.17	1.98 ± 0.15
4	3.92 ± 0.18	1.71 ± 0.13	3.69 ± 0.17	1.71 ± 0.13
5	4.00 ± 0.18	1.97 ± 0.15	3.92 ± 0.16	1.83 ± 0.17
6	3.68 ± 0.17	1.90 ± 0.12	3.69 ± 0.16	2.05 ± 0.11
7	3.95 ± 0.14	2.24 ± 0.16	3.74 ± 0.15	2.07 ± 0.17
8	3.79 ± 0.13	2.00 ± 0.10	3.76 ± 0.15	1.90 ± 0.13
9	3.79 ± 0.17	1.50 ± 0.09	3.81 ± 0.15	1.52 ± 0.12
10	3.47 ± 0.19	1.63 ± 0.13	3.64 ± 0.19	1.55 ± 0.10
11	3.05 ± 0.22	1.63 ± 0.16	2.91 ± 0.20	1.60 ± 0.13
12	3.55 ± 0.16	1.45 ± 0.09	3.52 ± 0.17	1.52 ± 0.10
13	3.68 ± 0.15	1.79 ± 0.13	3.52 ± 0.17	1.38 ± 0.09
14	3.42 ± 0.18	1.34 ± 0.10	3.17 ± 0.20	1.29 ± 0.12
Total score	**52.50 ± 1.55**	**25.71 ± 1.22**	**51.45 ± 1.66**	**24.81 ± 1.33**

Analysis of the pre-treatment questionnaire data showed that, among male patients in Group 1, the main factors negatively affecting quality of life were difficulties related to food intake (questions 1–5, "Eating problems" domain) and problems with pronunciation (question 7, "Communication problems" domain). Female patients primarily identified difficulties with food intake (questions 1–5) and discomfort during communication (question 9) as the main factors reducing their quality of life. Mean scores calculated from the OHIP-14 questionnaire responses completed by Group 1 patients before and after prosthetic treatment are presented in Table 3.22.

After prosthetic treatment, a nearly twofold reduction in mean scores was observed across all questionnaire domains in both men and women of Group 1. In particular, the mean score for oral pain decreased from 4.21 ± 0.11 to 2.21 ± 0.11 in men and from 4.17 ± 0.12 to 2.24 ± 0.15 in women.

Overall, no substantial differences were observed between men and women in Group 1 with regard to OHIP-14 questionnaire outcomes before and after prosthetic treatment, as the results were comparable between sexes.

Table 3.23

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Mean total OHIP-14 scores in Group 1 patients before and after prosthetic treatment

Sex	Total OHIP-14 score	Reliability of differences
	Before treatment	After treatment
Men	52.50 ± 1.55	25.71 ± 1.22
Women	51.45 ± 1.66	24.81 ± 1.33

According to the data presented in Table 3.23, the mean total OHIP-14 score in male patients of Group 1 decreased from 52.50 ± 1.55 points (satisfactory quality of life) before treatment to 25.71 ± 1.22 points (good quality of life) after prosthetic rehabilitation. A similar reduction was observed in female patients, with scores decreasing from 51.45 ± 1.66 to 24.81 ± 1.33 points. These changes were statistically significant and demonstrated a very high level of reliability ($P > 99.9\%$).

Table 3.24

Distribution of quality-of-life levels in Group 2 patients before and after prosthetic treatment

Quality-of-life level	Before prosthetic treatment	After prosthetic treatment
	Men, %	Women, %
Good	9 (27.3%)	11 (29.7%)
Satisfactory	18 (54.5%)	19 (51.4%)
Unsatisfactory	6 (18.2%)	7 (18.9%)

A pronounced positive effect of prosthetic treatment on quality of life was identified in Group 1 patients. According to the questionnaire data, prior to treatment most patients rated their quality of life as “unsatisfactory” (men—50.0%, women—54.8%), whereas after prosthetic rehabilitation the proportion of those reporting a “good” quality of life increased to 73.7% among men and 76.2% among women.

Before prosthetic treatment, 27.3% of men and 29.7% of women in Group 2 rated their quality of life as “good.” The majority of respondents assessed their quality of life as “satisfactory”—54.5% of men and 51.4% of women. The smallest proportion of patients reported an “unsatisfactory” quality of life, accounting for 18.2% of men and 18.9% of women.

After prosthetic treatment, similarly to the pattern observed in Group 1, the proportion of Group 2 patients reporting a “good” quality of life increased substantially—up to 72.7% among men and 73.0% among women. The proportion reporting a “satisfactory” quality of life was 21.2% among men and 21.6% among women. The number of patients who continued to rate their quality of life as “unsatisfactory” decreased markedly, to 6.1% among men and 5.4% among women

Thus, following prosthetic rehabilitation, the proportion of patients who rated their quality of life as “good” increased considerably (72.7% among men and 73.0% among women). A “satisfactory” quality-of-life level was reported by 21.2% of men and 21.6% of women, whereas only 6.1% of men and 5.4% of women continued to consider their quality of life “unsatisfactory.”

Analysis of mean OHIP-14 item scores in male patients of Group 2 demonstrated that the greatest impact on quality of life was associated with difficulties in food intake (Questions 1 and 2) and communication-related problems, including discomfort due to oral condition (Question 6)

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and difficulties in pronunciation (Question 7). Among female patients, the main factors reducing quality of life were likewise eating-related problems and communication discomfort (Questions 1, 2, 6, and 7). Mean OHIP-14 scores in Group 2 patients before and after prosthetic treatment are presented in Table 3.25.

Table 3.25

OHIP-14 questionnaire scores in Group 2 patients before and after prosthetic treatment

Question No.	**Men**		**Women**	
	Before treatment	After treatment	Before treatment	After treatment
1	3.15 ± 0.19	1.94 ± 0.18	3.21 ± 0.17	1.97 ± 0.18
2	3.36 ± 0.16	2.09 ± 0.17	3.35 ± 0.19	2.11 ± 0.16
3	3.06 ± 0.17	1.94 ± 0.17	3.11 ± 0.20	2.03 ± 0.15
4	3.03 ± 0.20	1.85 ± 0.15	2.60 ± 0.18	1.81 ± 0.13
5	2.97 ± 0.21	2.03 ± 0.20	2.78 ± 0.22	2.05 ± 0.16
6	3.15 ± 0.19	1.79 ± 0.19	3.38 ± 0.14	1.76 ± 0.17
7	3.12 ± 0.15	1.88 ± 0.16	3.30 ± 0.15	2.16 ± 0.16
8	2.97 ± 0.20	1.67 ± 0.16	3.30 ± 0.19	1.78 ± 0.17
9	2.85 ± 0.20	1.79 ± 0.16	3.11 ± 0.16	2.00 ± 0.16
10	3.00 ± 0.21	1.58 ± 0.16	2.60 ± 0.21	1.51 ± 0.15
11	2.09 ± 0.26	1.58 ± 0.15	2.68 ± 0.21	1.89 ± 0.15
12	2.94 ± 0.19	1.72 ± 0.18	3.11 ± 0.15	1.86 ± 0.17
13	2.82 ± 0.17	1.58 ± 0.12	3.00 ± 0.16	1.62 ± 0.13
14	1.97 ± 0.23	1.30 ± 0.12	2.22 ± 0.20	1.60 ± 0.18
Total score	**40.49 ± 2.17**	**24.73 ± 1.79**	**41.73 ± 2.01**	**26.16 ± 1.75**

After prosthetic treatment, changes in mean item scores were observed across all three domains of the questionnaire in both men and women in Group 2. In particular, prior to treatment the highest mean score among men was recorded for Question 2 (oral pain)—3.36 ± 0.16 points, which decreased to 2.09 ± 0.17 points after treatment. Among women, the highest score was also observed for the same item, decreasing from 3.35 ± 0.19 to 2.11 ± 0.16 points.

Overall, OHIP-14 mean values in Group 2 patients before and after prosthetic rehabilitation showed substantial improvement, with comparable patterns observed in both sexes.

Table 3.26

Mean total OHIP-14 scores in Group 2 patients before and after prosthetic treatment

Sex	**Total OHIP-14 score**	**Reliability of differences**
	Before treatment	After treatment
Men	40.49 ± 2.17	24.73 ± 1.79
Women	41.73 ± 2.01	26.16 ± 1.75

As shown in Table 3.26, the mean total OHIP-14 score in men of Group 2 decreased from 40.49 ± 2.17 points (satisfactory quality of life) to 24.73 ± 1.79 points (good quality of life) after prosthetic treatment. In women, the corresponding score decreased from 41.73 ± 2.01 to 26.16 ± 1.75 points. These changes were statistically significant and demonstrated a very high level of reliability (P > 99.9%).

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Thus, prosthetic treatment exerted a substantial positive effect on quality of life in patients of Groups 1 and 2. According to the OHIP-14 questionnaire, total scores decreased almost twofold in both sexes and in both groups. While prior to treatment the majority of patients rated their quality of life as “unsatisfactory,” after rehabilitation the proportion of those reporting a “good” quality of life increased to approximately 73–74% among men and 73–76% among women.

The most pronounced problems were related to food intake and communication; these domains also showed the greatest improvement. The observed changes were highly statistically significant according to Student’s *t*-test ($P > 99.9\%$). Given that Group 1 comprised socially vulnerable patients, baseline quality-of-life levels were lower; however, the magnitude of improvement after treatment was considerable, highlighting the social importance of prosthetic care for this population. Overall, prosthetic rehabilitation improved patients’ living standards not only clinically but also in psycho-emotional terms.

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