COMPARATIVE EVALUATION OF ORAL HYGIENE LEVELS IN ELDERLY PATIENTS BASED ON THE TURESKY INDEX

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Abstract. This article presents the results of assessing oral hygiene levels in elderly patients with partially preserved teeth requiring orthopedic rehabilitation, using the Turesky index. Only patients with partial tooth loss were included, as objective hygiene assessment requires the presence of teeth. The Turesky index enables a comprehensive evaluation of all existing teeth (excluding third molars) and allows detection of dental plaque on different tooth surfaces. The findings demonstrated that oral hygiene levels were unsatisfactory in all three study groups. The best hygiene indicators were observed in patients living under the care of relatives, whereas the poorest hygiene was noted in independently living elderly patients. Intergroup differences were statistically significant (t>2), confirming that lifestyle and social environment have a substantial impact on oral hygiene status.

Keywords: oral hygiene, Turesky index, elderly patients, dental plaque, orthopedic rehabilitation.

Introduction. Oral hygiene status is considered one of the key determinants in maintaining dental health. Insufficient cleaning of tooth surfaces leads to the accumulation of dental plaque, formation of calculus, and consequently to the development of dental caries and periodontal diseases (Löe, 1967). In elderly patients, a decline in oral hygiene levels is often associated with general somatic conditions, limited manual dexterity, and reduced hygiene-related skills (Petersen, Yamamoto, 2005).

In patients requiring prosthetic rehabilitation, the condition of oral hygiene significantly influences the effectiveness of prosthetic constructions, the adaptation process, and the risk of complications. In individuals with partial tooth loss, oral hygiene procedures become more challenging, resulting in increased plaque accumulation and progression of periodontal tissue damage (Axelsson, Lindhe, 1981). Therefore, regular assessment and monitoring of oral hygiene in such patients is of considerable importance in clinical practice.

Various indices have been proposed for the objective evaluation of oral hygiene, among which the Turesky index is widely used. This index is a modification of the Quigley–Hein Plaque Index and allows assessment of plaque distribution on the labial, lingual, and palatal surfaces of teeth by conditionally dividing each tooth into segments (Turesky et al., 1970). The Turesky index is particularly advantageous in elderly patients, as it enables a comprehensive evaluation of all present teeth except third molars (Quigley, Hein, 1962).

According to the World Health Organization, insufficient oral hygiene among the elderly population is one of the leading causes of periodontal diseases and tooth loss (WHO, 2013). In this context, comparative analysis of oral hygiene levels among elderly patients living under different social conditions is of significant scientific and practical relevance for improving preventive measures and developing individualized approaches.

Aim of the Study. The aim of this study was to assess the level of oral hygiene in elderly patients with partial tooth retention who require prosthetic rehabilitation using the Turesky index, and to perform a comparative analysis of hygienic status among patient groups living under different social conditions.

Materials and Methods. This clinical observational study was conducted among elderly patients requiring prosthetic dental care. Only patients with partial tooth loss were included in the study. Patients with complete edentulism were excluded, as oral hygiene assessment using plaque indices is not applicable in such cases.

All patients were divided into three groups according to living conditions:

Group 1 — patients residing in "Muruvvat" care homes;

Group 2 — patients living under the care of relatives;

Group 3 — patients living independently.

Oral hygiene status was assessed using the Turesky modification of the Quigley–Hein Plaque Index. This index allows comprehensive evaluation of plaque distribution and intensity on all present teeth (excluding third molars) (Turesky et al., 1970).

According to the Turesky index methodology, the labial, lingual, and palatal surfaces of each tooth were conditionally divided into six segments, and plaque presence in each segment was scored. The total score for each patient was calculated, and mean hygienic indices were determined (Quigley, Hein, 1962).

The obtained data were analyzed by groups and sex, and results were expressed as mean values ± standard error (M ± m). Statistical analysis was performed using Student's t-test. Differences were considered statistically significant when t > 2. All calculations were carried out in accordance with medical-biological statistical standards (Glantz, 1999).

Results. In assessing oral hygiene levels, similar to the evaluation of periodontal disease intensity, only patients with partial edentulism were included in the analysis (Table 3.5).

In the present study, the Turesky index was used to assess oral hygiene status in elderly patients. This index has advantages over other hygiene indices, as it enables comprehensive evaluation of all existing teeth (except third molars).

The Turesky index allows detection of plaque not only on the labial and lingual/palatal surfaces but also on conditional segments of each tooth, providing a detailed assessment of plaque accumulation.

Table 3.14

Quantitative analysis of the Turesky index in male and female patients

Study group	Men	Women	Reliability of differences
			t (Student's test)
Group 1	15.03 ± 0.31	14.44 ± 0.29	t = 1.4
Group 2	13.88 ± 0.39	13.91 ± 0.50	t = 0.0
Group 3	17.54 ± 0.44	16.61 ± 0.35	t = 1.6

To investigate oral hygiene levels in elderly patients living under different conditions, analyses were performed both within each group and between groups.

Hygiene status was also analyzed separately by sex. Corresponding data are presented in Tables 3.14 and 3.15.

According to Table 3.14, oral hygiene levels were slightly poorer in men than in women in Groups 1 and 3, with mean values of 15.03 ± 0.31 and 17.54 ± 0.44 in men, compared to 14.44 ± 0.29 and 16.61 ± 0.35 in women, respectively. In Group 2, mean Turesky index values were nearly identical in men (13.88 ± 0.39) and women (13.91 ± 0.50). Statistical analysis revealed no significant differences in oral hygiene levels between men and women in any of the studied groups (t < 2).

Table 3.15

Quantitative analysis of the Turesky index across three study groups

Study group	Mean value (M ± m)	Reliability of differences
		t (Student's test)
Group 1	14.73 ± 0.21	t > 2
Group 2	13.90 ± 0.32	t > 2
Group 3	17.11 ± 0.29	t > 2

Note: a) comparison between Groups 1 and 2; b) comparison between Groups 1 and 3; c) comparison between Groups 2 and 3.

The data presented in Table 3.15 and Figure 3.11 clearly demonstrate that mean Turesky index values in all three study groups correspond to poor oral hygiene status. The highest mean index value was observed in Group 3 patients living independently (17.11 ± 0.29). In patients

residing in "Muruvvat" care homes (Group 1), the mean value was 14.73 ± 0.21. The best hygiene status was recorded in Group 2 patients living under the care of relatives, with a mean Turesky index of 13.90 ± 0.32.

The differences in oral hygiene status between groups were statistically significant ($t > 2$), indicating a substantial influence of lifestyle and living environment on oral hygiene.

According to the study results, oral hygiene levels in all three groups were assessed as poor based on the Turesky index. This reflects inadequate plaque removal, extensive plaque accumulation on tooth surfaces, and insufficient use of oral hygiene aids.

Comparative analysis showed that the best oral hygiene status was observed in Group 2 patients (living with relatives), whereas moderate hygiene levels were recorded in Group 1 patients. The poorest hygiene status was identified in Group 3 patients living independently.

No statistically significant differences in Turesky index values were found between men and women in any group ($t < 2$).

Conclusion. In conclusion, oral hygiene levels in elderly patients are strongly influenced by lifestyle, social environment, and the degree of caregiving support. Patients living under the care of relatives demonstrated better oral hygiene, whereas independently living elderly patients exhibited the poorest hygiene status. These findings highlight the necessity of implementing individualized preventive and monitoring strategies tailored to patients' living conditions.

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