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DEVELOPMENT AND EVALUATION OF INDIVIDUAL ORAL HYGIENE MEASURES IN PATIENTS UNDERGOING ORTHODONTIC TREATMENT

Khabibjonova Y. Kh.¹,

Raxmatullaeva N. R.²

Nigmatova I. M.³

1. Fergana Public Health Medical Institute
2. Urgench State Medical Institute
3. Tashkent State Medical University

Orthodontic treatment is a long-term therapeutic process aimed at correcting the dentoalveolar system, normalizing occlusion, and improving esthetic and functional conditions. However, the presence of various orthodontic appliances in the oral cavity complicates the maintenance of hygiene (Proffit W.R., 2019). Brackets, bands, and connecting elements create favorable conditions for microbial plaque accumulation, which in turn enhances demineralization processes, caries, and gingival inflammation.

The study involved **126 patients aged 6–18 years** undergoing orthodontic treatment, who were evaluated according to oral hygiene, biofilm condition, and the degree of inflammation. Patients were divided into the **main group (n=84)** and the **comparison group (n=42)**, depending on the applied orthodontic appliance (removable or fixed) and adherence to individual hygiene measures. The age distribution of patients was analyzed according to the stages of occlusal development: **early mixed dentition (6–9 years)**, **late mixed dentition (10–12 years)**, and **permanent dentition (13–18 years)**. In each stage, the type of orthodontic appliance and the level of compliance with individual oral hygiene were considered.

According to the analysis, the number of patients in the main group was significantly higher compared to the comparison group, which demonstrates the importance of timely preventive measures. Among the 84 patients in the main group:

1. Early mixed dentition – 28 patients (33.3%),



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2. Late mixed dentition – 28 patients (33.3%),
3. Permanent dentition – 28 patients (33.3%).

Table 1. Dental indices in the studied groups

Indicators	Main group (n=84)	Comparison group (n=42)	p
DMFT index (mean)	1.7 ± 0.8	2.9 ± 1.1	<0.01
OHI-S	0.94 ± 0.5	2.1 ± 0.6	<0.001
GI	0.6 ± 0.3	1.4 ± 0.4	<0.001
API (%)	39.7 ± 8.2	71.2 ± 9.5	<0.001
White spot lesions (%)	14.3%	38.1%	<0.01

Results

In the main group, dental indicators consistently improved during treatment; caries and inflammation rates were lower, and biofilm accumulation decreased due to regular hygiene practices. In the comparison group, in the absence of preventive education and control, higher values of API, GI, and OHI-S were recorded. White spot lesions (WSL) were significantly more common among patients without preventive measures.

Additional observations revealed recurrent caries in 8 patients, mainly in the comparison group, around fillings or on proximal tooth surfaces. At orthodontic appliance sites, reactive swelling and mild gingivitis of the periodontal tissues were detected, mostly in patients without preventive care. Objective assessment of dental status is a key factor in evaluating the overall effectiveness of orthodontic treatment. In the main group, due to preventive interventions and regular dental supervision, dental indicators remained within normal limits, and patients developed a higher level of responsibility for oral hygiene. In contrast, in the comparison group, the absence of preventive measures increased the risk of dental complications.



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