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Current Views on Dental Status and Quality of Life in University Students

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Abstract A comprehensive survey of dental health of students in Samarkand city was conducted. The survey was conducted between the higher educational institutions. The total number is 574 students. The following institutions of higher education took part in research: (Samarkand Medical University and Samarkand State University) among which there were 193 first-year students, 175 second-year students and 206 third-year students respectively. Prevalence of dental caries, which amounted to 91,87±1,30% was detected. Intensity of carious process was 5,31±0,14 tooth at 8,34±0,26 surface, there were signs of periodontal tissue diseases with intensity 3,88±0,06 segments. 53.05±2.37% of the students had dental anomalies and deformities

Keywords: students, periodontal disease, tooth and jaw anomalies, caries and non-carious lesions

Introduction. It is well known that the dental aspect plays an important role in human health. It directly affects the somatic condition, has a significant impact on the aesthetics of the individual and reflects the medical culture of the individual [10]. Oral and dental health in youth predetermines their health throughout life [7]. A study of the health of students shows that the situation is most alarming among undergraduates [1,2,4]. From 12% to 27% of those enrolled in higher education institutions have pronounced health abnormalities [2], which suggests that the problem of low health of the students begins while they are still in school and is amplified by the increasing social, psychological and educational burden in higher education [11]. The most significant factors affecting the life of students during the period of vocational education include: adaptation to the conditions and mode of study, new natural and climatic factors. Changes in the quality of nutrition due to the departure from home; social and psychological tensions; different behavioral characteristics of boys and girls; socio-hygienic, ethnic and cultural factors; the level of medical activity, hygienic awareness and attitudes towards healthy lifestyle [6,9,5]. In some cases, the presence of these factors leads not only to the exacerbation of previously occurring diseases, but also to the emergence of new ones [9,11].

The aim of our study was to investigate the dental health of Samarkand university students and to assess the influence of organizational, medical and social risk factors on it.

Material and methods of the study: To accomplish the set tasks we have examined 574 students of Samarkand higher educational institutions (Samarkand Medical Institute (SMI) and Samarkand State University (SSU)) among which first-year students 193, second-year students -175 and third-year students 206 respectively. The average age was 21.4±1.2 years.

The prevalence of all detected diseases was expressed as a percentage of persons suffering from these diseases. Examination of oral mucosa and soft tissues included examination of skin and lip border (diseases of lips and SOPR - K13), character of their occlusion; mucosa of lips, cheeks and mouth vestibule; frenulum of lips and tongue, mucosal bands; gingival margin; tongue mucosa (tongue diseases - K14), floor of mouth, hard and soft palate. The incidence of dental caries was assessed by its prevalence and intensity. The caries prevalence was expressed as the percentage of people with the disease. The caries incidence rate (KPI) was considered as an integrated value of all variants of dental caries - the number of teeth affected by caries, its complications, fillings and extractions.

Registration of the obtained data was carried out in the developed "Card for the assessment of the dental status".

The following indices were used to assess the state of periodontal tissues: gingival bleeding index (Muchlemann - Cowell), gingival index GI, as well as CPI index reflecting the need for treatment of periodontal diseases. Oral hygiene status (as a major risk factor for dental diseases) was assessed according to the simplified OHI-S scale [20], the international classification of Dean N.T. [18] was used to assess the presence of dental fluorosis. According to this classification, the following forms of dental fluorosis were distinguished:

The Dental Aesthetic Index (DAI) was used to determine the need for orthodontic treatment. It assessed the position of the teeth and the condition of the bite in the sagittal, vertical and transversal directions.

To identify the need for restorative treatment of teeth, we used the index of destruction of the occlusal surface of the teeth - the DAI of Milikevich V.Yu. [11]. The entire occlusal surface area of a tooth was taken as a unit. To determine the fracture index, the surface area of the cavity or filling was subtracted from unity, i.e., the entire occlusal surface area.

Results of the study: The out-of-oral examination carried out on 574 students (430 male and 144 female) studying in Samarkand higher educational institutions (Samarkand Medical Institute (SamMI) and Samarkand State University (SamSU) showed the absence of marked pathology. On detection of complaints, external examination and palpation of the temporomandibular joint, it was found that 132 (22.80±1.99%) students had pathology in articulatory function of the TMJ (Fig. 1). It was expressed in the presence of pain, clicking and crunching in the joints, restricted mouth opening, zigzag shift of the lower jaw to the left or right, asynchronous movement of the heads of the TMJ. The prevalence of pathology in articulatory function of the temporomandibular joint in SamMI students was slightly higher (24,22±2,87%) than in SamSU students (21,36±2,76%, $p>0,05$). State of the mucous membrane and soft tissues of the oral cavity. The prevalence of different types of pathology of oral mucosa and soft tissues of Samarkand students was 30.66±2.19% (176 students) (Pic 1). Most frequently there were 107 (18.64±1.85%) inflammatory changes of gingival margin, followed by 61 (10.63±1.45%) tongue surface changes (desquamative glossitis or geographical tongue) and 38 (6.62±1.18%) students who had affected red vermilion of lips (meteoric cheilitis).

Examination of the SOPR revealed isolated cases of CPAS (4 persons -0.7%). We did not find pronounced pathology in the location and attachment of the frenulum of the lips, tongue and mucosal bands in the subjects. Comparison of examination findings revealed that prevalence of oral mucosa and soft tissue diseases among SamMI students was 2.1 times lower than among students of SamSU (19.73% and 41.82% respectively, $p<0.05$). Inflammatory changes of gingival margin were found 3.4 times less frequently among SamMI students than among SamSU students (8.52% and 29.09%, respectively), changes on the dorsal surface of the tongue were 2.3 times less frequently (6.28% and 14.55%, respectively, $p<0.05$).

Prevalence and intensity of dental caries

Each student had on the average little more than 5 teeth affected by caries (5.31±0.14), the rate of carious lesions on CPU(n) surfaces was 8.34±0.26 (Table 1).

Table 1

Intensity of dental caries and surfaces in students of Samarkand State Medical Institute and Samarkand State University (M±m)

Indicators		Intensity of injury	
		Samarkand State Medical Institute	Samarkand State University
Structure of the dental lesion index	KPU(h)	5,49 ±0,20	5,12 ±0,18
	C(h)	1,11 ± 0,08	1,56 ± 0,09*
	P(h)	4,26 ± 0,17	3,43 ±0,16*
	U(h)	0,12 ±0,01	0,13 ±0,02
Structure of the dental surface lesion index	KPU(n)	8,32 ± 0,37	8,37 ±0,37
	C(n)	1,63 ±0,13	2,65 ±0,18*
	P(n)	6,09 ± 0,27	5,09 ± 0,25*
	U(n)	0,61 ±0,07	0,64 ± 0,08

*Note: * - differences between the indicators are significant (p<0.05).*

The analysis of the index structure revealed the high proportion of "filled teeth" (72,5%), the proportion of "decayed teeth" was 25,24%, "extracted teeth" - 2,26%.

In the vast majority of cases (75.73±2.04% of all affected teeth) caries process, occurred in the group of molars (Table 2).

Table 2

Prevalence of dental caries by dental group of Samarkand State Medical Institute and Samarkand State University (M±m, %)

Prevalence of dental caries	HEI	
	Samarkand State Medical Institute (n=289)	Samarkand State University (n=285)
Molars	73,96 ±2,94	77,71 ±2,81
Upper jaw molars	31,84±3,12	30,46 ±3,10
Lower jaw molars	42,12 ±3,31	47,25 ±3,37
Premolars	14,61 ±2,37	10,92 ±2,10
Premolars upper jaw	11,18 ±2,12	7,28 ±1,75
Lower premolars	3,43 ±1,22	3,64 ±1,26
Incisors and canines	11,43 ±2,13	11,37 ±2,14
Incisors and canines of upper jaw	10,29 ±2,03	10,75 ±2,09
The incisors and canines of the lower jaw	1,14 ±0,71	0,62 ±0,53

The level of dental care for Samarkand university students was 74.82±2.06%, which corresponds to a satisfactory value.

To determine the need for various types of restorative therapy, we used Milikevich V.Y.'s IROPZ index. Depending on the degree of destruction, all teeth to be treated were divided into three groups. The EDEPI equal to 0,2-0,5 was observed in 43 % of teeth, indicating their moderate destruction and possibility of restoration of dental defects by means of fillings and restorations. 35%

of the teeth had an MRPI of 0.6-0.7, indicating more severe damage, no possibility of repair by filling, and the need for crowns. A CRPI of 0.8-0.9 was observed in 22% of teeth, indicating significant damage and indicating the need for dental restoration with cast inlays or post and cuspidectomy, followed by crowning. The incidence of each index group IROPZ included approximately equal numbers of students from both institutions, with girls characterised by an IROPZ of 0.36±0.07 and boys 0.43±0.08.

Non-carious damages of hard tooth tissues have been met in 56,44±2,36 % of examined students, some degrees of dental fluorosis have been observed in 30,93±2,20 %, the share of stains and hypoplasia of enamel was 16,93±1,78 %, the signs of pathological erasure were revealed in 3,61±0,89 %, and cliniform defects - in 4,97±1,03 % (Table 3).

Table 3

Prevalence of non-carious dental lesions of Samarkand university students (M±m, %)

Non-carious dental lesions		Prevalence
Dental fluorosis		30,93 ±2,20
Forms of dental fluorosis	Doubtful	32,12 ±3,99
	Very weak	20,44 ± 3,45
	Weak	29,20 ±3,88
	Moderate	16,07 ±3,14
	Severe	2,19 ±1,25
Stained and hypoplasic enamel		16,93 ±1,78
Abnormal abrasion		3,61 ±0,89
Wedge-shaped defects		4,97 ±1,03

Gingivitis was detected in 364 (63.41%) students examined, clinically characterised as catarrhal in 306 (84.07%) students and hypertrophic in 59 (16.21%) students. According to gingivitis index (GI) in 55,77% (203 persons) of cases mild inflammation of gingiva (slight hyperemia and swelling), in 40,11% (146 students) - moderate inflammation (more pronounced hyperemia and swelling, bleeding when probing), in 4,12% (12 persons) - severe inflammation (intense hyperemia and swelling, spontaneous bleeding).

Bleeding gingival inflammation was assessed with the Muchlemann index, which showed bleeding in 310 (54%) subjects, bleeding at the slightest gingival probing and while eating in 104 (18,12%) students. Evaluation of the results of study of periodontal tissues condition among Samarkand State University students has shown their high prevalence (97,49±0,78%) and intensity (3,88±0,06) among students (table 5).

The prevalence of periodontal disease signs among students of SamSU was 99.55±0.45%, with average intensity of lesions - four segments per examinee (4.10±0.08), which was 5% and 12%, respectively, higher than in students of SamMI ($p<0.05$). Tartar was most common among medical students and its prevalence was 78.65±3.07%. Tartar was diagnosed in almost 2 sextants. Among signs of periodontal tissue lesions, tartar was also frequently observed among SamSU students (65.45±3.21%), with an intensity of 1.55±0.08 sextant, but this lesion sign was found reliably less frequently than among medical students. The average hygiene index in SamMI youth was 1.92±0.07, which corresponds to a satisfactory level of oral hygiene. The average value of hygiene index in SamSU students (2.05±0.05) did not differ significantly from that of SamMI students. However, there were significant differences in plaque index (1.51±0.03 and 1.25±0.03, respectively) and calculus index (0.54±0.03 and 0.67±0.04, respectively) (Table 5).

Table 5

Prevalence and intensity of periodontal tissue of periodontal tissues of Samarkand students (M±m)

Indicators		Samarkand State Medical Institute)	Samarkand State University
Prevalence (%)	**medium**	94,94 ±1,64	99,55 ±0,45*
	bleeding	15,17 ±2,69	28,64 ±3,05*
	stone	78,65 ±3,07	65,45 ±3,21*
	pocket	1,12 ±0,79	5,45 ±1,53*
Intensity (sextants)	**medium**	3,61 ±0,10	4,10±0,08*
	bleeding	1,63 ±0,09	2,50 ± 0,08*
	stone	1,97 ±0,10	1,55 ±0,08*
	pocket	0,01 ±0,00	0,05 ±0,01*

Note: * - Differences between signs between groups are significant (p<0.05).

Table 6

Oral hygiene status of Samarkand university students (M±m)

Indicators		Values		
		Secondary	**SamMI**	**SamSU**
Hygiene index	average	2,00 ±0,04	1,92 ±0,07	2,05 ±0,05
	plaque	1,40 ±0,02	1,25 ±0,03	1,51 ±0,03*
	stone	0,60 ±0,02	0,67 ±0,04	0,54 ±0,03 *
Oral hygiene level (%)	good	22,79 ±2,17	29,41 ±3,68	18,18 ±2,60*
	satisfactory-	64,34 ±2,48	58,82 ±3,98	68,18 ±3,14
	good	12,87 ±1,73	11,76 ±2,60	13,64 ±2,31

Note:* - differences between the groups are significant (p<0.05).

Prevalence of dental and maxillary system disorders

The dental system disorders were found in every second student of Samarkand (53,05±2,37%) (tab. 7). We registered bite pathology in 16.48±1.76% of all examined students. Among the students having bite pathology, prognathic jaw ratio was the most frequent - 64,38±5,60%; prevalence of deep bite was 17,81±1,82%; equally frequent (6,85±2,96%) open and cross bites were observed; in single cases prognathism was registered (4,11±2,32%). Dental anomalies occurred in 75.40±2.05% of the students. Anomalies of individual teeth were found least frequently (8.13±1.39%).

Table 7

Frequency of different types of dental anomalies among Samarkand university students (M±m)

Nosology		Prevalence
Disorders of the maxillary system		53,05 ±2,37
Bite anomalies		16,48 ±1,76
Types of anomaly	**Prognathia**	64,38 ±5,60
	Prognathia	4,11 ±2,32
	Crossbite	6,85 ±2,96
	Deep bite	17,81 ±1,82
	Open bite	6,85 ±2,96
Dental anomalies		75,40 ±2,05
Anomalies of individual teeth		8,13 ±1,39

Our study showed that 193 (33.62±2.25%) students had an aesthetic DAI of less than 25, indicating no or very little bite problems. In these cases, there is little or no need for treatment. DAI values of 26-30 were found in 92 (16.03±1.21%) young people, indicating a clear bite disturbance, they are recommended to consult an orthodontist and treatment as indicated. In 63 (10.98±1.35%), the DAI index value was 31-35, indicating a pronounced bite disorder and the need for orthodontic treatment. In 28 (4.88±0.19%) young men and women the aesthetic index values exceeded 36, which reflects very severe bite disturbances and an unconditional need for treatment.

Conclusions:

1. The prevalence of dental caries among students of Samarkand higher educational institutions is 91,87±1,30% and intensity of carious process is 5,31±0,14 tooth at 8,34±0,26 surface. Non-carious damages of hard tissues of teeth are ascertained at 56,44±2,36 % on a background of satisfactory level of stomatological help to students.

2. 97,49±0,78 % of Samarkand university students have revealed signs of periodontal tissues diseases with intensity of 3,88±0,06 segments, and 30,70±2,19 % of students have stated pathology of mucous membrane and soft tissues of oral cavity. Oral hygiene of Samarkand university students is at satisfactory level, and good level of hygiene of medical students is 1,6 times higher than that of Samarkand State University students.

3. Dental-alveolar anomalies and deformities were found in 53.05±2.37% of students, and articulatory dysfunctions of temporomandibular joints were found in 22.80±1.99% of students.

There is a direct correlation between the prevalence and intensity of major dental diseases and risk factors such as poor oral hygiene, tobacco smoking and alcohol consumption**.**

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