

## **DYNAMICS OF PSYCHOLOGICAL MICROCLIMATE INDICES IN STUDENT GROUPS OF MEDICAL HIGHER EDUCATION INSTITUTIONS AND THEIR ROLE IN DEVELOPMENT OF PSYCHOSOMATIC DISORDERS IN STUDENTS**

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**Ключові слова:** психологічний мікроклімат, стрес, психосоматичні розлади, студенти, аутогене тренування.

**Ключевые слова:** психологический микроклимат, стресс, психосоматические расстройства, студенты, аутогенная тренировка.

**Keywords:** the psychological microclimate, stress, psychosomatic disorders, students, autogenic training.

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**Introduction.** The processes of higher medical education reforming, that take place in Ukraine in conditions of deep social and economic changes, determine the implementation of modern approaches to the organization of the process of acquiring the theoretical knowledge and practical skills by students, optimization of occupational training. In this regard, justification for approaches to preservation and health promotion of today's college students and investigation of features of their psychological and psychophysiological adaptation processes are the priority tasks (1).

Scientific foundation for the formation of moral human being, including a large army of students, disclosure of their possibilities and abilities is psychohygiene and its integral component - the psychology of interpersonal relationships, which in turn is the basis of psychological microclimate in any collective (1, 2). It should be noted that in the learning process there is always a number of so-called "crisis periods", distinguishing features of which should be considered as a high level of body sensitivity, as well

as expressed, stressful in content neuro-emotional loadings, leading to serious psycho-emotional abuses up to emotional burnout syndrome (EBS) (3).

Stressful situations, as well as high informational loads inherent in a modern high school represent a potential threat to the health of college students in the form of premorbid psychosomatic disorders of the various organs and systems of the body. That is why the harmonization of interpersonal relationships is an important factor in prevention of conflict and stressful situations in student collectives, as well as a factor of prevention of premorbid psychosomatic disorders in students (4).

Aim of study: to estimate the dynamics of psychological compatibility in student groups of medical faculties (2009-2014-2016 years); to establish their susceptibility to stress; to describe the symptoms of psychosomatic disorders; to use the obtained findings to develop a methodology of autogenic training as a way to improve mental, and therefore intellectual and physical working capacity of students, as well as anti-stress capabilities of their organisms.

**Research methods and materials.** The study involved 497 3rd year students of the I Medical Faculty and 212 students of the I Medical Faculty. In total 709 students have participated in the research. The indices of psychological compatibility were determined in all examinees, for what the method of anonymous questionnaire. This method allowed us to study the problem of psychological compatibility in student groups in detail and model the holistic result. To estimate the level of psychological microclimate and the character of interpersonal relationships we used the method for determining the coefficient of interpersonal compatibility. This technique was proposed by the Crimean Institute of Balneology (1971). The Black Sea Scientific Research Institute of Occupational Health developed a modification of the sociometric method (1989), that allows to quantify the relationships in a collective on the basis of mutual consultation. This technique was successfully used in conducting of the social and psychological research of collectives at a number of companies and organizations, including medical ones (2, 5). The degree of predisposition to stress and EBS, and the symptoms of psychosomatic disorders were determined by questionnaires following the R. V. Kupriyanov technique.

The mathematical processing of the data was performed using Excel software, Statistica and traditional methods of variation statistics (6). In total 1001 questionnaires (497 – of the first and 212 – of the third medical faculties) on psychological compatibility, as well as 292 questionnaires to determine the tendency to stress were processed.

**Results and its discussion.** Analysis of psychological compatibility indices in 3 year student groups of the I Medical Faculty in 2009-2014-2016 generally shows their multidirectional dynamics (Table 1). Thus, the total level of compatibility in the groups is low in its entirety. Having been slightly increased in 2014 (from 64 to 67%), it fell to 63% in 2016. At the same time compatibility with the members of the group among group presidents, averaging 70-65-70 %%, in some groups was only 37%. Psychological compatibility with group members among true leaders is high and makes 86-88-87 %%, reaching 97% during all the years of research. It should be considered as a positive trend that the match of personalities of formal (group presidents) and true leaders has a positive tendency: if in 2009 there was no signs of this in any of the groups, then in 2014 - in a single one, and in 2016 - in 4 groups. The number of

outsiders in the groups was reduced - in the dynamics from 17% (2009) to 11% (2014 and 2016), that is a positive fact. However, their presence is a negative phenomenon itself. At the same time attention is drawn to the growth of conflicts in groups: in 2009 and 2016 more than half of the students (52-54,5 % %, respectively) had conflicts with their mates. Meanwhile, 12 (in 2009) and 12.3 (2016) per cent of students had more than one conflict.

Table 1

**The dynamics of psychological compatibility indices in 3 year student groups of the I Medical faculty (2009-2014-2016)**

Indices	Years		
	2009	2014	2016
	abs. (%)		
The number of students	150 (100)	169 (100)	178 (100)
Group compatibility index	1,93 (64)	2,0 (67)	1,9 (63)
Group presidents compatibility index (formal leaders)	2,1 (70)	1,96 (65)	2,1 (70)
The lowest level of group presidents compatibility	1,68 (56)	1,57 (52)	1,1 (37)
True leaders compatibility index	2,58 (86)	2,64 (88)	2,61 (87)
The highest level of true leaders compatibility	2,9 (97)	2,9 (97)	2,9 (97)
Match with formal leader, its index	none	in a single group - 2,46 (86)	in four groups: 2,49-2,6 (83-87)
Compatibility index 1,5 (50%) and less - outsiders	25,0 (17)	18,0 (11)	19,0 (11)
Total number of conflicts	77,0 (52)	38,0 (22,5)	97,0 (54,5)
The number of students, that have more than 1 conflict	21,0 (14)	5,0 (3)	22,0 (12,3)

At the same time in 2014 on the background of a higher level of psychological compatibility in student groups (67%) vs. 64-63% in 2009 and 2016, accordingly, a lower rating of group presidents (65% vs. 70% in 2009 and 2016) and the highest rating of the true leaders (88%) is notable, and however the personality of one of true leaders has coincided with the personality of the group president. It is in the organizing role of true leaders we can see one of the reasons for the sharp decrease in the total number of conflicts, as well as the number of students with multiple conflicts (in 78,2-76,7%, respectively, compared with 2009 and 89-81,9% compared with 2016).

Analysis of students psychological compatibility indices in groups of the III medical faculty generally shows their negative trend (Table 2). Thus, the level of psychological compatibility ("friendliness of the group") has decreased, the group presidents rating has fallen, in 2009 and 2014 some of them were compatible with the group by only 43%. True leaders rating has also decreased: from 86% (2009) to 79.6% (2016). But there is a positive dynamics: the number of outsiders has fallen (from 19 to 13.3%) and the total number of conflicts has abruptly decreased - from 47.6% to 9.3% (more than in 5 times), and the number of students with multiple conflicts - from 17.5% to 1.3% (almost in 13.5 times).

**The dynamics of psychological compatibility indices in 3 year student groups of the III Medical Faculty (2009-2014-2016)**

Indices	Years		
	2009	2014	2016
	abs. (%)		
The number of students	74(100)	63 (100)	75 (100)
Group compatibility index	1,98 (66)	1,94 (65)	1,9 (63)
Group presidents compatibility index (formal leaders)	2,75 (81)	2,1(70)	2,07 (69,3)
The lowest level of group presidents compatibility	1,3(43)	1,3 (43)	1,56 (52)
True leaders compatibility index	2,58 (86)	2,56 (85)	2,39 (79,6)
The highest level of true leaders compatibility	2,92 (97)	2,73 (91)	2,7 (90)
Match with formal leader, its index	in a single group - 2,75 (912)	none	in a single group - 2,07 (69,3)
Compatibility index 1,5 (50%) and less - outsiders	14,0 (19)	11,0 (17,5)	10,0 (13,3)
Total number of conflicts	32,0 (43,2)	30,0 (47,6)	7,0 (9,3)
The number of students, that have more than 1 conflict	9,0 (12,2)	11,0 (17,5)	1,0 (1,3)

With the reduction of psychological rating of group presidents and true leaders of the groups there has been observed a sharp decrease in the total number of conflicts and the multiple conflicts. This "misreading" can be explained first and foremost by psychophysiological features of each group member. However the influence on the conflicts number either of a form of education (I medical faculty - state-funded, III medical faculty - study-for-fee), or the level of general development of students (at I medical faculty it is considerably higher) is not decisive.

Considering the high level of conflicts at the faculties in general, and the growth of this index over the period of 2009-2014 at the III medical faculty and 2014-2016 at I medical faculty, we analyzed the degree of students' resistance to stressful, conflict situations and the number of their premorbid psychosomatic disorders of the central nervous system, gastrointestinal tract and musculoskeletal system (Table 3,4).

As the Table 3 shows, one third of students are stress-resistant, that is a positive fact. In the meantime the overwhelming majority of students (67%) have a predisposition to stressful situations, that is expressed moderately, and in four patients (2%) the EBS (emotional burnout syndrome) is inherent. These circumstances, on the one hand, are one of the causes of psychological discomfort, conflicts, on the other hand - lead to psycho-emotional abuses, that are manifested in psychosomatic disorders, which are inherent in 75-76% of patients with moderate tendency to stress and almost all students with the EBS (Table 4). These premorbid condition constitutes a serious threat both to health and the excellence in learning of students.

The research results have been used for recreational and corrective method, representing the methodological guidelines "Autogenic training as an active method of increasing the psychological

working capacity of students and lecturers." We used the most simple and accessible versified modification of autogenic training.

Table 3

**The degree of predisposition of students to stressful situations**

The degree of predisposition to stress	The number of points	The abs. number	%
Very low	0 – 6	93	31
Moderate	7 – 16	195	67
Very high (EBS emotional burnout syndrome)	17 and more	4	2
-	Total	292	100

Table 4

**Characteristic of psychosomatic disorders in students**

The number of examinees	The degree of predisposition to stress	Headache		Stomach ache		Heaviness in the hindhead		Back pain	
		abs.	%	abs.	%	abs.	%	abs.	%
93	Very low	45	48	45	48	50	54	50	54
195	Moderate	148	76	148	76	146	75	146	75
4	EBS	3	83	3	83	3	83	3	83
292	-	196	67	196	67	199	68	199	68

**Conclusion**

- 1.The level of psychological compatibility of students in both groups of faculties was not high (less than 70%) and tended to decrease over 2009-2014-2016 period. True leaders of both faculties have a high level of psychological compatibility, which at I medical faculty has not changed over the monitoring period (86-88-87 % %), and at III medical faculty – decreased over time (86-85-79,6 % %).
- 2.The authority of group presidents is lower than that of the true leaders in both faculties and if in groups of I medical faculty its level is 70-65% over time, then at III medical faculty we observe a significant decrease in the level of psychological compatibility of group presidents (81-70-69,3%) over this period. This minimum level of compatibility of the group presidents with all members of the group was 37% at I medical faculty and did not reduce lower than 52% at III medical faculty.
- 3.The number of outsiders in student groups of I medical faculty is less than in groups of III medical faculty, at both faculties their number decreases over time, which is estimated positively. At the same time, in groups of I medical faculty there are more conflicts, including multiple, which tend to increase in comparison with groups of III medical faculty, where these indices are less, and significantly decreased over the monitoring period.
- 4.Resistance to stress is inherent in one third of students (31%); the majority of students (67%) have moderate susceptibility to stress, EBS is typical for only 2% of the surveyed students.
- 5.More than 79% (79.25%) of students have the psychosomatic disorders symptoms, that are typical for the majority of students with moderate tendency to stress and for those of them, who have the EBS. These premorbid conditions represent a potential threat to the health of students.

6.The impact of form of study on the level and quality indicators of psychological compatibility of student groups members, as well as on the predisposition of students to stress, and on the frequency and type of psychosomatic disorders is not crucial. The priority reasons here are the psychophysiological features of a particular individual.

### Литература

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**Реферат.** У статті представлено динаміку показників психологічного мікроклімату в студентських групах лікувальних факультетів медичного вузу (2009-2016 рр.) та їх роль у розвитку психосоматичних розладів у студентів на тлі схильності до стресових ситуацій. У дослідженнях прийняли участь 709 студентів, оброблено 1001 анкету. Результати досліджень використані для оздоровчо-корекційного способу у вигляді методичних вказівок «Аутогенні тренування – активний захід підвищення психологічної працездатності студентів та викладачів».

**Реферат.** В статье представлена динамика показателей психологического микроклимата в студенческих группах лечебных факультетов медицинского вуза (2009-2016 гг.) и их роль в развитии психосоматических расстройств у студентов на фоне предрасположенности к стрессовым ситуациям. В исследованиях приняли участие 709 студентов, обработана 1001 анкета. Результаты исследования использованы для оздоровительно-коррекционного способа, представляющего собой методические указания «Аутогенная тренировка – активный метод повышения психологической работоспособности студентов и преподавателей».

**Summary.** The article presents the dynamics of the psychological microclimate indices in student groups of medical faculties in the medical higher school (2009-2016 years) and their role in development of psychosomatic disorders in students with underlying predisposition to stressful situations. 709 students have participated in studies, 1001 questionnaires have been processed.

The research results have been used for recreational and corrective method, representing the methodological guidelines "Autogenic training as an active method of increasing the psychological working capacity of students and lecturers."

**Реферат (укр.)** У статті представлено динаміку показників психологічного мікроклімату в студентських групах лікувальних факультетів медичного ВНЗ (2009-2014-2016 рр.) та їх роль у розвитку психосоматичних розладів на фоні схильності до стресових ситуацій. У дослідженнях прийняли участь 709 студентів, оброблено 1001 анкета. Отримані дані дозволили оцінити рівень психологічної сумісності студентів (ступінь їх «дружності»), авторитет старост (формальні лідери) та істинних лідерів, кількість аутсайдерів (студентів, у яких психологічна сумісність з членами групи менш ніж 50%), а також кількість конфліктів, в тому числі множинних. Результати дослідження використані для оздоровчо-корекційного способу у формі методичних вказівок «Аутогене тренування – активний метод підвищення психологічної працездатності студентів та викладачів».

**Реферат (рус.)** В статье представлена динамика показателей психологического микроклимата в студенческих группах лечебных факультетов медицинского вуза (2009-2014-2016 гг.) и их роль в развитии психосоматических расстройств у студентов на фоне предрасположенности к стрессовым ситуациям. В исследованиях приняли участие 709 студентов, обработана 1001 анкета. Полученные данные позволили оценить уровень психологической совместимости студентов обоих факультетов (степень их «дружности»), авторитет старост (формальные лидеры) и истинных лидеров, количество аутсайдеров (студенты, у которых психологическая совместимость с членами группы менее 50%), а также количество конфликтов, в том числе и множественных. Результаты исследования использованы для оздоровительно-коррекционного способа, представляющего собой методические указания «Аутогенная тренировка – активный метод повышения психологической работоспособности студентов и преподавателей».

**Summary.** The article presents the dynamics of the psychological microclimate indices in student groups of medical faculties in the medical higher school (2009-2014-2016 years) and their role in development of psychosomatic disorders in students with underlying predisposition to stressful situations. 709 students have participated in studies, 1001 questionnaires have been processed. The obtained data allowed us to estimate the level of psychological compatibility of students of both faculties (the degree of their "friendliness"), the authority of group presidents (formal leaders) and true leaders, the number of outsiders (students who have psychological compatibility with the members of the group of less than 50%), as well as the number of conflicts, including multiple. The research results have been used for recreational and corrective method, representing the methodological guidelines "Autogenic training as an active method of increasing the psychological working capacity of students and lecturers."