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Smoking as a risk factor for psychosomatic disorders in medical students

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Abstract- The article analyzes smoking as a risk factor for psychosomatic disorders in medical students. The obtained results obtained indicate the highest prevalence of psychosomatic disorders among fourth-year students and neurotic reactions caused by the conditions of training, and indicate the need for psychological support and psycho-preventive measures. Positive correlations were found between neurotic reactions in students, the level of depression and smoking. The higher the level of neurotic disorders among students, the higher their assessment of their own depression, and the destructive coping strategy of smoking is characteristic of them. These respondents tend to concentrate on unpleasant emotions and actively express them. Correlation relationships between the level of psychosomatic disorders and such coping strategy as "smoking" among students were revealed. When developing psychological support programs and prevention programs, one should take into account the relationship between smoking and psychosomatic disorders in students, as well as when organizing a health-preserving educational environment of the university.

Keywords: Psychosomatic disorders, stress, medical students, questioning, smoking, neurotic reactions, neurosis-like symptoms, coping strategy

I. INTRODUCTION

The situation in the modern world is getting more complicated and unpredictable every year due to the changing conditions, stress factors, the coronavirus infection pandemic, and the increasing flow and amount of information. Students in particular are exposed to stresses within the whole period of study; a student age is characterized by the intensive development of the entire personality structure (Satretdinova and Penskaya, 2013; Sidorova et al., 2015). Exam tests, intensive training loads lead to neuropsychic stress and the risk of psychosomatic disorders (Satretdinova and Penskaya, 2018;Bogdanchikova et al., 2019; Volchansky, 2012). In order to cope with the impact of stressors during the period of study, coping strategies are "switched on" in students (Matveev, 2011). Coping strategies mean a way of managing a stress factor arising as an individual's response to a perceived threat (Klimanova and Chalov, 2015; Kosareva and Kostina, 2011). Currently, behavioral coping strategies are divided into active and passive, adaptive and maladaptive. Various coping strategies are applied based on personal and environmental resources. Tobacco smoking is one of the unproductive (maladaptive) ways to overcome stressful situations. Students are a special risk group, and not all students can cope effectively using productive coping strategies, therefore, in order to reduce stress and anxiety, students can also take non-adaptive coping strategies (Makunina et al., 2019).

According to the studies of V.I. Ponomarev, V.I. Vovk, O.N. Kaploukh (2014) a significant relationship between the degree of psychoemotional stress associated with studies and the prevalence of psychosomatic diseases in students was noted. In the research study of Makunina O.A., Zvyagina E.V., Kovalenko A.N., Bykov E.V. (2019) it was disccovered that the dominant causes of tobacco smoking among students of the Ural State University of Physical Culture are social categories (70%), which contribute to the transition of passion for tobacco smoking into psychophysiological dependence. Thus, the problem of tobacco smoking as an unproductive coping mechanism and its connection with psychosomatic disorders is an urgent topic due to the insufficient volume of accurate research on the topic.

Objectives

The aim of the study is to establish the relation between smoking as a risk factor for psychosomatic disorders in medical students.

II. MATERIALS AND METHODS

The study was carried out at the Federal State Budget Educational Establishment (FSBES) of Higher Education "The Astrakhan State Medical University of the Ministry of Health protection of the Russian Federation", at the Department of Psychology and Pedagogics. The study involved 1225 1st, 4th and 6th- year students of the following specialties: 'General Medicine', 'Pediatrics', 'Dentistry', 'Pharmacy' of the Astrakhan State Medical University of the Ministry of Health protection of the Russian Federation. Among the first year students 106 boys (31.0%) and 234 girls (69.0%), among the fourth year-students 172 boys (37.0%) and 290 girls (63.0%), among the sixth year students 123 boys (29.0%) and 300 girls (71.0%) were tested. The average age of the 1st year respondents was 17.7 years old, the 4th year – 20.7 and the 6th year that of 22.8 years old. The author's questionnaire of A.T. Beck "The influence of social and hygienic and material conditions on human health"; which includes 21 categories of symptoms and complaints was used in the research. The interpretation of the results is made in accordance with the established values: 09 – no depressive symptoms, 10-15 – mild depression (subdepression), 16-19 – moderate depression, 20-29 – severe depression (moderate), 30-63 – severe depression. According to the results of the analysis of the questionnaire, the respondents were divided into two groups: the first group – smokers (148 people), the second group – non-smokers (1077 people). It should be noted that in parallel with the questionnaire, an interview was conducted with students of a medical university by clinical psychologists of the Department of Psychology and Pedagogics. The interview included a survey for the presence of psychosomatic disorders and neurotic reactions (increased anxiety, acute psychotrauma, vegetative-vascular disorders, sleep disorders, etc.) in students. The obtained results of the experimental study are presented as an indicative sample, as well as a comparative selection of standardized methods.

Statistical data processing was carried out using Spearman's correlation coefficient for correlation analysis, Mann-Whitney U-test, SPSS-21.0 software package and Microsoft Office Excel 2010. The research results are presented in figures and tables.

III. RESULTS AND DISCUSSION

In 2018, a survey of 1225 people was conducted at the Astrakhan State Medical University among students of the first, fourth and sixth years of the medical, pediatric, pharmaceutical, and dental faculties. The average age of the 1st year respondents was 17.7 years old, the 4th year – 20.7 and the 6th year is 22.8 years old. As a result of the survey, it was found that among the first- year students 23 people smoke (6.8%), among the fourth year- students – 64 people (14.0%), among the sixth year-students – 61 people (14.4%) (Figure 1).

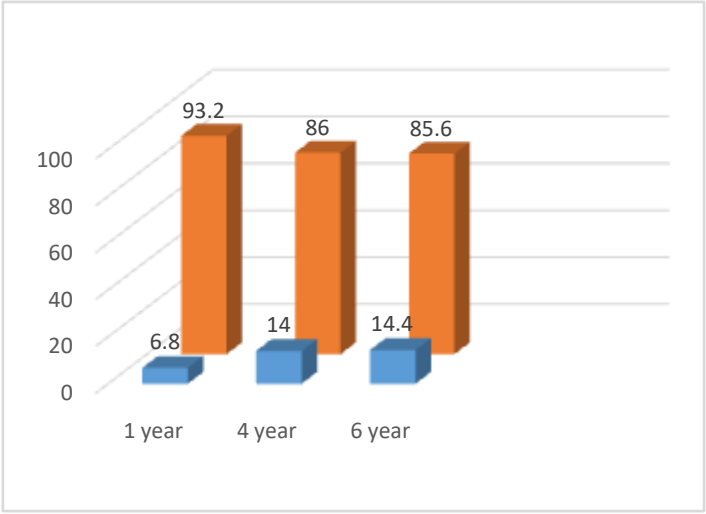

FIGURE 1. *Results of a survey of tobacco smoking among students of a medical university*

According to the results of the questionnaire survey and interviews carried out by the clinical psychologists of the Department of Psychology and Pedagogics with students of the medical university (the questionnaire "Influence of socio-hygienic and material conditions on human health), conducted on the basis of the department, it was determined that 34 students were absolutely healthy (10.0 %) of the first year of study who do not use tobacco (Table 1).

Table 1. *The results of the questionnaire survey among students of the medical university of 1, 4, 6 study years (%)*

		Healthy	Neurosis-like symptoms	Neurotic symptoms	Neurotic reactions	Neurotic conditions	Neurotic reactions	Psychosomatic disorders
1 year	no smoke	10.0	25.6	38.8	25.9	6.5	8.8	24.7
	smoke	0.9	3.2	2.9	1.2	1.2	0.3	1.8
4 year	no smoke	9.7	146.0	109.0	139.0	30.0	65.0	137.0
	smoke	17.0	21.0	20.0	11.0	6.0	7.0	12.0
6 year	no smoke	7.8	30.3	23.9	28.8	5.4	26.2	38.1
	smoke	2.6	5.2	3.3	4.5	1.2	3.1	3.3

* Mann-Whitney U-test ($p < 0.05$)

Only 3 people (0.9%) of first-year smoking youth consider themselves healthy. It was found that 132 people (38.8%) of students among those who do not smoke had neurotic symptoms. Students report anxiety, tension, and increased fatigue. And only 10 people (2.9%) of those who smoke have neurotic symptoms out of 132 people. We can assume that smoking is a kind of "ritual" for students, allowing them to relieve stress and psycho-emotional stress. About 88 nonsmoking first-year students (25.9%) noted neurotic reactions, while non-smoking fourth-year students had a high index of neurotic reactions – 139 people. This result may indicate neurotic states in students and susceptibility to stressful influences. This indicator is significantly higher among nonsmoking students of the 4th year in comparison with nonsmoking students of the 1st and 6th years of study ($p < 0.05$). High rates of neurosis-like symptoms are recorded among nonsmoking students. In particular, among nonsmoking students, a reliably high indicator was among 4th year students – 146 people ($p < 0.05$). It should be noted that among the smoking students of the same year of study, the indicator of neurosis-like symptoms was only 21.0%. Smoking is viewed as addictive behavior and is understood as unproductive coping to reduce stress and as one of the ways to overcome stressful situations.

A high rate of psychosomatic disorders was recorded among non-smoking 4th year students – 137.0%, including a set of neurotic conditions, symptoms and reactions. This indicator is significantly higher in comparison with the smoking students of the first (24.7%) and sixth years (38.1%) of study ($p < 0.05$). Neurotic reactions and symptoms were observed in the group of non-smoking fourth-year students (109.0%) in comparison with the first and sixth years and were accompanied by anxiety and a tendency to neurosis. According to sources, neurotic reactions and mental maladjustment are mainly accompanied by anxiety and depressive disorders. It can be assumed that the study load has an impact on the psychosomatic state of students.

As a result of psychological testing according to the method of the depression scale of A.T. Beck, it was found that among students of the first year of study, the indicator settled at the level of 0.8%, which indicates the absence of depressive symptoms in this contingent (Table 2). For fourth-year students, the indicator on the Beck scale is fixed at 9.1%. This result indicates a tendency towards mild depression (subdepression) among 4th year students. This result correlates with psychosomatic disorders and neurotic conditions in them, which were previously established by the questionnaire.

Table 2. *Comparison of the indicators of depression among medical students of 1, 4, 6 study years (%)*

Year of study	Beck Depression Scale
1 year	0.8±0.8 (no depression)

4 year	9.1±0.32*(mild depression)
6 year	7.25±0.76 (no depression)

Notes: significant differences at p <0.05: * – significant differences between indicators

For 6th year students, this indicator decreased in comparison with the 4th year, and was established at 7.25% and indicates the absence of depressive symptoms. However, there were significant differences between the groups on the scale of "mild depression", this indicator is significantly higher in 4th year students in comparison with 1st year (p> 0.05).

The performed correlation analysis allowed us to establish the connection between the level of psychoemotional stress associated with educational activity, depression and the prevalence of psychosomatic disorders in medical university students. The correlation analysis was carried out with the calculation of the Spearman's rank correlation coefficient, the results of the correlation are presented in Table 3.

Table 3.*The results of a correlation analysis between neurotization and indicators of coping strategies and anxiety*

Indicators	**Neurotic reactions**	**Neurotic symptoms**	**Psychosomatic disorders**	**Depression**	**Smoking**
Correlation coefficient, r	0.385	0.390	0.343	0.351	0.372
Significance level, p	0.001	0.001	0.01	0.01	0.01

Positive correlations were found between neurotic reactions in students, the level of depression (r = 0.385) and smoking (r = 0.372). The higher the level of neurotic disorders in students, the higher their assessment of their own depression, and they are characterized by the destructive coping strategy of smoking. These respondents tend to concentrate on unpleasant emotions and actively express them. Correlation relationships between the level of psychosomatic disorders and such coping strategy as “smoking” among students were revealed.

IV. CONCLUSIONS

As a result of the study, the correlation between smoking as a factor in the development of psychosomatic disorders, the formation of psychosomatic disorders and the level of depression in students was established. When developing psychological support and prevention programs, one should take in consideration the relation between smoking, the level of depression and psychosomatic disorders in students. Thus, according to the results of the study, there is a need to organize a health-preserving educational environment of the university in order to reduce stress and psycho-emotional stress during educational activities.

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