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FEATURES OF RISK BEHAVIOR AND SUICIDAL IDEATION IN MEDICAL STUDENTS

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Abstract

Relevance: Deficient education system and insufficient psychological support for medical students is high possible to lead to a decrease in the adaptive capabilities of doctors in the future. This item becomes the development of dependent behavior and suicide as the extreme form of auto-aggressive behavior or emotional disorders.

Objective: Due to appropriate psychological support among medical students in NJSC «Semey Medical University», this study was shown features of risk behavior and suicidal ideation.

Materials and Methods: 386 medical students in Semey Medical University were surveyed: 242 (62.7%) females and 144 (37.3%) males. The main psychometric methods of the study were the following: questionnaires to determine the predisposition to behavioral and chemical addictions; test questionnaires to identify 6 types of behavioral addictions: internet, gambling, shopping, eating, love, and sex; a questionnaire to identify suicidal ideations. Statistical analysis was performed using Fisher's exact test.

Results: In medical students in the present study, 25.91% of the students were identified with positive results for a predisposition to the development of behavioral addictions. Among them, 58.0% of the students was suicidal ideation, and a statistically significant predominance of the ideation was found among females. Internet accident was major problems each males and females. Females were also associated with the abnormal risk of eating behaviors.

Conclusions: Based on the results of this study, early diagnosis of the personal characteristics associated with dependent and suicidal trends among medical students, especially females, is important, and support from their families and universities is necessary. In addition, this study was concluded that we have to understand these features of risk behavior and suicidal ideation.

Keywords: *behavioral addiction; suicidal ideation; eating behavior; internet addiction; medical students.*

Резюме

ОСОБЕННОСТИ ФОРМИРОВАНИЯ ПОВЕДЕНЧЕСКИХ ЗАВИСИМОСТЕЙ И СУИЦИДАЛЬНЫХ НАМЕРЕНИЙ У СТУДЕНТОВ-МЕДИКОВ

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Актуальность: Несоввершенство системы образования и недостаточная психологическая помощь студентам-медикам вполне могут привести к снижению адаптационных возможностей врачей в будущем. В дальнейшем, способствуя к развитию поведенческих зависимостей и суицида, как крайней формы аутоагрессивного поведения или эмоциональных расстройств.

Цель: Определить особенности формирования поведенческих зависимостей и суицидальных намерений среди студентов-медиков НАО «Медицинский университет Семей».

Материалы и методы: Проведено анкетирование 386 студентов-медиков Медицинского университета Семей: 242 (62,7%) женщины и 144 (37,3%) мужчины. Основными психометрическими методами исследования были следующие: анкеты для определения предрасположенности к поведенческим и химическим зависимостям; анкеты для выявления 6 типов поведенческих зависимостей: интернет, азартные игры, шоппинг, еда, любовь и секс; анкета для выявления суицидальных намерений. Статистический анализ проводился с использованием точного критерия Фишера.

Результаты: Выявлены 25,91% студентов-медиков с положительными результатами в отношении предрасположенности к развитию поведенческих зависимостей. Среди них у 58,0% студентов-медиков были суицидальные намерения, и статистически значимое преобладание суицидальных намерений было обнаружено среди женского пола. Высокие показатели формирования риска интернет-зависимости были одинаковы для мужчин и женщин. Женский пол также были ассоциированы с риском развития расстройств пищевого поведения.

Выводы: Ранняя и своевременная диагностика личностных характеристик, связанных с предрасположенностью к формированию поведенческих зависимостей и суицидальных намерений среди студентов-медиков, особенно женского пола, имеет важное значение, возникает необходимость в разработке комплексных планов психологической помощи (психологическая поддержка в семье, университете) студентам-медикам.

Ключевые слова: поведенческая зависимость; суицидальные намерения; пищевое поведение; интернет-зависимость; студенты-медики.

Түйіндеме

МЕДИЦИНАЛЫҚ СТУДЕНТТЕРДЕ МІНЕЗ-ҚҰЛЫҚ ТӘУЕЛДІЛІКТЕРІНІҢ ЖӘНЕ СУИЦИДТІК НИЕТТЕРДІҢ ҚАЛЫПТАСУ ЕРЕКШЕЛІКТЕРІ

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Өзектілігі: Білім беру жүйесінің жетілдірілмегендігі және медициналық студенттерге психологиялық көмектің жеткіліксіздігі болашақта дәрігерлердің бейімделу қабілетінің төмендеуіне әкелуі мүмкін. Одан әрі ықпал ете отырып, мінез-құлық тәуелділіктерінің қалыптасуына және өзіне өзі қол жұмсауы сияқты аса қауіпті аутоагрессивті мінез-құлықтың немесе эмоционалдық бұзылыстардың пайда болуына әкеледі.

Зерттеудің мақсаты: КеАҚ «Семей Медицина университеті» медициналық студенттерінің арасындағы мінез-құлық тәуелділіктерінің және суицидтік ниеттердің қалыптасу ерекшеліктерін анықтау.

Зерттеу материалдары және әдістері: Семей Медициналық университетінің 386 медициналық студентіне сауалнама жүргізілді: 242 (62,7%) әйел және 144 (37,3%) ер адам. Зерттеудің негізгі психометриялық әдістері: мінез-құлық және химиялық тәуелділіктерге бейімділікті анықтауға арналған сауалнамалар; мінез-құлық тәуелділіктің 6 түрін анықтауға арналған сауалнамалар: интернет, құмар ойындары, сауда, тамақ, махаббат және жыныстық қатынас; суицидтік ниеттерді анықтауға арналған сауалнама. Статистикалық талдау Фишердің нақты критерийін қолдана отырып жүргізілді.

Зерттеу нәтижелері: Медициналық студенттердің 25,91%-ы мінез-құлық тәуелділіктің дамуына бейім болғаны анықталды. Олардың ішінде, медициналық студенттердің 58,0%-ында суицид ниеттері болды, әсіресе әйелдер арасында суицид ниеттерінің статистикалық көрсеткіштері басым болды. Интернетке тәуелділіктің жоғары қауіп-қатері ерлер мен әйелдер үшін бірдей болды. Сондай-ақ, әйел жынысы тамақтану мінез-құлық бұзылысы қаупімен байланыста болды.

Қорытынды: Медициналық студенттер, әсіресе әйелдер арасында, мінез-құлық тәуелділіктері және суицидтік ниеттерді қалыптастыруға бейімділікпен байланыстағы жеке тұлғаның сипаттамаларын ерте және уақтылы диагностикалау өте маңызды, медициналық студенттерге психологиялық көмек көрсетудің (отбасындағы, университеттегі психологиялық қолдау) кешенді жоспарларын жасау қажеттілігі туындайды.

Түйінді сөздер: мінез-құлық тәуелділігі; суицидтік ниеттер; тағамдық мінез-құлық; интернет-тәуелділігі; студенттер-медиктер.

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Introduction

Medicine is one of the most advanced areas of human's professional activity, which requires significant effort from specialists of intellectual, emotional, and physical resources. The importance of mental health among clinical specialists cannot be questioned [28]. A recognized fact in prevention is the need to seduce the principle of timeliness, when preventive measures are carried out as early as possible, even before the onset of the disease or the failure of adaptation. When talking about health and strengthening the adaptive capabilities of a doctor, you should focus your efforts already on the periods of obtaining medical education. To date, several scientific data have been accumulated, indicating an increased stressful experience of academic processes among students of higher educational institutions (so called universities) of medical profile. It is known that medical students have a high level of educational stress [26], to reduce the level of which they were 3 times more likely to use drugs, 4.5 times more likely to smoke cigarettes and 2 times more likely to drink alcohol [25], spent a lot of time in social networks and computer games [6], which is a risk factor for the development of addictive behavior and the formation with chemical or without chemical addictions. For the development about mental health of complex and difficult, the important role is the diagnosis about the state and adaptive capabilities in the mental area of students. As targets for screening, it is necessary to consider determining the predisposition of involvement in the orbit of dependence among other indicators. The risks of developing and progressing specific addictions are highlighted in the psychometric assessment. The need for psychological support in medical universities continues to be an urgent task for several decades in the world. However, a report showed that only a part of them

had the opportunity to receive psychological services in British medical students in the present, while quite percentage was assessed as lacking [11]. A meta-analysis study showed that the prevalence of depressive symptoms among medical students has been increased steadily, and the percentage was reached 30% [23]. The intensification of academic processes and insufficient psychological support for students lead to the chronization of stress and the accumulation of symptoms of emotional burnout [24]. There was a report that training of registered medical students at a higher educational institution increases the risk of developing emotional burnout by two to five times as compared to studying at universities of a different profile [16]. Reminiscent of destructive institutions (including suicidality) and maladaptive tendencies in broad additions can suspend the primary disorders in the student's mental sphere, which can increase in the learning process.

In previous report, we described change of lecture style for medical students in Semey Medical University of Kazakhstan in recent years [19, 20], but we couldn't show high risk of dependent behavior and suicide among medical students in Kazakhstan. The study of this perspective is also important in Kazakhstan. Therefore, this report was carried out features of risk behavior and suicidal ideation due to appropriate psychological support among medical students in Kazakhstan.

Objective. The detailed psychometric discussion of dependent behavior, suicidal ideation and suicide as the extreme form of auto-aggressive behavior among medical students in NJSC Semey Medical University.

Methods

Study Design and Participants

In this study, member of Semey Medical University in our authors conducted to identify the prevalence of

behavioral addictions and related suicidal ideations among first-year (2019-2020) medical students of the Semey Medical University. The criteria for inclusion in the sample was: 1) the availability of voluntary consent to the study, 2) first-year study at the Semey Medical University, and the exclusion criteria was: 1) a student who missed the questionnaire for an objective reason, 2) students who came to study from other countries and studying under the academic mobility program. This research was carried out using the questionnaire method for them. Member of Semey Medical University in our authors obtained informed consent from the students for participating in this study that was approved by the medical Ethics Committee of Semey Medical University (№2, 18.10.2019). The voluntary participations were 400 students, but 14 students refused to take the questionnaire. Therefore, the sample was formed by amounted to 386 students. The assessment was conducted based on student's self-completion of questionnaires.

Questionnaire details

This was used the following questionnaires – Zavyalov's questionnaire consisted of 9 questions aimed at identifying a predisposition to dependent behavior and validity of this questionnaire was confirmed in previous report in Belarus [8]. If the result of the method is scored from 0 to 15 points, outside the 'risk group'. For each positive answer, the student received a certain score, depending on the question, for a negative answer – 0. Those students scored from 15 to 30 points require increased attention. If student score more than 30 points, student are in the 'risk group' and are predisposed to addictive behavior.

The RAFFT test was used to identify the predisposition for chemical dependence and consisted of 5 questions. Thus, 1 point, it is possible to diagnose the predisposition of the subject to dependent behavior; a total of 2 or more points indicates a suspicion of the presence of alcohol or drug addiction. RAFFT test proved to be excellent, which showed a high sensitivity of 89% and a specificity of 69% when identifying chemical addiction in previous study [10], therefore, RAFFT has proven well.

Kimberly-Young test for internet addiction, originally the test consisted of 8 questions that had to be answered on the principle of Yes/No. In the case of five or more positive responses, the student was considered an internet addict. Currently, the full version of the questionnaire consists of 40 items. For each question, the subject must give an answer in accordance with the 5-point Likert Scale. The points for all questions are summed up, determining the final value. Thus, 20-49 points, a normal internet user; 50-79 points, there are some problems associated with excessive internet addiction; 80-100 points, internet addiction. A previous study [17] was proved good psychometric properties in terms of internal consistency and factor validity of this test. The alpha values were satisfactory for both the one-factor solution (Cronbach's alpha=91), and for the two-factor solution (Cronbach's alpha=88 and Cronbach's alpha=79).

According to Thomas Tucker's method of identifying gambling addiction, the questionnaire consisted of 9 questions, for each answer 'never' was assigned 0 points, 'sometimes' – 1 point, 'most often' – 2 points, 'almost always' – 3 points. All the points scored for the answers to all 9 questions were summed up. The result was defined as,

0 points - there are no negative consequences of gambling. The student can play occasionally, for the purpose of communication or at leisure-the game is not a problem addiction; 1-2 points – the student can gamble at a level that does not lead to negative consequences; 3-7 points – the student is gambling at a level that can lead to negative consequences. The result indicates the level of risk that is subject to further research; 8-27 points – the student plays at a level that leads to negative consequences. Perhaps the control over gambling addiction is already lost – the higher the result, the more intense the game, the more serious the problems can be. It is necessary to investigate the addiction to the game and its consequences. A study conducted in Russia using Thomas Tucker's questionnaire on 100 students showed the presence of gambling addiction in 40% of students [4]. According to the study [4], students who are at risk of gambling addiction tend to spend all their free time on a computer, phone, losing interest in other activities. They also lose control of the time spent behind the screen of gadgets [4].

The 'Bergen Shopping Addiction Scale' (BSAS) consisted of 7 questions. To each statement, the students had to answer: 0 - 'completely disagree'; 1 - 'disagree'; 2 - 'I can neither agree nor deny'; 3 - 'agree'; 4 - 'completely agree'. The 'agree' and 'totally agree' responses of four points or more are indicators of shopping addiction. A study conducted in Norway [9] using 'Bergen Shopping Addiction Scale' demonstrates the following characteristics and results: the Cronbach's alpha for BSAS was 0.867. The study [9] showed that BSAS has good psychometry, structure, content, convergent validity, and discriminativeness.

The Dutch DEBQ questionnaire is aimed at identifying and studying eating addiction [29] and consisted of 33 questions, the student had to answer: 'never' - 1, 'rarely' - 2, 'sometimes' - 3, 'often' - 4, 'very often' - 5. Results, the first 10 questions added, then divided by 10, then add questions from 11 to 23, divide by 13, then add questions from 24 to 33, and divide them by 10. Thus, 1-10 questions = 2,4 – restrictive eating behavior; 11-23 questions = 1,8 – emotional behavior; 24-33 questions = 2,7 – external eating behavior. A previous report [29] was used DEBQ in their study claim that this questionnaire is the first to study three types of eating behavior. According to the study [29], DEBQ has good reliability and validity. This questionnaire was evaluated by the committee on tests and testing (COTAN) according to all the criteria of the European Federation of Psychologist's Association (EFPA). It has been adapted into more than 15 languages.

A screening test for detecting sexual addiction was also used, which consisted of 25 questions [13]. Students had to carefully read each statement and make a choice between the answers 'Yes' or 'No'. For each positive answer, 1 point is given. If 13 of the 25 questions are answered in the affirmative, the student has a high probability of having a sexual addiction.

The test for detecting love addiction (according to Yegorov) consisted of 40 statements. The students had to mark the numbers of the statements they agreed with. If students agree with 5-10 statements, they can suspect love addiction, and with 11 or more statements, the probability of love addiction is extremely high. According to the previous

research [12], it can be argued that students assigned to the group with a high probability of love addiction have a pronounced suicidal risk, which makes the Yegorov test used in this work one of the possible tools for screening for potential auto aggressive behavior [12]. After interpreting the results obtained according to the Yegorov test for detecting a tendency to love addiction, all the respondents were divided into three groups. The group with a high probability of love addiction was represented by 64 subjects (15%), with an average probability – 211 (51%), 141 respondents (34%) – revealed a low probability. The results obtained, in general, coincide with the previous studies [5, 12].

The Paykel scale is international suicidal ideations, and it consists of 5 statements [18]. Each statement is asked to rank the student independently from 0 to 5. The points are calculated by summing the ranks. The total score ≥ 2 was determined as the threshold level for the presence of suicidal ideations. Thus, we identified a group with a suicidal ideation. The positive aspects of the Paykel scale include its conciseness (5 statements), clarity (the usual assessment for students on a five-point scale), simplicity and the possibility of instant processing. The disadvantages

of this scale include the use of self-reports of the students themselves to assess suicidal ideations, while it does not exclude the deliberate understatement of the results by the students, insincerity of the answers. The use of such a scale requires additional diagnostics, for example, with the help of a semi-structured interview with a psychologist or psychiatrist.

Statistical Analysis

Statistical analysis was performed using Fisher's exact test in SPSS Statistics 21 (the IBM SPSS® software platform).

Results

Gender differences in the presence of positive screening test results

The survey was conducted among 386 students in total, 242 females and 144 males. These 386 students were that, 100 students (25.91%) showed a positive response in at least one of these screening scales: the Zavyalov questionnaire, the RAFFT test, the Kimberly Young Internet addiction detection test, Thomas Tucker's method, the Bergen scale, the Dutch DEBQ, a screening test for detecting sexual addiction, and a test for detecting love addiction according to Yegorov (Table 1).

Table 1.

Gender differences in the presence of positive screening test results.

[Total of survey: N]	Female n (%) [N=242]	Male n (%) [N=144]
Positive results of screening tests (in at least one of scale or test)	74 (30.58%)	26 (18.06%)

**The Zavyalov questionnaire, the RAFFT test, the Kimberly Young Internet addiction detection test, Thomas Tucker's method, the Bergen scale, the Dutch DEBQ, a screening test for detecting sexual addiction, and a test for detecting love addiction (according to Yegorov).*

The prevalence of a positive response in screening was about three times as high in females, and the relative risk for females (RR) was 1.99 (95% confidence interval (95% CI): 1.34; 2.99). Females had significantly more positive screening test results ($p=0.03$).

Screening evaluation data for medical students on separate psychometric scales

Detailed results of the study group based on specific screening scales, including the distribution and comparison by gender were shown in Table 2.

In Zavyalov questionnaire, the proportion of risk possibility was 57%, 55.4% and 61.5% among both sexes, females and males. In RAFFT test for determining a predisposition to chemical dependencies, the proportion of risk possibility was 8%, 5.4% and 15.4% among both sexes, females and males. In Kimberly Young Internet addiction detection test, the proportion of risk possibility was 97%, 95.9% and 100% among both sexes, females and males. In Thomas Tucker's method for assessing gambling addiction, the proportion of risk possibility was 5%, 2.7% and 11.5% among both sexes, females and males. In Bergen scale of shopping addiction, the proportion of risk possibility was 2%, 2.7% and 0% among both sexes, females and males. In Dutch DEBQ eating behavior questionnaire among females and males, the proportion of risk possibility in Restrictive eating behavior was 34%, 39.2% and 19.2%, the

proportion of risk possibility in Emotional behavior was 57%, 63.5% and 38.5%, the proportion of risk possibility in External eating behavior was 65%, 70.3% and 50% among both sexes, females and males. In Test for detecting love addiction (according to Yegorov), the proportion of risk possibility was 57%, 55.4% and 61.5% among both sexes, females and males.

According to these results, the proportion among males higher than it among females in other scales except Bergen scale of shopping addiction and Dutch DEBQ eating behavior questionnaire. In only 'emotional behavior', females showed a significant high risk than males ($p=0.026$).

Suicidal ideation

A detailed study of 100 students for the presence of suicidal ideation showed the following results. The average rate of suicidality did not have significant differences between males (2.04 ± 1.34 points) and females (2.09 ± 1.11 points) ($p=0.53$). However, taking the survey results into account as rank variables provided a more accurate picture for analysis. Thus, according to the Paykel scale, 58 students out of 100 surveyed respondents found the presence of at least two signs of suicidality, which was 15.03% of all the students surveyed, including 13 males (9.03%) and 45 females (18.6%) (Table 3). Suicidal ideation was more often registered among females. The relative risk

when comparing both sexes was 2.06 (95% CI: 1.15; 3.69) in favor of the female sex. Four to five points on this scale indicate the need for psychological counseling and a detailed mental assessment: these results were recorded in

12 students (3.11%), of which 5 males (3.47%) and 7 females (2.89%). With high scores on the Paykel scale (4 and higher), the difference between the sexes was leveled: RR was 0.78 (95% CI: 0.25; 2.39).

Table 2.

Data from screening evaluation of medical students on separate psychometric scales.

Scale indicator	Female n (%) [N=74]	Male n (%) [N=26]	p-value
Zavyalov questionnaire			
Increased attention of psychologists is required, risk is not excluded or direct risk group	41 (55,4%)	16 (61,5%)	0,587
No risk	33 (44,6%)	10 (38,5%)	
RAFFT test for determining a predisposition to chemical dependencies			
Predisposition to dependent behavior or suspected chemical	4 (5,4%)	4 (15,4%)	0,107
No risk	70 (94,6%)	22 (84,6%)	
Kimberly Young Internet addiction detection test			
There are problems with using the internet or internet addiction	71 (95,9%)	26 (100%)	0,297
No risk	3 (4,1%)	0 (0%)	
Thomas Tucker's method for assessing gambling addiction			
There is a risk or the presence of negative consequences	2 (2,7%)	3 (11,5%)	0,075
No risk	72 (97,3%)	23 (88,5%)	
Bergen scale of shopping addiction			
There is a risk of dependence on purchases	2 (2,7%)	0 (0%)	0,397
No risk	72(97,3%)	26 (100%)	
Dutch DEBQ eating behavior questionnaire			
Restrictive eating behavior	29 (39,2%)	5 (19,2%)	0,065
No risk	45 (60,8%)	21 (80,8%)	
Emotional behavior	47 (63,5%)	10 (38,5%)	0,026*
No risk	27 (36,5%)	16 (61,5%)	
External eating behavior	52 (70,3%)	13 (50%)	0,062
No risk	22 (29,7%)	13 (50%)	
Test for detecting love addiction (according to Yegorov)			
Suspicion of love addiction or high probability of love addiction	41 (55,4%)	16 (61,5%)	0,587
No risk	33 (44,6%)	10 (38,5%)	
Sexual addiction			
High probability of sexual addiction	0 (0%)	0 (0%)	
No risk	74(100%)	26 (100%)	

Table 3.

Suicidal ideation in the Paykel scale.

Paykel scale	Female n (%) [N=74]	Male n (%) [N=26]
2 points	19	6
3 points	19	2
4 points	5	2
5 points	2	3
Total	45 (18.6)	13 (9.03)

Discussion

Our comparisons show that in recent years the difference in male and female morbidity has decreased. While in previous years [7], among students, dependent behavior was more common in males than in females, now these indicators are equalized, on the other hand, there were some focusing reports of females with dependent behavior [22, 27]. An analysis of studies by several authors [2, 3, 30] about the historical and clinical-epidemiological origin of dependent behavior among females shows that its formation was strongly associated with the socio-economic status of females in the periods of 'matriarchy', 'the feminist movement', and 'subsequent emancipation', in which the personal claims and social status of females were

progressively improved. The reason for the formation of dependent behavior among females is a psychogenic stress factor, which leads to the formation of a poorly adapted personality type with a low tolerance for psychological difficulties.

Suicidal thoughts include the desire to die or stop living, and the thoughts contain the elaboration of a method and plan of action, which is a manifestation of intra-destructive behavior aimed at the disintegration of the personality itself, that is, deviant behavior. Based on the results of our study, this tendency was recognized more in females than males. In a Japanese study [21], one of the risk factors for suicidal attempts among females was 'visiting treatment'. We must pay particular attention to the risk factors of suicide among females.

The findings suggested a high rate of eating addiction among females. High rates of emotional eating behavior, which indicates emotional discomfort (reduced mood, anxiety, irritability, loneliness); restrictive eating behavior, the causes of which are strict diets; and external eating behavior, which is caused by a slowly forming, incomplete sense of satiety. The main cause of eating addiction among females is the substitution/restriction of food, lack of love,

recognition, attention to yourself, resistance to negative emotions and fears, obtaining/restriction through food, stress resistance, comfort, and support [1, 14]. There is also the image of physical thinness among younger females [15]. The appearance of these symptoms, combined with the inability to get rid of them or cope with them and their consequences, as well as possible psychological inflexibility are signs that can indicate the appearance of suicidal thoughts.

An important finding of our study was the identification of groups of students that require dynamic observation. In screening practice, this was manifested by threshold values for individual psychometric scales that indicate 'suspicion of risk'. Especially in female medical students, this suggests the need for differentiated approaches to the prevention of mental disorders and disruptions of adaptation.

Thus, if a risk is suspected, general preventive measures should be carried out in the form of trainings to develop and improve a range of productive coping strategies. In comparison, those students who show signs of dependent behavior can be introduced to more 'concentrated' psychocorrection technologies, including those involving the resources of psychotherapists. For the same group, it is necessary to consider the possibility of involving the subject's significant other and family members in psychocorrection and psychological counseling.

Conclusion

In general, the data obtained demonstrate the need for a dynamic assessment of the mental sphere of medical students. The collecting of objective data and the timeliness of diagnostic measures should remain important goals. We propose a two-step approach to identifying adaptation disorders in students: the initial screening methods should be supplemented by a detailed analysis of the student's mental status and a study of the causal factors that lead to an increase in maladaptation. This part of the pilot evaluation serves as a justification for continuing the study using longitudinal monitoring of the risk group for addictive behavior. It is important for the analysis to determine the correlations among various indicators of the adaptive capabilities of the mental sphere.

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