

Internal forms of suicidal behavior among medical students

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ABSTRACT

Introduction: The problem of suicidal behavior among young people does not lose its relevance. According to the Russian school of suicidology, it is divided into external (suicidal attempts) and internal (suicidal thoughts, ideas, and intentions) forms. **Aims:** This study aimed to identify the prevalence, clinical-psychopathological characteristics, and risk factors for the formation of internal forms of suicidal behavior in medical students to develop recommendations for primary psychoprophylaxis of suicides. **Materials and Methods:** A solid sample of 143 Russian-speaking medical students aged 17–29 years were examined using the medico-sociological and psychometric methods. The comparative analysis was carried out in two groups: The first group consisted of 52 students who had internal forms of suicidal behavior and the second - 91 students who had not. **Results:** It was found that 36.4% of students had suicidal thoughts and intentions, and at the time of the survey, 23.1% of respondents said that they did not want to live. The level of anxiety ($P = 0.0319$) and depression ($P = 0.0186$) was higher among students with internal forms of suicidal behavior than that of students without them. Students with suicidal thoughts and intentions had a moderate level of stress (34.6% of cases) more often ($P = 0.0237$) than students without suicidal behavior (16.5%). There was a high risk of forming addictive behavior in 19.2% of cases in the first group and 6.6% of cases in the second group ($P = 0.0424$). Factor analysis revealed four significant factors causing the formation of internal forms of suicidal behavior (55.1% of variance): Aggressiveness, lack of social support, choice of avoidance, or competing strategies in a conflict situation. **Conclusions:** The most significant factors causing the formation of suicidal behavior are aggressiveness, choice of avoidance, or competing strategies in a conflict situation. Lack of social support is of particular importance. A high level of stress (a manifestation of which is an increased level of anxiety and depression and psychosomatic diseases, using of alcohol) contributes to the emergence of suicidal thoughts. The prevention programs developed based on research and implemented in practice will allow students to learn how to cope with stress, find constructive ways to resolve conflicts, which will increase adaptive abilities, help overcome aggressive tendencies, and preserve health status.

KEY WORDS: Suicidal behavior, Suicidal intentions, Suicidal thoughts, Suicide risk

INTRODUCTION

Suicide is the result of conscious actions on the part of a certain person fully aware or expecting a fateful outcome.^[1] The Russian Federation occupies one of the leading places in the world in terms of the number of completed suicides.^[2] In general, the number of suicide attempts exceeds the number of completed suicides by 10–20 times, and in some population, groups up to 40 times.^[3]

The risk factors for suicidal behavior are effective mood disorders, especially clinically significant depressive

symptoms,^[4] antisocial behavior,^[5] alcohol abuse, drug use, loneliness, and frequent change of place of residence.^[6,7] For adolescents, low self-esteem, a lack of social and family support,^[8] and various emotional problems^[9] are of special importance.

According to the study by Sharp,^[10] 70% of the students in schools repeatedly had thoughts about unwillingness to live because of learning difficulties and fear of the upcoming examinations, and 24% were about to commit suicide. Medical students have a high level of educational stress, which contributes to emotional burnout,^[11,12] negatively affects general health and academic performance,^[13-15] and contributes to the development of anxiety and depression. From 45% to 83% of students in medical specialties have suicidal thoughts,^[16,17] and the first suicide attempt in

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86% of cases occurs within a year from the moment of appearance of suicidal thoughts.^[18] Moreover, suicidal thoughts and attempts in childhood and adolescence are a reliable risk factor for their occurrence in adulthood.^[19]

In this regard, the purpose of this study was to identify the prevalence, clinical-psychopathological characteristics, and risk factors for the formation of internal forms of suicidal behavior in medical students to develop recommendations for primary psychoprophylaxis of suicides.

MATERIALS AND METHODS

During the academic year 2015/16, 143 students of 2 years of medical school aged 17–29 (18.5 ± 0.1) years - 37 (25.9%) males and 106 (74.1%) females - were examined. The comparative analysis was conducted in two groups - the first group - 52 (36.4%) of the student, who had in the anamnesis internal forms of suicidal behavior, and the second group - 91 (63.6%) - not having.

The main research methods were as follows:

1. Medico-sociological (questionnaire using the author's questionnaire, which includes a block of sociodemographic data and information about the way of life).
2. Suicidological analysis was conducted on the basis of the criteria adopted in the Russian suicidology:^[20] The division of all forms of suicidal behavior into external (suicidal attempts) and internal - suicidal thoughts, views, experiences, as well as suicidal trends that are divided into plans and intentions.
3. Psychometric: Hospital Anxiety and Depression Scale (HADS), the RAFFT test, Thomas-Kilmann conflict mode instrument, the multidimensional scale of perceived social support, the test of aggressiveness by Pochebut, the stress-level test by Ivanchenko, and the test "Self-report of willpower" by Obozov.
4. Statistical: Descriptive statistics, χ^2 criterion for conjugacy tables 2×2 with the Yates correction, Mann-Whitney test for comparison of two independent groups, factor analysis (by the principal components method with Varimax rotation of the factor) analysis.

RESULTS AND DISCUSSION

Due to the study, it was found that 52 (36.4%) students had an internal history of suicidal behavior. Gender analysis showed that in the first group there were more ($\chi^2 = 3.87$ $P = 0.049$ odds ratio [OR] = 2.57 95% confidence interval [CI] 1.0–6.78) of female subjects - 44 (84.6%) than in the second group - 62 (68.1%).

Analysis of the level of education of parents surveyed showed that in 73 (51.0%) cases the fathers of respondents had higher education, in 55 (38.5%) - secondary special, and 15 (10.5%) - secondary. Mothers of respondents in 99 (69.2%) cases had higher education more often ($\chi^2 = 9.11$ ($P = 0.0034$; OR = 2.158; 95% CI 1.29–3.6) than fathers in 36 (25.2%)-special secondary and 7 (5.6%) cases average and below average.

Passive suicidal thoughts - "you do not live, but exist" and "do not want to live" were visited by 43 (83.5%) of the first group at the age from 6 to 18 (14.8 ± 0.4) years. They were associated with quarrels in the family, conflicts with relatives, incomprehension with parents and friends, death of loved ones, problems with studying at school or university, disillusionment in oneself, loss of strength, excessive weight, and loneliness.

Suicidal thoughts "wish I would fall asleep and not wake up" and "it would be good to die," were noted in 28 (53.8%) respondents of the first group aged 10–18 (16.0 ± 0.4) years. At the time of the survey, 12 (23.1%) respondents said that they did not want to live.

Thirteen (25.0%) students of the first group aged 10–18 (15.4 ± 0.9) years thought about a possible method of suicide due to problems with relatives, quarrels with parents, and problems with study.

The intents and plans to commit a suicide were in 11 (21.2%) of the first group of respondents between the ages of 10 and 18 (15.3 ± 0.8) years. Among the reasons, the leading role is played by conflicts in the family, quarrels with parents, leading to a sense of own uselessness, and problems with study.

The attempts to commit suicide were committed by 3 (5.8%) of the surveyed, all female at the age of 15 years. At the same time, the two examined had several suicidal attempts, committed through self-cuts of forearms, or poisoning with medicines.

Eight (5.6%) inflicted various injuries (cuts of hands, beating their fists against the wall, and biting themselves) to "feel pain and calm down," "to prove their willpower" - 5 (3.5%), and "to frighten the parents or friends" - 1 (0.7%).

Six (11.5%) respondents in the first group (none after the suicide attempt) aged 6–18 (14.8 ± 1.9) years addressed the psychiatrist.

In childhood, 16 (30.7%) of the first group and 23 (25.3%) of the second were taken to the "wizards," "psychics," and "healers." The reason in 70% of cases was the problems of the mental plane (night fears, fear of water and dogs, stammering, tics, enuresis,

convulsions, and hallucinations, in the order of decreasing frequency).

Independently to the various adepts of occultism to solve problems in their personal lives, with the goal of knowing the future, cope with nightmares, fears, or nervous tics, 5 (13.5%) respondents of the first group and 4 (4.4%) of the second, most of them (77.8% of cases), received the desired help.

123 (86.0%) respondents were born through physiological births, the remaining 20 (14.0%) by means of cesarean section.

In 42 (80.8%) of the examined first group and 52 (57.1%) of the second, various psychosomatic diseases were identified ($\chi^2 = 7.186$; $P = 0.0082$; OR = 3.15; 95% CI 1.3-7.65), as summarized in Table 1.

The results of the HADS are presented in Table 2.

Analysis of the results of the HADS showed that 28 (53.9%) students in the first group showed anxiety: In 12 (23.1%) cases - subclinical and 16 (30.8%) - clinically apparent. In 11 (21.2%) cases, symptoms of mild depression were detected. Among the students of the second group, anxiety was detected in 40 (44%) cases: 21 (23.1%) - subclinical and 19 (20.9%) - clinically apparent. In 12 (13.2%) cases, the depression was detected as subclinical in 8 (8.8%) cases and clinical in 4 (4.4%).

In general, the level of anxiety and depression among students with internal forms of suicidal behavior in the anamnesis was higher than that of students without them (Mann-Whitney test).

The results of the stress level test are presented in Table 3.

As can be seen from Table 4, students with suicidal thoughts and designs more often ($\chi^2 = 5.15$; $p = 0.0237$; OR = 2.68; 95% CI 1.1-6.42) had a moderate level of stress than students without suicidal behavior. Moreover, in general, according to stress level (Mann-Whitney criterion), the main group significantly exceeds the comparison group ($P = 0.00004$).

Table 1: Psychosomatic diseases of medical students

Disease	n (%)		
	Group 1	Group 2	Total
No	10 (19.2)	39 (42.9)	49 (34.3)
Cardiovascular system	4 (7.7)	7 (7.7)	11 (7.7)
Digestive system	4 (7.7)	15 (16.5)	19 (13.2)
Respiratory system	1 (1.9)	1 (1.1)	2 (1.4)
Other	16 (30.8)	23 (25.3)	39 (27.3)
Several diseases	17 (32.7)	6 (6.5)	23 (16.1)
Total	52 (100)	91 (100)	143 (100)

The RAFFT method revealed a high risk of forming addictive behavior in 10 (19.2%) of the respondents in the first group and 6 (6.6%) in the second group ($\chi^2 = 4.12$; $P = 0.0424$; OR = 3.4; 95% CI = 1.0-11.3). Alcohol abuse is one of the signs of stress and is associated with the formation of internal forms of suicidal behavior.

The results of the test "self-assessment of willpower" are presented in Table 4.

In terms of the number of persons with a high level of willpower, the comparison group exceeds the main one ($\chi^2 = 4.81$; $P = 0.029$; OR = 2.5; 95% CI = 1.1-5.8). Thus, a high level of willpower is a protective factor and prevents the formation of internal forms of suicidal behavior.

The results of the social support scale are presented in Table 5.

It was found that the surveyed first group, compared with those surveyed by the second group (Mann-Whitney criterion), had a deficit of support from the family and friends.

The results of the aggressiveness test by Pochebut are presented in Table 6.

It was found that the second group (Mann-Whitney criterion) was more emotionally alienated when communicating with another person, accompanied by suspicion, hostility, hostility, or ill-will (emotional aggression), as well as they are not in peace and harmony with the respondents themselves, they have weakened the mechanisms of psychological defense (autoaggression).

The results of Thomas-Kilmann Conflict Mode Instrument are presented in Table 7.

It is established that students of both groups are equally represented in all forms of behavior in conflict situations.

Factor analysis (by the main components method with Varimax factor rotation) revealed four significant factors causing the formation of internal forms of suicidal behavior (55.1% of the variance), as presented in Table 8.

It has been established that the most significant factors leading to the formation of suicidal behavior are aggressiveness and a decrease in adaptive abilities, a lack of social support, the choice of an avoidance strategy, or a rivalry in a conflict situation.

Based on the research, we developed and implemented two prevention programs. The first is aimed at informing students about stress and teaching methods of overcoming and adapting it (ways of resolving

Table 2: Results of the HADS

Symptom	Group 1			Group 2			P
	Me	M±σ	Q25-Q75	Me	M±σ	Q25-Q75	
Anxiety	8.0	8.5±3.2	6.0–11.0	7.0	7.2±3.4	5.0–9.0	0.0319
Depression	5.0	5.0±2.5	3.0–7.0	3.5	3.9±2.8	2.0–5.0	0.0186

HADS: Hospital anxiety and depression scale

Table 3: Results of the stress-level test

	Me	M±σ	Q25-Q75	No (%)	Light (%)	Moderate (%)	Severe
Group 1	43.5	44.0±6.8	39.5–48.5	-	34 (65.4)	18 (34.6)	-
Group 2	38.0	38.2±8.1	34.0–44.0	10 (11.0)	66 (72.5)	15 (16.5)	-

Table 4: Results of the test “self-assessment of willpower”

	Me	M±σ	Q25-Q75	Weak (%)	Medium (%)	Strong (%)
Group 1	20.0	19.2±4.7	17.0–21.0	3 (5.8)	37 (71.2)	12 (23.0)
Group 2	21.0	20.6±4.7	17.0–24.0	3 (3.3)	49 (53.8)	39 (42.8)

Table 5: Results of the MSPSS

	Group 1			Group 2			P
	Me	M±σ	Q25-Q75	Me	M±σ	Q25-Q75	
Family	4.0	3.3±1.0	3.0–4.0	4.0	3.8±0.6	4.0–4.0	0.0022
Friends	4.0	3.0±1.4	2.0–4.0	4.0	3.6±1.0	4.0–4.0	0.0061
Significant other	4.0	3.6±0.9	4.0–4.0	4.0	3.7±0.8	4.0–4.0	0.7125

MSPSS: Multidimensional scale of perceived social support

Table 6: Results of the test of aggressiveness by Pochebut

Aggression	Group 1			Group 2			P
	Me	M±σ	Q25-Q75	Me	M±σ	Q25-Q75	
Verbal	4.0	4.0±1.8	3.0–5.0	3.0	3.4±1.9	2.0–5.0	0.0597
Physical	3.0	2.9±1.9	1.0–4.0	2.0	2.6±2.1	1.0–4.0	0.2749
Subject	3.0	3.3±1.4	2.0–4.0	3.0	3.0±1.7	2.0–4.0	0.1539
Emotional	3.0	3.2±1.7	2.0–4.5	2.0	2.6±1.5	2.0–4.0	0.0312
Autoaggression	5.0	4.6±1.6	3.5–6.0	4.0	3.8±1.7	3.0–5.0	0.0075
Aggregate aggression	17.5	18.0±4.8	16.0–20.0	15.0	15.4±5.8	11.0–18.0	0.0025

Table 7: Results of the Thomas–Kilman conflict mode instrument

	Group 1			Group 2			P
	Me	M±σ	Q25-Q75	Me	M±σ	Q25-Q75	
Competing	4.0	4.1±3.3	1.0–6.0	4.0	4.5±3.2	2.0–7.0	0.407319
Collaborating	6.0	5.8±1.9	4.5–7.5	6.0	5.7±1.7	5.0–7.0	0.671279
Compromising	6.0	6.7±2.1	5.0–8.0	7.0	6.6±2.1	5.0–8.0	0.920603
Avoiding	6.0	6.3±1.9	5.0–8.0	6.0	5.9±1.9	4.0–7.0	0.225725
Accommodating	7.0	7.0±2.8	5.0–9.0	7.0	6.8±2.5	5.0–8.0	0.523222

conflicts, overcoming auto - and hetero-aggressive tendencies, relaxation methods) and introduced into the educational process within the framework of the discipline “psychological correction of crisis states.” The second includes training the students in literate time planning, methods of optimal independent work with educational literature, as well as informing about healthy lifestyle taking into account biorhythms, day regimen and eating habits, and destructive methods of fighting stress in the aspect of preventing addictions. It is realized within the framework of the discipline

“introduction to the specialty.” This allows students to learn how to plan their time, cope with stress, and maintain health.

CONCLUSION

Thus, the study showed that more than one-third (36.4%) of the students in the medical institute have internal forms of suicidal behavior, with women who are more susceptible to suicidal thoughts, feelings, and intentions than men.

Table 8: Factors of the formation of internal forms of suicidal behavior

Factors	Components of the factor	% variances
Aggressiveness	Aggregate aggression (0.935)	19.0
Problems with social support	Autoaggression (0.700)	16.0
	Family (0.797)	
Engagement behavior	Significant other (0.777)	11.8
	Friends (0.727)	
Cooperative behavior	Avoiding (-0.702)	8.3
Cooperative behavior	Competing (-0.935)	8.3

The development of internal forms of suicidal behavior is promoted by a high level of stress, manifested by an increased level of anxiety and depression, the development of psychosomatic diseases, and the use of alcohol and drugs (to cope with stress and to calm down). A high level of willpower, by contrast, is a protective factor.

The most significant factors leading to the formation of suicidal behavior are aggressiveness and a decrease in adaptive abilities, the choice of strategies for avoiding, or rivalry in a conflict situation. Of particular importance is the lack of social support (quarrels in the family, conflicts with relatives, lack of understanding from friends, death of loved ones, and loneliness), leading to disappointment in oneself, the appearance of a feeling of own uselessness, and meaninglessness of life.

The prevention programs developed on the basis of research and implemented in practice will allow students to learn to cope with stress, find constructive ways to resolve conflicts, which in turn will increase adaptive abilities, help overcome aggressive tendencies, and preserve health status.

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