

# Suicidal thoughts, intentions and suicide attempts by Lithuanian medical students of the Lithuanian University of Health Sciences

## Lietuvos sveikatos mokslų universiteto lietuvių medicinos studentų mintys, ketinimai bei bandymai nusižudyti

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### SUMMARY

**Introduction.** Medical students are particularly stressed during their studies. There is a very strong association between chronic stress, depression and suicidal ideation, which can lead to suicidal actions or even suicide.

**Aim.** To find out the prevalence of thoughts/intentions/suicide attempts of medical students of LUHS, their differences between genders and courses, and possible causes of suicidal ideations.

**Material and methods.** Anonymous questionnaire survey of Lithuanian medical students of LUHS I-VI year students was carried out on 2019. The questionnaire consisted of questions designed by the researchers to look at demographics, smoking and drug use rates, prevalence of thoughts/intentions/suicide attempts, open questions to identify mental disorders and possible causes of suicidal attempts, and the AUDIT-C test.

**Results.** 45% of medical students have thoughts of suicide and 2.8% had thoughts of suicide during the survey. 16% of students had an intention to commit suicide. 1.2% had such intentions at the time of the survey. 5.9% have tried to commit suicide. Causes of suicide during studies are very diverse: high levels of stress, psychological pressure, competition, burnout, extreme workloads, and other.

Men more often than women had suicidal thoughts and intentions. No statistically significant differences were found in the prevalence of thoughts/intentions/suicide attempts and the reasons among medical students in different courses.

**Conclusions.** 45% of medical students reported history of suicidal thoughts; 2.8% of the respondents had such thoughts during the survey. Every sixth of the respondents reported suicide plans. 1.2% of medical students had such intentions during the survey. 6.2% of students have tried to commit a suicide. The most common causes of suicidal ideations during study years are very different: stress, psychological pressure, high workload, competition, fatigue and burnout, personal life problems, lack of leisure time, bullying, high expectations of self/others. Men more often than girls had suicidal thoughts and intentions, without significant differences in the prevalence of thoughts/intentions/suicide attempts and the reasons in differences causes of students.

**Keywords.** medical students, suicidal thoughts/ intentions, LUHS.

### SANTRAUKA

**Įvadas.** Medicinos studentai savo studijų metu patiria ypač daug streso, o visa tai gali turėti įtakos jų psichikos sveikatai. Egzistuoja labai stiprus ryšys tarp lėtinio streso, depresijos bei minčių apie savižudybę, kurių pasekmės gali pasireikšti kaip savižudiški veiksmai ar savižudybė.

**Tikslas.** Išsiaiškinti Lietuvos sveikatos mokslų universiteto (LSMU) I-VI kurso medicinos studentų savižudiškų minčių/ ketinimų/ bandymų nusižudyti paplitimą, viso to skirtumus tarp lyčių ir skirtingų kursų bei galimas savižudiškų tendencijų priežastis.

**Medžiaga ir metodai.** 2019 metais buvo atlikta anoniminė LSMU I-VI kurso lietuvių medicinos studentų anketinė apklausa. Anketa buvo sudaryta iš tyrėjos kurtų klausimų, kuriais buvo siekiama išsiaiškinti demografinius duomenis, rūkymo bei narkotikų vartojimo dažnį, minčių/ketinimų/bandymų nusižudyti paplitimą, atvirų klausimų forma buvo siekiama išsiaiškinti sergamumą psichikos sutrikimais bei galimas savižudiškų bandymų priežastis, bei AUDIT-C testo, kuriuo buvo siekiama išsiaiškinti rizikingą alkoholio vartojimo lygį.

**Rezultatai.** Keturiasdešimt penkiems proc. medicinos studentų yra kilę minčių apie savižudybę, 2,8 proc. apklaustųjų tokių minčių turėjo apklausos metu. Ketinimų nusižudyti turėjo apie 16 proc. apklaustųjų. 1,2 proc. medicinos studentų tokių ketinimų turėjo apklausos metu. Nusižudyti buvo bandę 5,9 proc. apklaustųjų. 58,4 proc. apklaustųjų buvo girdėję apie įvykusias savižudybes tarp LSMU medicinos studentų. Priežastys dėl kurių įvyksta savižudybės studijų metu yra labai įvairios: didelis stresas, psichologinis spaudimas, konkurencija, perdegimas, studijų ir darbo perspektyvų beprasmybė, didelis mokymosi krūvis ir kitos. Vaikiniai dažniau nei merginos apklausos metu turėjo minčių apie savižudybę bei ketinimų. Jokių statistiškai reikšmingų skirtumų tarp minčių/ketinimų/bandymų nusižudyti paplitimo bei jų priežasčių tarp skirtingo kurso medicinos studentų nenustatyta.

**Išvados.** 45 proc. medicinos studentų pranešė turėję minčių apie savižudybę, 2,8 proc. apklaustųjų tokių minčių turėjo apklausos metu. Ketinimų nusižudyti turėjo kas šeštas apklaustasis, o 1,2 proc. medicinos studentų tokių ketinimų turėjo apklausos metu; 6,2 proc. apklaustųjų buvo bandę žudytis. Dažniausios priežastys savižudiškoms tendencijoms studijų metu: didelis stresas, psichologinis spaudimas, didelis mokymosi krūvis, konkurencija, pervargimas ir perdegimas, asmeninio gyvenimo problemos, patiriama įtampa, laisvalaikio stoka, patyčios, dideli lūkesčiai iš savęs/aplinkinių. Vaikiniai dažniau nei merginos apklausos metu turėjo minčių apie savižudybę bei ketinimų, bet nenustatyta reikšmingų skirtumų tarp minčių/ketinimų/bandymų nusižudyti paplitimo bei priežasčių skirtumo tarp skirtingo kurso medicinos studentų.

**Raktiniai žodžiai:** medicinos studentai, savižudiškos mintys/ ketinimai, LSMU

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## INTRODUCTION

Medical students are under a great deal of stress throughout the six years of the study because of the high academic standards placed upon them. All of this can affect both somatic and mental health of future physicians. The incidence of mental health problems among medical students has been shown to be constantly increasing and higher than for other specialty students and the general population [1,2].

The most common mental health problem in the world among future doctors unfortunately is depression [3]. One third of medical students in the world are affected by this disorder, but very few of them are cured [4].

Depression is considered to be the most important factor affecting attempts to suicide [1,5]. Other factors contributing to suicidal ideation include chronic stress, desire to quit medical studies, sleep disorders, anxiety, previous psychiatric diagnosis, low socioeconomic status, financial difficulties, grades, academic burden, introversion / extraversion, current or past drug use, feeling anxious parents [1,3,5-9]. It is noted that there is a very strong association between chronic stress, depression and suicidal ideation [8]. Coentre and colleagues peer-reviewed research papers on suicidal ideations by prospective physicians and found that the incidence was between 1.8 % and 53.6 %. [5]. The consequences of suicidal ideation can be manifested as suicidal actions and completed suicide [5,10].

It was found that in the first years of medical education, the mental health of young people is no different from that of their peers, but medical students experience burnout syndrome, depression and other mental disorders more often and intensively than young people of other specialties [11]. Suicidal ideations among medical students is not a popular research topic in Lithuania. Only one Master's thesis has been carried out on this topic by Erika Keršytė [12]. She found that nearly a quarter of LUHS students have suicidal tendencies, while those who consume alcohol were more likely. As this topic is not a widely analysed in Lithuania, it would be important to find out the prevalence of LUHS medical students' thoughts/intentions/suicide attempts and the possible causes of suicidal ideations.

**The aim.** To find out the prevalence of thoughts/intentions/suicide attempts of medical students of Lithuanian University of Health Sciences (LUHS), their possible causes and the differences between genders and courses.

## METHODOLOGY

The survey was conducted between April and July 2019. Lithuanian medical students of Lithuanian University of Health Sciences (LUHS) were invited to participate in this study. Questionnaires were distributed before the lectures, practical work and self-study in the library to find out socio-demographic characteristics, risk of alcohol consumption, smoking and frequency of drug use, prevalence of thoughts/intentions/suicide attempts, mental illness, possible causes of suicide. The AUDIT-C test [13], which consists of the first three questions in the AUDIT questionnaire, was used to find out risky levels of alcohol consumption. This level of use was found when men scored 4 or more (out of 12 possible) and

women scored 3 or more (out of 12) [13]. Researcher-designed questions aimed at finding out the prevalence of smoking and drug use, the prevalence of thoughts/intentions/suicide attempts among medical students, and open-ended questions aimed at identifying student morbidity (Are you currently suffering from/had a mental disorders: depression, anxiety, addictions, schizophrenia, etc.? If so, what?) and possible causes of suicide (In your opinion, what are the reasons for suicide during medical studies/why did you try to quit life?). The submitted questionnaires were requested to be completed and returned by the researchers. The name and other personal details were not requested in the questionnaire survey. Only fully completed questionnaires were included in the analysis of the study data.

The software package SPSS 23.0 was used to analyze the results. The statistical significance level chosen was 0.05. First, the normality of the distributions was checked. According to the Kolmogorov-Smirnov criterion, all distributions were statistically significantly different from normal. As a result, the Mann Whitney nonparametric criterion for two independent samples, the Kruskal-Wallis criterion for comparing several independent samples, as well as the Chi square criterion for nominal variables were used to compare averages.

The study was authorized by the LUHS Bioethics Center. Publication Number: BEC- MF-362.

## RESULTS

The study involved 322 LUHS medical students of I–VI courses. 62 (19.3%) of them were men and 260 (80.7%) were women. The distribution of subjects by study course is presented in Figure 1.

### Prevalence of medical students suicidal thoughts/intentions/suicide attempts.

The first task of the study was to determine the prevalence of medical students' thoughts/intentions/suicide attempts. To assess this, we first asked the question: Have you ever had suicidal thoughts? The answers are shown in Figure 2.

Figure 3 shows that about half of the students have suicidal thoughts, 2.8% respondents had such thoughts during the survey. The third figure shows that as much as 23% students have had suicidal thoughts many times.

Approximately 16% of the respondents had a suicidal intentions (1.2% had this intention at the time of the survey), and about 6% of students had a suicide intention more than

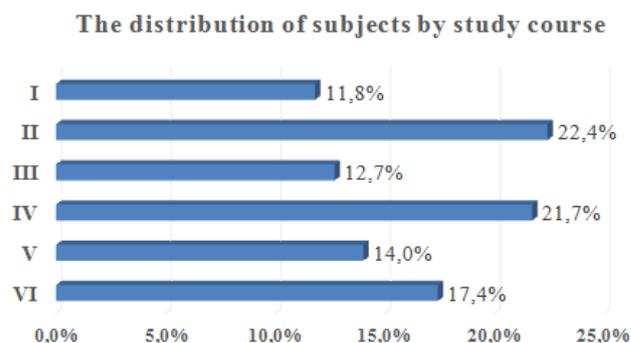


Figure 1. The distribution of subjects by study course

### Have you ever had thoughts of suicide?

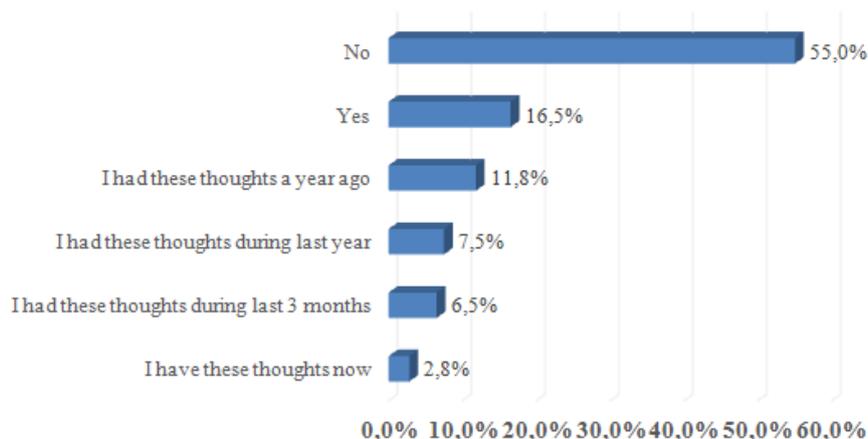


Figure 2. Suicidal thoughts among medical students

twice (Fig. 4).

As shown at Figure 5, 5.9 % of study participants- medical students have attempted suicide. Approximately 2% of them attempted suicide more than once (Fig. 5).

More than half (58.4%) of the respondents have heard of suicides among LUHS medical students, on average 2–3 such cases, and they have heard about attempts to commit suicide even more (up to 10 cases).

#### The reasons for medical students' thoughts/ intentions/ suicide attempts

The second task was to find out the reasons for medical students' thoughts/intentions/suicide attempts. When asked to identify the reasons for suicidal thought or suicidal attempts during the medical studies, students most often mentioned the reasons listed in Table 1.

Table 1 shows that the main causes of suicide among LUHS medical students of year I–VI are stress 15.2%, pressure 12% and high study load 11.5 %. All these reasons are related to studies. Academic community of LUHS should take more attention to it and try to reduce these causes among medical students. The resulting feelings of hopelessness, sadness, frustration, self-loathing, loneliness, constant anxiety, depression, and poor knowledge of how to take care of one's

mental health lead to thoughts, intentions or suicide attempts.

The results of the study revealed that 8.1% of students had a mental disorder (depression, anxiety disorders, bulimia, schizophrenia), 6.5% had a history of mental health depression, adjustment disorder, anxiety disorders, anorexia, bulimia) 4.7% used psychotropic medications during the survey, 9.9% had used medication during lifetime. 88.8% of students time to time used alcohol. The mean of the AUDIT-C test scores was  $5.75 \pm 2.11$  at a rate of 0–4 for men and 0–3 for women.

19.9% of respondents were smoking, 3.1% were using drugs. All of these factors could be rated and be a risk factors for medical student suicidal thoughts or attempts.

#### Differences in medical students' thoughts/intentions/ suicide attempts between genders and across courses

Another task of the study was to assess the differences of thoughts/intentions/suicide attempts of medical students in different genders of LUHS I–VI courses.

The results showed that men statistically ( $p = 0.008$ ) more often than women had suicidal thoughts (Table 2).

Similarly, with the intention to suicide, it seems that statistically significant ( $p = 0.014$ ) men had a higher frequency than women during their survey (Table 3).

Regarding suicide attempts, again, the results show that

### How often do these ideas come to you?

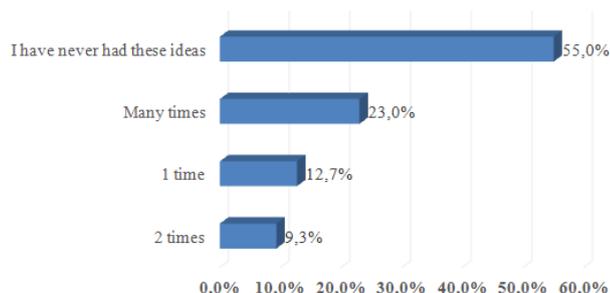


Figure 3. The incidence of suicidal thoughts among medical students

### How many suicidal intentions did you have?

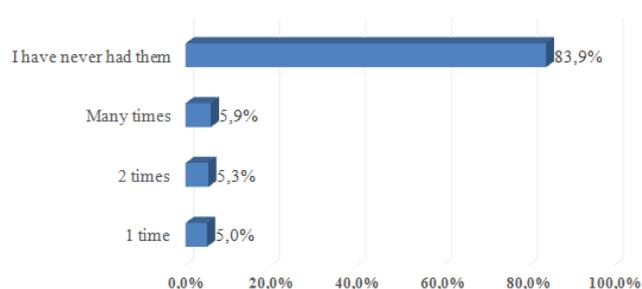


Figure 4. The incidence of suicide intentions among medical students

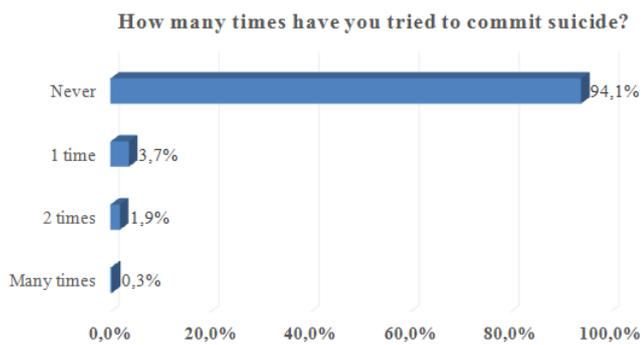


Figure 5. The incidence of suicide attempts among medical students

men were statistically significantly ( $p = 0.032$ ) more likely than women to attempt suicide more than once (Table 4).

No statistically significant differences were found in the prevalence of suicide among men and women.

No statistically significant ( $p > 0.05$ ) differences were found in the prevalence of thoughts/intentions/suicide attempts among medical students of different courses. In fact, there are different answers to the question of whether they have heard of suicides among LUHS medical students. It seems that first and second year students have statistically significantly ( $p = 0.001$ ) less often heard of such events (Table 5).

## DISCUSSION

The study revealed that even half of LUHS Lithuanian medical students had suicidal thoughts, while 2.8% of respondents had such thoughts during the survey. Approximately 16% of those surveyed had suicide intentions, and 1.2% of them had such intentions during the survey. As many as 5.9% of medical students have attempted suicide. These are very shocking and distressing results, because at any time such thoughts can move on to intentions and suicide attempts. There are a number of studies from other parts of the world looking at medical students' thoughts / intentions / suicide attempts, which are very different. We have mentioned several such studies in Table 6.

Comparison of these studies with our study reveals considerable differences. It has been mentioned that as many as 45% of LUHS Lithuanian medical students have thoughts of suicide, which is significantly more than students of other countries [14,15,16]. Our study also found that 2.8% of those surveyed had suicidal ideation at the time of the survey, which is less than Torres and colleagues in Brazil [6], but more than Amiri and colleagues in the United Arab Emirates [14].

Table 2. Thoughts of suicide among men and women

Gender	Have you ever had thoughts of suicide?			I have had these thoughts now	I have had such thoughts for the last three months	I have had such thoughts in recent years	I had such thoughts more than a year ago	p-value
	no	yes						
Men, n=62	32 (51.6%)	12 (19.4%)	6 (9.7%)	4 (6.5%)	4 (6.5%)	4 (6.5%)		0.008
Women, n=260	145 (55.8%)	41 (15.8%)	3 (1.2%)	17 (6.5%)	20 (7.7%)	34 (13.1%)		

Table 1. Possible causes of suicide among LUHS medical students of year I-VI

Cause	Number of respondents	Percentage (%)
Stress	99	15.2
Pressure	78	12.0
High study load	75	11.5
High competition	54	8.3
Fatigue and burnout	35	5.3
Personal life issues	34	5.2
Tension	27	4.1
Lack of leisure	24	3.6
Bullying	22	3.3
High expectations from oneself / others	20	3.0
Hard studies	19	2.9
Loneliness	19	2.9
Poor self-esteem	17	2.6
Mental Illness	15	2.3
Fear of the future	14	2.1
Misfortune	14	2.1
Lack of support from loved ones	14	2.1
Fear of not meeting parents' expectations	14	2.1
Marks	12	1.8
High demands	11	1.6
Financial difficulties	9	1.3
High perfectionism	8	1.2
Dissatisfaction with own results	5	0.7
Unhappy Love	4	0.6
Mistakes	2	0.3
Lack of assistance	1	0.1

If we treat suicide as having a suicide plan, it would appear that medical students in our country are much more likely to commit suicide than would-be doctors in other countries. [15,16,17]. Another shocking fact is that LUHS I-VI medical students are much more likely to commit suicide than other students. [14–17]. Summarizing the researches it can be stated that Lithuanian medical students of LUHS I-VI course have one of the highest thoughts/intentions/suicide attempts in the world.

Table 3. Intentions of suicide among men and women

Gender	Have you ever had suicide intentions?			p-value
	no	yes	Yes ( i have these thought now)	
Men, n=62	49 (79.0%)	10 (16.1%)	3 (4.8%)	0.014
Women, n=260	224 (86,2%)	35 (13,5%)	1 (0,4%)	

Table 4. Suicide attempts among men and women

Gender	How many times did you try to commit suicide?				p-value
	I have never tried	1 time	2 times	Many times	
Men, n=62	57 (91.9%)	1 (1.6%)	3 (4.8%)	1 (1.6%)	p= 0.032
Women, n=260	246 (94.6%)	11 (4.2%)	3 (1.2%)	0 (0.0%)	

Table 5. Knowledge of suicide among LUHS students, among different course students

Course (grade)	Have you heard of suicides among LUHS medical students?		p-value
	Yes	No	
I grade, n=38	9 (23.7%)	29 (76.3%)	0.0001
II grade, n=72	31 (43.1%)	41 (56.9%)	
III grade, n=41	34 (82.9%)	7 (17.1%)	
IV grade, n=70	44 (62.9%)	26 (37.1%)	
V grade, n=45	29 (64.4%)	16 (35.6%)	
VI grade, n=56	41 (73.2%)	15 (26.8%)	

Respondents in our study identified a variety of causes that could lead to suicide: high levels of stress, psychological pressure, competition, burnout, futility of study and work prospects, “cold, cynical, competitive relationships between students”, excessive workload, demands, expectations, personal reasons, alcohol, low self-esteem, “old-fashioned thinking of teachers that prevents growth, sets the bullet points to follow”, bullying (mostly from lecturers), disrespect, lack of empathy and humanity, failure to reconcile social life with academic, financial problems. Other studies highlight the following predisposing factors for suicide: chronic stress, previous suicide attempts, depression, high levels of anxiety,

broken relationships with a loved one, hopelessness, loss of something valuable, grades, high academic load, low economic status, sleep disorders, often experiencing headaches or non-inflammatory joint pain, living alone, poor physical health, receiving previous psychopharmacological treatment, alcohol use, lack of intrinsic motivation to study [3,7–9,12,16,18]. Comparing the results of our study with the results of other countries, we can clearly see that LUHS medical students experience a lot of negative factors in communication with the academic staff and other students: “cold, cynical, competitive relations among students”, does not allow for growth, sets rules to follow”, bullying (mostly from teachers), disrespect, lack of

Table 6. Medical students’ thoughts / intentions / suicide attempts in other parts of the world

Research	Country	Sample	Prevalence of thoughts/intentions/suicide attempts
Amiri and co-authors (2012) [14]	UAE	115 medical students in I–VI grades	17.5% have had suicidal thoughts. 1.8% had suicidal thoughts during the survey. 1.8% have attempted suicide.
Miletic and co-authors (2014) [15]	Serbia	1296 medical students in I,III,VI grades	2.9% have had suicidal thoughts. 0.5% had a suicide plan. 0.6% have attempted suicide.
Coentre and co-authors (2016) [16]	Portugal	465 medical students in IV–V grades	3.7% of the respondents had suicidal thoughts during their studies. 1.1% had a suicide plan in their studies. 0.7% of those surveyed attempted suicide during their studies.
Sun and co-authors (2017) [17]	China	2198 medical students in I–V grades	17.9% have had suicidal thoughts. 8.2% had suicidal ideation within 12 months. 5.2% had a suicide plan. 4.3% have attempted suicide.
Torres and co-authors (2017) [6]	Brazil	475 medical students in I–VI grades	7.2% had suicidal thoughts during the survey.

empathy and humanity. All of these potential causes of suicide are not highlighted in research findings in other countries and require the attention of students and academic staff alike to reduce medical students' thoughts/intentions/suicide attempts at the Lithuanian University of Health Sciences.

In our study, 8.1% of students had a mental disorder (depression, anxiety disorder, bulimia, schizophrenia), and 6.5% had a history of it. 4.7% used psychotropic medications during the survey, 9.9% had used medications earlier. In a study of 456 fourth- and fifth-year medical students at the University of Portugal, Coentre and colleagues in Portugal found that 12.7% of those surveyed had a psychiatric diagnosis and 11% had received prior psychopharmacological treatment [16]. Comparing medical students at the Lithuanian University of Health Sciences with Portuguese university colleagues, it is clear that LUHS medical students were slightly more likely to have mental illness and were 3.6% more likely to use psychotropic medication than their Portuguese counterparts.

Even 88.8% of LUHS I-VI medical students consumed alcohol less frequently or more frequently (the mean of the AUDIT-C test score was  $5.75 \pm 2.113$  at 0–4 for males and 0–3 for females). These data reveal that LUHS medical students have a high risk of alcohol abuse. In 2016, the same Master's student Erika Keršytė made similar conclusions in her Master's thesis. She claimed that most LUHS medical students consume alcohol. Almost half of students drink alcohol at least once a month. More than half of students consume 2 to 5 units of alcohol once. 6 units of alcohol and more are consumed more often by 4–6 year students. Girls are more likely to consume 1 unit of alcohol, guys 6 units and more [12]. Risky drinking is also common among medical students in Portugal: 11.8% suspected alcoholism, 15.6% alert alcoholism [16]. Alcohol consumption is a known risk factor for suicide. Alcohol consumption increases aggressiveness, impulsivity, which are strongly associated with suicidal behavior [19].

In our study, 3.1% of respondents used drugs during the survey. A study conducted by Coentre and colleagues in Portugal found that as many as 143 (31%) respondents mentioned using a substance over a 12-month period: cannabis, sedatives, stimulants, cocaine, heroin [16]. In Nepal, Adhikari and colleagues also analyzed medical students and found that 15% of respondents used marijuana during their studies [20]. Comparing the results of this study with the studies of other authors, it can be stated that medical students of LUHS are much less likely to use drugs than medical students of other countries.

Men studying medicine at LUHS were more likely than women to have thoughts about suicide ( $p < 0.5$ ). This conclusion is in stark contrast to one of the findings of the Master's thesis presented by Erika Keršytė in 2016, which stated that no relationship between suicidal tendency and gender was found. [12]. It is noteworthy that gender differences in suicidal ideation have not been observed in other national studies [1,7,20]. Only a study by Zheng and colleagues found that of the 540 Chinese students surveyed, girls were more likely to commit suicide than boys [9]. The LUHS community needs to pay special attention to the population of male

medical students who had statistically significantly greater suicidal ideation and intention than girls.

No statistically significant differences were found in the prevalence of thoughts/intentions/suicide attempts and reasons among medical students of different rates in our study. A study by Coentre and colleagues in Portugal showed a similar trend: there is no difference in suicidal behavior between different medical courses [16]. Other authors have found different conclusions. In Erika Keršytė's Master's thesis, students who have been diagnosed with a mental disorder are more likely to commit suicide [12]. A study by Alhikari and colleagues found that students in clinical years in Nepal (from the third year of study) were more likely to have suicidal thoughts than pre-clinical students [20]. A similar trend was observed in China: medical students in their fourth year of study had the highest incidence of suicide [9].

Ideas for future research: it would be useful to compare the prevalence of thoughts/intentions/suicide attempts of LUHS medical students with those of Vilnius University medical students or with non-medical students of other universities.; at the same time- to evaluate the prevalence of mental disorders among medical students.

### CONCLUSIONS

1 About half of medical students in this study reported history of suicidal thoughts; 2.8% of the respondents had such thoughts during the survey. Every sixth of the respondents reported suicide plans. 1.2% of medical students had such intentions during the survey. 6.2% of the respondents have tried to commit a suicide.

2. According to medical students, the most common causes of suicidal ideations during study years are very different: stress, psychological pressure, high workload, competition, fatigue and burnout, personal life problems, lack of leisure time, bullying, high expectations of self / others.

3. Men more often than girls had suicidal thoughts and intentions, without significant differences in the prevalence of thoughts / intentions / suicide attempts and the reasons in differences causes of medical students.

### PRACTICAL RECOMMENDATIONS

The results of this study lead to much more needs of attention from the university community and efforts to reduce suicidal thoughts among medical students.

Further research is needed to elucidate the more accurate causes of suicide among LUHS medical students in I–VI courses and the most effective ways to reduce suicide rates.

REFERENCES

1. Zeng W, Chen R, Wang X, Zhang Q, Deng W. Prevalence of mental health problems among medical students in China: A meta-analysis. *Medicine (Baltimore)* 2019;98(18):e15337.
2. Bitonte RA, DeSanto DJ 2nd. Mandatory physical exercise for the prevention of mental illness in medical students. *Ment Illn* 2014;6(2):5549.
3. Pham T, Bui L, Nguyen A, Nguyen B, Tran P, Vu P, Dang L. The prevalence of depression and associated risk factors among medical students: An untold story in Vietnam. *PLoS One* 2019;14(8):e0221432.
4. Puthran R, Zhang MWB, Tam WW, Ho RC. Prevalence of depression amongst medical students: a meta-analysis. *Med Educ* 2016;50(4):456–468.
5. Coentre R, Góis C. Suicidal ideation in medical students: recent insights. *Adv Med Educ Pract* 2018;9:873–880.
6. Torres AR, Campos LM, Lima MCP, Ramos-Cerqueira ATA. Suicidal ideation among medical students: prevalence and predictors. *J Nerv Ment Dis* 2018;206:160–168.
7. Fan AP, Kosik RO, Mandell GA, et al. Suicidal ideation in medical students: who is at risk? *Ann Acad Med Singapore* 2012;41(9):377–382.
8. Rosiek A, Rosiek-Kryszewska A, Leksowski L, Leksowski K. Chronic Stress and Suicidal Thinking Among Medical Students. *Int J Environ Res Public Health* 2016;13(2):212.
9. Zheng A, Wang Z. Social and psychological factors of the suicidal tendencies of Chinese medical students. *Biopsychosoc Med* 2014;8:23.
10. Klonsky ED, May AM. The Three-Step Theory (3ST): A new theory of suicide rooted in the “ideation-to-action” framework. *International Journal of Cognitive Therapy* 2015;8(2):114–129.
11. Schwenk TL, Davis L, Wimsatt LA. Depression, stigma, and suicidal ideation in medical students. *JAMA* 2010;304:1181–1190.
12. Keršytė E. Polinkio į savižudybę paplitimas tarp LSMU medicinos studentų ir sąsajos su alkoholio vartojimu. Lietuvos sveikatos mokslų universitetas: magistro darbas; 2016.
13. Janonienė R., Radzevičiūtė I., Ivanauskienė R., Vėryga A. Trumposios Intervencijos: Alkoholio Vartojimo Įpročių Patikros Ir Pagalbos Teikimo Rekomendacijos. Higienos Institutas 2016
14. Amiri L, Voracek M, Yousef S, Galadari A, Yammahi S, Sadeghi MR et al. Suicidal behavior and attitudes among medical students in the United Arab Emirates. *Crisis* 2013;34(2):116–123.
15. Miletic V, Lukovic JA, Ratkovic N, Aleksic D, Grgurevic A. Demographic risk factors for suicide and depression among Serbian medical school students. *Soc Psychiatry Psychiatr Epidemiol* 2015;50(4):633–638.
16. Coentre R, Faravelli C, Figueira ML. Assessment of depression and suicidal behaviour among medical students in Portugal. *Int J Med Educ* 2016;7:354–363.
17. Sun L, Zhou C, Xu L, Li S, Kong F, Chu J. Suicidal ideation, plans and attempts among medical college students in china: the effect of their parental characteristics. *Psychiatry Res* 2017;247:139–143.
18. Tan ST, Sherina MS, Rampal L, Normala I. Prevalence and predictors of suicidality among medical students in a public university. *Med J Malaysia* 2015;70:1–5.
19. Bhattacharjee S, Bhattacharya A, Thakurta RG, Ray P, Singh OP, Sen S. Putative effect of alcohol on suicide attempters: an evaluative study in a tertiary medical college. *Indian J Psychol Med* 2012;34(4):371–375.
20. Adhikari A, Dutta A, Sapkota S, Chapagain A, Aryal A, Pradhan A. Prevalence of poor mental health among medical students in Nepal: a cross-sectional study. *BMC Med Educ* 2017;17(1):232.

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