

## Psychopathology screening in medical school students

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### Abstract

**Objective:** Screening of psychopathology and associated factors in medical students employing an electronic self-report survey. **Method:** A transversal, observational, and comparative study that consisted of the following instruments: Sociodemographic survey; 2. Adult Self-Report Scale-V1 (ASRS); State-Trait Anxiety Inventory (STAI); Zung and Conde Self-Rating Depression Scale, Almonte-Herskovic Sexual Orientation Self-Report; Plutchik Suicide Risk Scale; Alcohol Use Disorders Identification Test Identification (AUDIT); Fagerström Test for Nicotine Dependence; 9. Maslach Burnout Inventory (MBI); Eating Disorder Inventory 2 (EDI). **Results:** We gathered 323 student surveys from medical students of the first, third and sixth grades. The three more prevalent disorders were depression (24%), attention deficit disorders with hyperactivity (28%) and anxiety (13%); the prevalence of high-level burnout syndrome was 13%. Also, the fifth part of the students had detrimental use of tobacco and alcohol. **Conclusion:** Sixty percent of medical students had either one or more probable disorder or burnout. An adequate screening and treatment of this population could prevent severe mental disorders and the associated factors could help us to create a risk profile. This model is an efficient research tool for screening and secondary prevention. (Gac Med Mex. 2017;153:69-80)

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**KEY WORDS:** Anxiety. Burnout. Depression. Stress. Students.

### Introduction

It is common for medical students to seek treatment when they suffer symptoms of anxiety, depression, decreased concentration, attention deficit and other psychosocial problems such as academic failure and familial dysfunction. These problems constitute the most

common reasons that drive students to request psychiatric care in educational institutions that have this type of services, such as the Autonomous University of San Luis Potosí Department of Psychiatry. In this context, it is important establishing that the medical student is generally at the end of the second decade of his/her life when starting college education and often invests the entire third decade on it.

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Date of reception: 19-10-2015  
Date of acceptance: 13-12-2015

Based on the Mexican National Comorbidity Survey of the year 2007<sup>1</sup>, there are data available on psychiatric disorders prevalence in Mexico in a representative national sample of people between 18 and 65 years of age, which indicate that 26% of the population has experienced at least one psychiatric disorder and that 36.4% of Mexicans will experience one sometime in life.

Considering the population of college students, it is important highlighting that those younger than 21 years are at higher risk for more disorders, since half the population presenting with a psychiatric disorder does it before 21 years of age. Early onset of a mental disease has particularly important consequences on the development of the first decades of life, where education, choosing a profession, choosing a partner and sexual identity development are included.

In addition to possible presence or onset of mental illness in medical students, it is important highlighting that throughout medical training there are multiple sources of stress, such as uncertainty about the future, economic problems, academic overload, constant pressure with regard to success and competence with peers. These factors might favor or precipitate manifestations of psychopathology. This has led to identify the necessity to assess college students' mental health. Investigators of the Institute of Mental Health of the Belgrade University School of Medicine, in Serbia, propose that college students represent the national capital and an investment for the future, with a mission both for their families and society<sup>2</sup>. They report that there are specific risk factors for the development of psychopathology, such as elevated levels of anxiety, low self-esteem, as well as certain personality traits. In addition, there are students who arrive to universities with preexisting mental problems.

The study of mental health among medical students has been systematically carried out in several parts of the world over the past few decades. An important question would be whether psychological stress is the same in medical students than in students of any other discipline. In this regard, a population of medical students has been compared to economics and physical education students<sup>3</sup>. The findings showed that general health questionnaire, STAI and Beck's depression inventory tests scores were elevated in second-year medical students in comparison with students of other disciplines. Furthermore, stressing life-events scores showed an increase from first to second year,

and anxiety and depression indices were associated with the level of dissatisfaction with social activities. As time goes by in medical training, medical students show an increase in the degrees of anxiety and depression, in addition to a decrease in general health status.

Burnout appears to be the most common form of stress. Dedication and intensity with regard to studying activities in medical training predispose the student to physical and psychical exhaustion and, secondarily, to experiencing psychopathology isolated symptoms and even psychiatric disorders in the strict sense. An investigation conducted in USA on burnout and suicidal ideation in medical students demonstrated a prevalence of 11.2%, which was higher than in individuals of the same age of the general population (6.9%)<sup>4</sup>. Suicidal ideation was strongly associated with personal stress (quality of life) and professional stress (burnout). It was also concluded that a high prevalence of this phenomenon among USA medical students suggested that the increased risk for suicide among physicians might initiate at school. These findings suggest that burnout among medical students is an important predictor of subsequent suicidal ideation, even in the absence of depressive symptoms. This type of external pressures continues in postgraduate students.

Investigations in medical student populations have also been conducted in Mexico. One study was carried out by the Faculty of Psychology of the National Autonomous University of Nuevo León to assess the relationship between depression, anxiety and psychosomatic symptoms<sup>5</sup>. This exploratory work used self-administered questionnaires with a convenience sample of 506 psychology students from two universities of Monterrey, Nuevo León. To assess psychosomatic symptoms, the questionnaire on patient health was used, for depression, Beck's inventory was employed and anxiety was assessed by means of the social scale for adolescents. Of all participants, 129 (25.5%) had moderate or high-severity psychosomatic symptoms; only 4 (0.8%) showed severe depression and only 2 (0.4%) displayed levels of anxiety higher than 75% of the scale's highest score. Psychosomatic symptoms severity increased proportionally with increasing levels of anxiety and depression, with the direct relationship between somatic symptoms severity, depression and anxiety being confirmed.

In view of all this, it is clear that the prevalence of both psychiatric symptoms and disorders in medical

students generates the need to perform follow-up studies. Furthermore, investigating the evolution of symptoms into disorders and the influence these have on student general functioning is required. This information can be obtained by applying measuring instruments at crucial moments of medical student's life, which, based on the experience of the Psychology Department, are admission to medical school, contact with patients initiation and the internship year. In this work, we describe the generation and results of a system for acquisition and analysis of information on medical students, designed with the purpose to acquire knowledge about the student population. The main objective of this study is to know the factors associated with the presence of psychopathology, as well as its prevalence in first, third and sixth-year students of the Faculty of Medicine of the Autonomous University of San Luis Potosí.

## **Methodology**

### ***Ethical considerations***

The present research work was approved by the Bioethics Committee of the Faculty of Medicine of the Autonomous University of San Luis Potosí. Participation was voluntary, without any pressure or coercion. Prior to answering the surveys, each participant signed an informed consent document.

### ***Type of study***

To achieve the proposed objectives, a cross-sectional, comparative, observational study was carried out. Sampling was by convenience, and an attempt was made to include 100% of students listed at first, third and sixth year of the Autonomous University of San Luis Potosí MD curriculum in the 2011-2012 academic period.

### ***Measuring instruments***

The self-administered, electronic measuring instrument was created in the Microsoft Access 2010 program. This instrument feeds the answers to an Excel database under previously established coding. Each student was assigned a code on order to be able to be identified later if he/she wanted. The only person able to accede to the codes was the main investigator.

### **ADHD screening scale<sup>6</sup>**

It was designed by the World Health Organization (WHO). It consists of 18 items grouped in 2 sections. We used section A, comprised by the six first items, which have demonstrated better prediction of attention deficit/hyperactivity disorder (ADHD).

### **STAI<sup>7</sup>**

The State-Trait Anxiety Inventory (STAI) is an instrument designed to assess 2 independent concepts of anxiety: anxiety as a state (transient emotional condition) and anxiety as a trait (relatively stable propensity to anxiety). It consists of a total of 40 items (20 for each one of the concepts).

### **Zung depression scale<sup>8,9</sup>**

This is a brief scale where the patient must indicate how often he/she experiences each one of the explored symptoms. It comprises 20 items grouped in four factors: depressive, biological, psychological and psychosocial. Each item is answered according to a 4-value Likert-type scale (ranging from 1 to 4) that refers to the frequency of symptom occurrence. The time frame of reference is current moment.

### **Almonte-Herskovic sexual orientation questionnaire<sup>10</sup>**

Sexual orientation is qualitatively assessed. The questionnaire consists of 90 items corresponding to personal history, sexual orientation, sexual identity, sexual activity, sexual attraction, fantasies, pornography and history of sexual abuse. Answers are qualitative and are scored as present or absent for each condition.

### **AUDIT alcohol consumption scale<sup>11</sup>**

This scale consists of 10 items. Total score ranges from 0 to 40. If the cutoff value is set at 13, sensitivity is 0.70 and specificity is 0.78 for dependence.

### **Fagerström nicotine dependence test<sup>12</sup>**

It consists of 6 items. It is a very brief and easy to apply questionnaire, and it is therefore a good screening device and a useful guide to plan treatment strategy and intensity. Approximate application

time is 7 min and is directed to individuals from 11 to 20 years of age.

### MBI<sup>13</sup>

The Maslach Burnout Inventory (MBI) is an instrument about feelings and thoughts in relation to the subject's own interaction with work, which is comprised by 22 items assessed in a Likert-type scale. Factorization of all 22 items yields, in most works, 3 clusters –namely, emotional exhaustion, depersonalization and personal accomplishment at work–, which constitute the 3 MBI subscales. Subjects above percentile 75 are included in the “high” category, those between percentiles 75 and 25, in the “intermediate” category and those below percentile 25, in the “low” category. Although there are not clinical cutoff scores to measure the existence or not of burnout, the syndrome is defined by emotional exhaustion and depersonalization high scores, in addition to low score for personal accomplishment. These 3 scales have high internal consistency, with exhaustion being regarded as a continuous variable with different severity degrees.

### EDI 2<sup>14</sup>

The eating disorder inventory 2 (EDI 2) was designed to assess/detect both anorexic and bulimic psychopathology; however, it does not provide specific diagnostic of eating behavior disorder. The usefulness of the instrument was corroborated in the study by Arellano et al., published in 2009, where, based on the 91 original questions, a logistic regression model was constructed including significant answers to 5 questions of clinical interest obtained from EDI 2, and the addition of which to the model allowed for it to obtain a specificity score of 95% and positive predictive value of 90%. Therefore, we used this model owing to its high discrimination of healthy population, which makes it convenient for screening.

The questions that showed higher significance are: I plan to go on a diet, I am terrified of gaining weight, I have tried to vomit to lose weight, I pig out and I feel I cannot pass, and I feel dissatisfied with the shape of my body.

### Plutchik suicide risk scale<sup>15</sup>

This scale was designed to assess suicide risk by means of 15 dichotomous answer (yes/no) items, and

enables discriminating between normal individuals and patients with suicide attempts or with a history thereof. It includes questions related to self-harm previous attempts, intensity of current ideation, feelings of depression and hopelessness and other aspects related to attempts. Each affirmative answer has a 1-point value, and each negative answer 0 points; total score is obtained by adding all items and it can range from 0 to 15. In the Spanish version, the authors propose a cutoff point of 6.

### **Operational definition of variables**

According to the type of variable and its measuring scale, variables were divided in groups:

- Sociodemographic characteristics.
- Presence and type of psychopathology (burnout, depression, anxiety, attention deficit disorder, consumption of substances [including alcohol and tobacco] and risky eating behaviors).
- Associated factors (familial dysfunction, adaptability, sexual identity).

### **Measuring instrument application**

Groups of 20 students were gathered, according to programming with teachers responsible for each grade. The electronic measuring instrument was applied at the computing laboratory of the Autonomous University of San Luis Potosí Faculty of Medicine.

### **Data processing and statistical analysis**

In the exploratory analysis of data, quantitative variables univariate analysis was carried out with mean, standard deviation, maximum value and minimum value; the analysis of qualitative variables used percentage distribution and frequencies. In the bivariate analysis, variables were compared using the chi-square test to establish the state of relationship between them, with statistical significance being considered in those values with a p-value < 0.05. The Statistical Package for the Social Sciences version 19 was used for data statistical processing.

### **Results**

Three-hundred and twenty-three surveys were collected among first, third and sixth-year medical students on May 2012. Sampling included in all cases more than 80% of students listed at each level (first-year

**Table 1. Table of socio-demographic data**

Characteristic	Frequency	Percentage
Gender:		
Male	172	53%
Female	151	46.7%
Age:		
Mean	21.45	
Median	21	
Minimum	17	
Maximum	33	
Grade:		
First	126	39%
Third	115	35.6%
Sixth	82	25.4%
Cohabitants:		
Family and/or partner	263	81%
Alone	33	10.2%
Friends	27	8.4%
Paternal level of education:		
College, postgraduate degree	235	72.8%
High-school or technical degree	52	16.1%
Primary or secondary education	36	11.1%
Maternal level of education:		
College, postgraduate degree	200	61.9%
High-school or technical degree	84	26%
Primary or secondary education	38	11.8%
Illiterate	1	0.3%
Child of physician:		
Yes	51	15.8%
Has partner:		
Yes	158	48.9%
Practices sport:		
Yes	147	45.5%
Place occupied as child in the family:		
First	153	47.4%
Last	87	26.9%
Other	83	25.7%

included 100% of its population). Mean age was 21.5 years, with a minimum of 17 and maximum of 33. The summary of sociodemographic data of the study population is shown in table 1.

### **Burnout-associated factors**

Among the conditions developing during medical training we can mention the burnout syndrome. Significant relationship was found between burnout level and grade level (Fig. 1), where moderate and high level

were directly associated with grade level, with higher burnout level being noticed at higher grades. Higher percentage of moderate and high emotional exhaustion factor was observed in third-year students, in comparison with a low percentage of emotional exhaustion in first-year students ( $p < 0.001$ ). Greater percentage of high burnout depersonalization factor is also shown in sixth-year students in comparison with higher percentage of low depersonalization factor in first-year students. With regard to low level of accomplishment, more students were found at sixth year ( $p < 0.05$ ).

The variables associated with burnout syndrome were grade level, depression, risky eating behavior and practicing sports. The association with grade level, depressive symptoms and risky eating behaviors was positive ( $p < 0.05$ ,  $< 0.001$  and  $0.001$ , respectively), whereas with practicing sports, it was negative ( $p < 0.05$ ).

Within the variables significantly associated with burnout, depressive symptoms were found to increase and sport practicing subjects to decrease with higher levels of exhaustion factor, and a high level of depersonalization is associated with increased frequency of symptoms of anxiety (Fig. 2).

### **Anxiety, depression and ADHD show different significant associations**

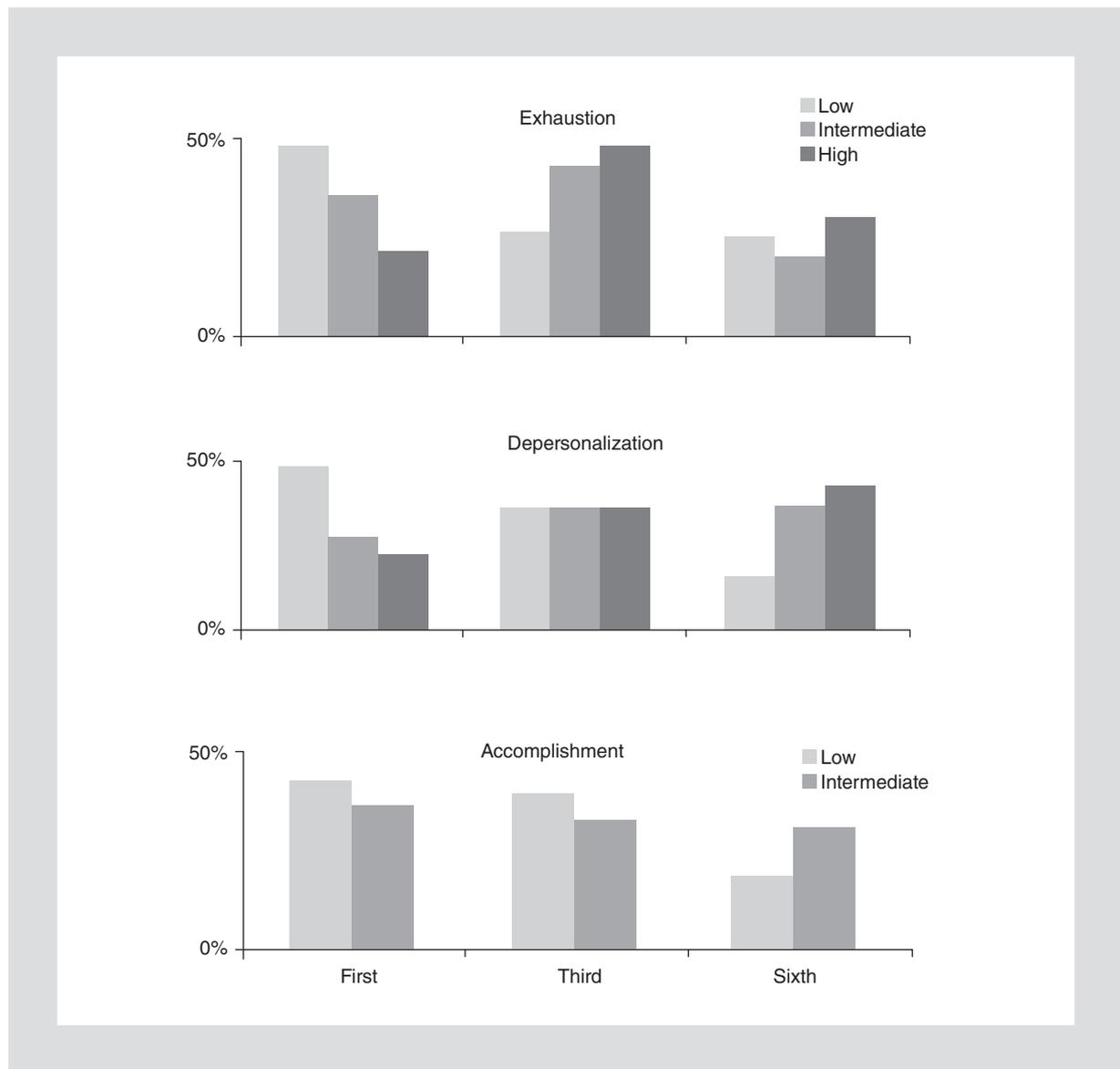
State of anxiety, trait anxiety and suicide risk variables were found to be associated with depression ( $p < 0.001$ ) (Fig. 3). ADHD probable cases of have higher depersonalization level ( $p < 0.001$ ) (Fig. 4). Higher percentage of risky eating behaviors ( $p < 0.05$ ) and higher proportion of depression is observed in comparison with those who are not probable ADHD cases ( $p < 0.001$ ).

### **Variables significantly associated with gender**

We found higher prevalence of depression ( $p < 0.001$ ), trait anxiety ( $p < 0.05$ ), suicide risk ( $p < 0.001$ ) and sexual abuse in females ( $p < 0.05$ ). In addition, females practice less sport in comparison with males ( $p < 0.001$ ).

### **Alcohol consumption, sexual identification and sexual abuse**

With regard to variables associated with harmful alcohol consumption (Fig. 5), depression ( $p < 0.05$ ),



**Figure 1.** Burnout factors associated with grade level. Higher level of exhaustion is observed at superior grade levels ( $p < 0.001$ ); there is higher level of depersonalization at higher grade levels ( $p < 0.001$ ) y and the level of accomplishment decreases at higher grades ( $p < 0.05$ ).

harmful tobacco consumption ( $p < 0.001$ ), trait anxiety ( $p < 0.001$ ) and living alone ( $p < 0.05$ ) were the characteristics with significant relationship. Students with non-heterosexual sexual identification showed more harmful alcohol consumption in comparison with heterosexuals ( $p < 0.05$ ).

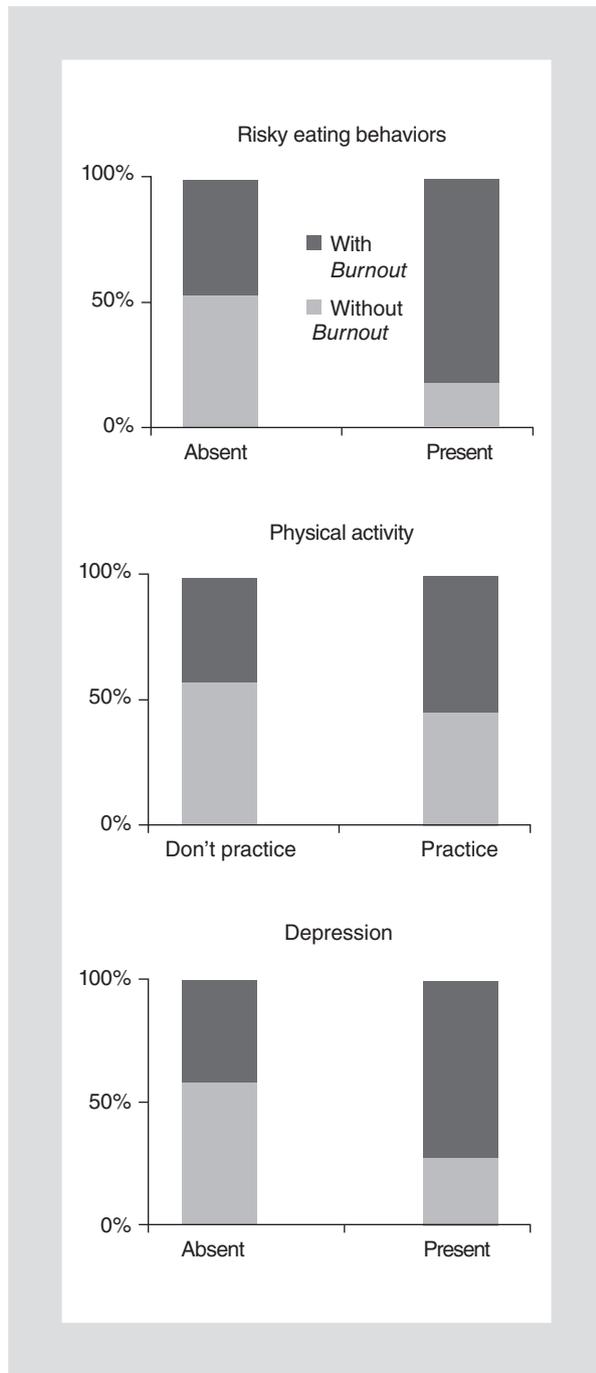
### Sexual abuse

Sexual abuse was one of the variables that had important significant associations, with depression ( $p < 0.001$ ), trait anxiety ( $p < 0.001$ ), alcohol consumption

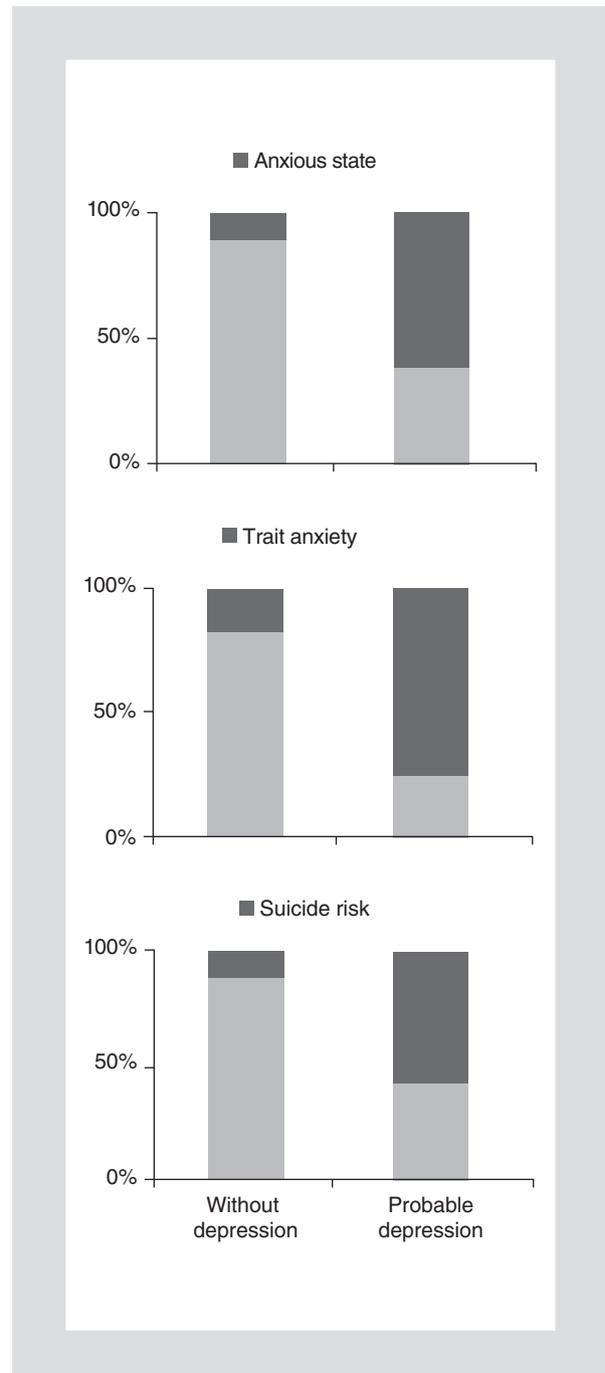
( $p < 0.01$ ), suicide risk ( $p < 0.001$ ) and risky eating behaviors ( $p < 0.001$ ) standing out (Fig. 6).

### Factors associated with risky eating behaviors

Students with risky eating behaviors had higher exhaustion factor ( $p < 0.001$ ), and there were also more students with suicide risk ( $p < 0.01$ ) and a significant association with trait anxiety ( $p < 0.01$ ). The frequency of risky eating behaviors was higher in third and sixth-year students in comparison with first-graders ( $p < 0.01$ ).



**Figure 2.** Burnout syndrome-associated factors. There is greater presence of risky eating behaviors ( $p < 0.001$ ), decreased physical activity ( $p < 0.05$ ) and more depressive syndromes in students with burnout ( $p < 0.001$ ).



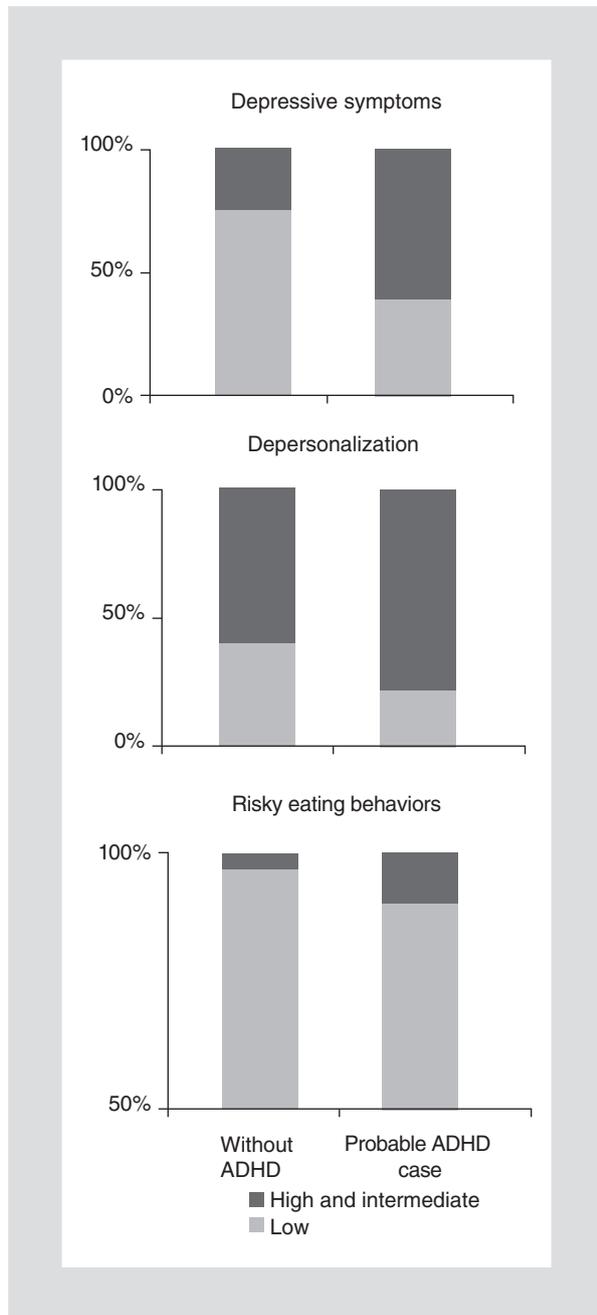
**Figure 3.** Probable depression-associated factors. An association is observed between probable depression and anxious state ( $p < 0.001$ ), trait anxiety ( $p < 0.001$ ) or suicide risk ( $p < 0.001$ ).

## Sexual identity

Other notable findings were with regard to sexual identity, where higher percentage of trait anxiety ( $p < 0.001$ ), depression ( $p < 0.01$ ) and sexual abuse ( $p < 0.05$ ) was observed to exist among non-heterosexuals. Lower

acceptation of own sexual identity was observed among non-heterosexuals ( $p < 0.001$ ), whereas heterosexual students showed lower acceptance of homosexuality in other people ( $p < 0.001$ ).

The summary of the psychopathology prevalence found is shown in table 2.

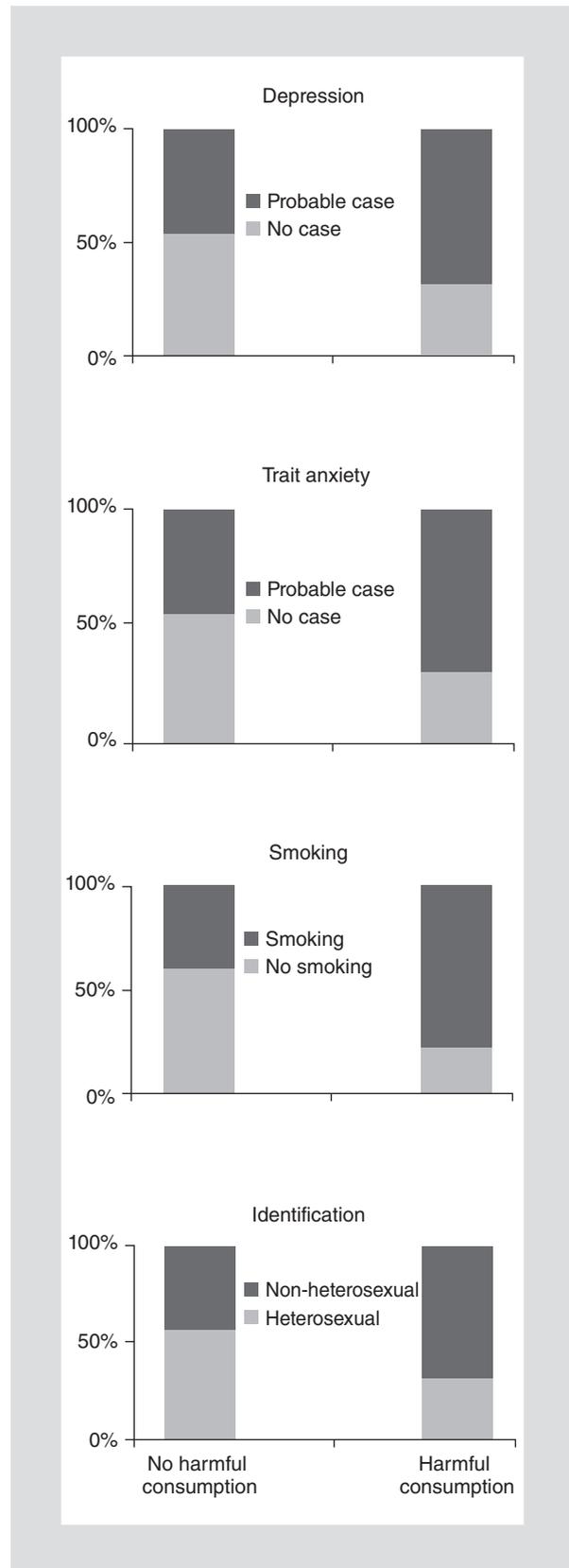


**Figure 4.** Probable ADHD cases-related factors. Higher prevalence of patients with depressive symptoms ( $p < 0.001$ ), high depersonalization level ( $p < 0.001$ ) and risky eating behavior ( $p < 0.05$ ) was found in ADHD probable cases.

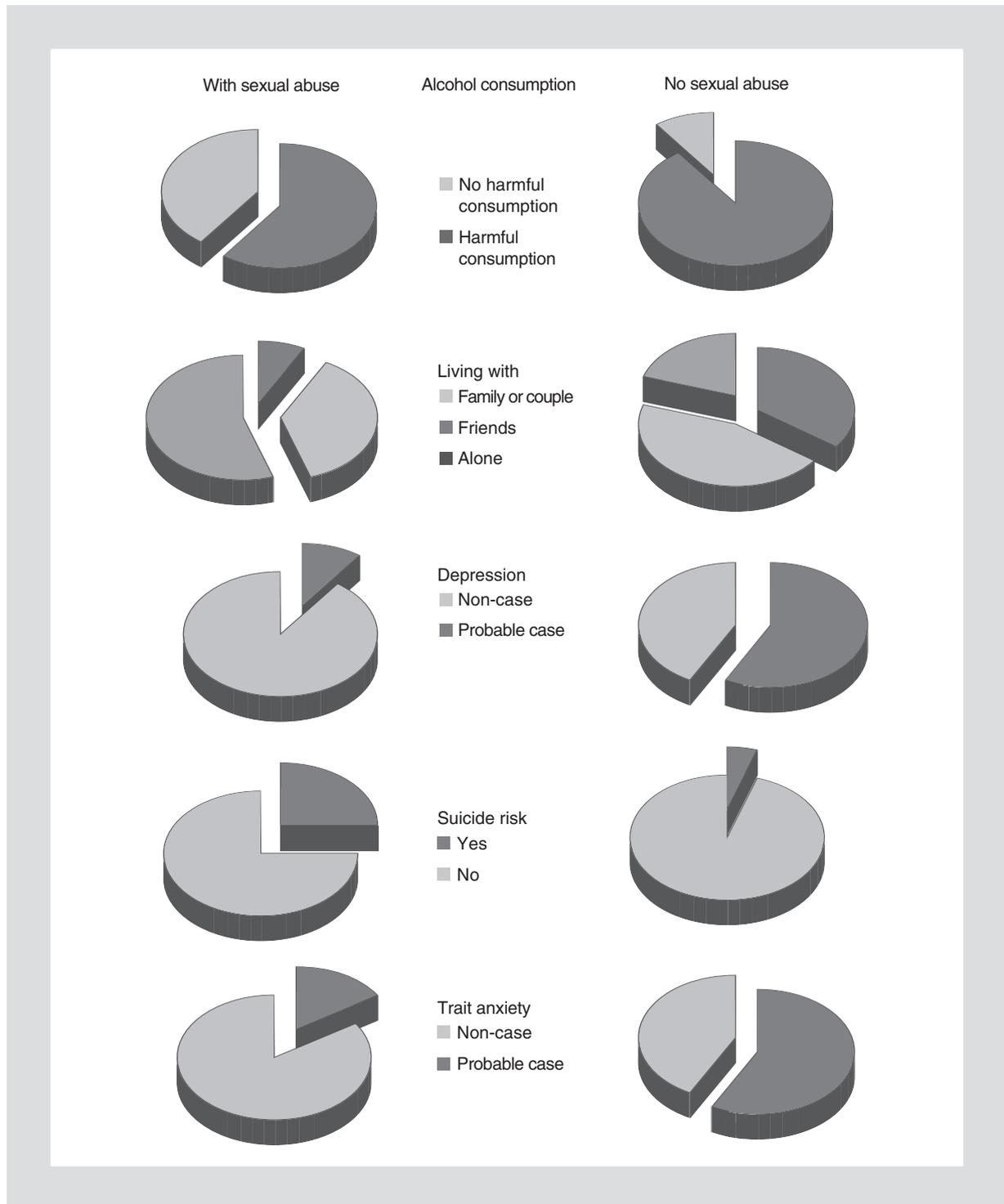
## Discussion

### Description of the study population in comparison with same age nation-wide population

Within this investigation we found relevant socioeconomic data: in a medical student population of the



**Figure 5.** Harmful alcohol consumption-associated factors. There was more harmful alcohol consumption in students with probable depression ( $p < 0.05$ ), anxiety ( $p < 0.001$ ), smoking ( $p < 0.001$ ) and non-heterosexual sexual identification ( $p < 0.05$ ).



**Figure 6.** Sexual abuse-associated factors. The presence of sexual abuse was associated with harmful alcohol consumption ( $p < 0.001$ ), living alone ( $p < 0.001$ ), probable depression ( $p < 0.001$ ), suicide risk ( $p < 0.001$ ) and trait anxiety ( $p < 0.001$ ).

hinterland with a mean age of 21 years, most of them live with their family, where most parents have an elevated level of education –college or postgraduate degree–, half the population is first-born, has a couple or

practices some sport. Noteworthy, the level of education of the student parents in our study population is extremely high in comparison with the national mean, where only 4.2% has college education, while in our

**Table 2. Table of probable diagnoses prevalence**

Probable diagnosis	Frequency	Percentage
State of anxiety	43	13.3
Depression	77	23.8
ADHD	90	27.9
Moderate burnout	91	28.2
High burnout	43	13.3
Risky eating behaviors	17	5.3
Harmful alcohol consumption	56	17.3
Moderate and severe tobacco dependence	52	16.1
Suicide risk	31	9.6
Sexual abuse	17	5.3
With one or more probable diagnoses	190	60
With only one probable diagnosis	95	30
With two probable diagnoses	39	12
With three or more probable diagnoses	63	18

population more than 60% has a college degree. If we consider that 47% of the 18-25-year old population is still lives with their parents, while in our study group 81% of our population lives with their parents, we can conclude that the help parents can offer to this population makes them fit to continue in pursue of a college degree and, in turn, this is surely linked to parental level of education<sup>16</sup>.

### **Context of our findings in comparison with other reports**

While the state of anxiety in our students was 13.3%, very similar to that in the general population<sup>1</sup>, where the prevalence of any anxiety disorder is 15%, probable cases of depression were reported in 23.8%, a significantly higher level than that reported for any mood disorder in 18 to 29 year-old people in the general population, which is 9.2%. In this regard, data obtained from medical students indicate a clear association between depression and conditions present in this population, which to begin with should not be very different from those in the general population, such as

trait anxiety, sexual identity, presence of ADHD, suicide risk and sexual would be. However, there are factors that increase as students advance on their training, such as burnout syndrome, which shows a clear association with depression, as well as risky eating behaviors, and both these factors might account for the increased prevalence of depression in medical students with regard to the general population<sup>1</sup>.

In investigations of the Mental Health Institute of the University of Belgrade School of Medicine, in Serbia, the most common mental disorders among students were reported to be substance abuse, depression, self-harm, suicide, and anxiety and eating disorders, situations that mostly agree with the findings of our investigation<sup>2</sup>.

Another important difference of our population were the cases of probable ADHD, which were also elevated with regard to the general population since, for the same age, any impulse control disorder is observed in 6.8% of the population<sup>1</sup>. This might be influenced by the high sensitivity of our employed instrument. The first 4 items assess inattention and the latter 2 hyperactivity. It could be happening that symptoms of other conditions that are also highly prevalent and that produce inattention, such as any disorder of the anxiety spectrum, are being detected. Therefore, this instrument could be useful to detect students who have these deficiencies, even if not precisely in association with ADHD.

Moderate-level burnout syndrome was found in one third of the population, for an elevated level of the same syndrome in 13.4%, with this syndrome progressively increasing while the student is in medical school, as reported in other studies<sup>4,17</sup>. The prevalence of burnout syndrome in the academic setting shows wide variations depending on several circumstances, such as the used instrument, the criteria to diagnose it and the discipline or specialty the student is being trained for. While in studies among medical students of North American universities the reports vary between 11.2% and 45%<sup>4,18</sup>, investigations in Latin American students report it ranges from 12.6% to up to 85.3%<sup>15,19</sup>. In spite of this disparity, we can conclude from our study that medical students have a predisposition for the development of psychopathology, since nearly 40% of assessed students were within moderate and high burnout levels. In addition, this studio supports that results' reporting should be standardized, rescuing the posture that high levels of exhaustion and depersonalization and low levels of accomplishment indicate the presence of burnout<sup>20</sup>.

In other results that define this population<sup>16</sup>, moderate and severe tobacco dependence was found in 16.1%, which might be consistent with observations at the national level, since active smokers in the urban population are 20.8% and 13.8% in the general population. However, harmful alcohol consumption among students is 17.3%, higher than the 6.1% in the population that meets alcohol abuse or dependence criteria in the 18-65-year old population. This result might differ due to different measuring instruments used at each study, since AUDIT was created following the WHO criteria on problems related to alcohol consumption, whereas the national survey on addictions looks for abuse or dependence diagnostic criteria. This higher percentage in our population might support the usefulness of this instrument to be used for screening. Also relevant was the finding of a significant increase in risky eating behaviors with grade level and burnout, which translates into different psychodynamical and physical manifestations appearing as a response within a social context with regard to several stressing stimuli<sup>14</sup>.

It is important to note that the cases of probable ADHD are a focus of attention, since addressing this phenomenon might be important to treat other of its associations, such as depressive symptoms, depersonalization and risky eating behaviors. In addition, harmful alcohol consumption is yet another important point to address, since it was found to be associated with other entities such as depression, trait anxiety, non-heterosexual orientation and tobacco dependence. Since 9.6% of the population was found to have suicide risk, with this being observed more in females, depressed subjects, students with risky eating behaviors and sexual abuse, it is highly relevant proposing that this risk profile should be proactively and systematically searched for in order to impact on this phenomenon. Similarly, sexual abuse, which was detected in 5.3% of our population, is another condition that should be proactively looked for, since it was associated with living alone, harmful alcohol consumption, trait anxiety, depressive symptoms and non-heterosexual sexual identity.

Non-heterosexual students are another risk group that should be aided, since it was related to trait anxiety, depression and suicidal ideation. It should be noted that in this group, the fact that 50% of non-heterosexual students do not accept their sexual orientation is an additional stressor. In fact, one fifth of non-heterosexuals reject their own sexual identity, a situation that might be related to the process of sexual

identity development some of them are experiencing, which might change subsequently. The comparison of our results with those published in an exploratory study on sexual orientation development in adolescents of both genders of Santiago de Chile shows a series of differences<sup>10</sup>. In our study, a higher prevalence of non-heterosexual students was observed (11.8%) than that reported in said study (6%); in addition, greater identification diversity was observed in our study: 5% predominantly heterosexual, 2.8% bisexual, 1.5% predominantly homosexual, 1.9% homosexual and 0.6% not sure were detected. In the referred study, there were only reports on 3% predominantly heterosexual, 2.2% bisexual and 0.7% other orientation, without reports about the rest of classifications. According to the Pan American Health Organization estimates<sup>21</sup>, at the end of this stage, approximately 6-8% of adolescents will have a homosexual orientation, a situation that was reported with lower prevalence in both studies.

Studies have had problems to demonstrate the prevalence of homosexuality in the population, and have failed at the moment of distinguishing between several components of sexual orientation: desire, behavior and identity. A methodological difficulty in interviews is that the person is only asked if he/she is a lesbian or homosexual. In some cases, associated stigma or people who are not open with regard to their own sexuality can result in wrong answers. A large study in the USA estimated the prevalence of homosexuality<sup>22</sup>. This study demonstrated that 1.3% of women and 2.7% of men had sexual behaviors with people of the same sex in the preceding year, and that 4.1% and 4.9% of men and women, respectively, have had them since 18 years of age. In Great Britain, 6% of the population has been described to have had homosexual behaviors; in Denmark, less than 1% of the population described itself as homosexual; in Canada, 1% of the population has been described as homosexual and 1% as bisexual<sup>23</sup>. These results are consistent with what our surveyed subjects expressed.

## **Conclusión**

Finally, it is important to highlight that, although this study does not allow for causative inferences to be made as in any other cross-sectional study, it does demonstrate that 60% of students is likely to develop psychopathology, with more ADHD, anxiety, depression and burnout cases being noticed. Therefore, special attention should be considered due to the dimension and repercussion this problem has among

students. In addition, associated factors might help us to create a risk profile: female students, those who live alone, those with a history of sexual abuse, those with non-heterosexual identification, those who do not practice any sport, as well as those who have any condition among the most prevalent, since identifying and treating this population could prevent severe psychopathology syndromes. Therefore, initial assessment systematization is essential, and follow-up of the students is necessary, according to what the methodology applied in our investigation revealed, which will redound to advantages for health, teaching, hospital performance and student quality of life.

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