Prevalence of depression symptoms, anxiety symptoms and suicidal risks in students of Medicine at College "Pontificia Universidad Católica de Chile"

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Introduction: *Neuropsychiatric disorders are highly prevalent in Chile, Teenagers and young adults belong to the highest risk groups. The objective of this work is to determine prevalence of depression symptoms, anxiety symptoms and suicidal risks in students of Medicine at College "Pontificia Universidad Católica de Chile", in order to study its relationship with other psychosocial variables and to compare these with prior studies.* ***Methods:*** *A voluntary/self reported survey was designed including the 12-Item General Health Questionnaire (GHQ-12), Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI) plus questions extracted from the National Health Survey on suicidal risks.* ***Results:*** *559 out of 857 students answered (65.2%). 33,.6% had a positive GHQ-12; 66.4% had a positive BDI and 34.9% had a positive BAI. On suicidal risks, 19.1% has a moderate risk and 6.1% has a high risk A link was found with variables, such as sex, course, fail a subject during a career and a significant and stressing event.* ***Conclusions:*** *Students of Medicine of the College Pontificia Universidad Católica have a high prevalence of depression symptoms, anxiety symptoms and suicidal risks than common citizens in Chile. Additionally, our students have higher rates against other studies made in the same population during previous years.*

Key words: *Medicine students, depression, anxiety, suicide.*

Introduction

Neuropsychiatric disorders are highly prevalent in Chile. 22% of the population meet the criteria of experiencing some of these during the last 12 months[1] and are the main source of disease burden in our country[2]. According to the latest study on Disease Burden and Attributable Burden, 23.2% of the years lost due to disability or death (AVISA) are determined by neuropsychiatric conditions. The National Health Survey (ENS) 2016-2017 states that in the population there is 15.8% prevalence of depression symptoms and 2.2% of suicidal ideas during the last 12 months[3].

Data from the World Health Organization (WHO) for 2016 states that in Chile the rate is 13 people our of 100,000 inhabitants. This is the second cause of death on people between 15 to 34 years old[4]. According to the Institute of Forensic Medicine, from all suicides committed during 2011 to 2017 in the Capital (Región Metropolitana) 15.6% of the total are aged between 15 to 24. This figure has remained

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rather steady since 2011[5].

Mental health pathology is not distributed in the same manner in the population. One of the highest risk groups is teenagers and young adults[6]. Several authors are concerned about the mental health of college students. Scholars believe that all academic activities may influence on their physical & psychological welfare and could even contribute to create anxiety & depression symptoms[7]. This is how at this stage people may experience a higher level of stress, as they are at an identity forming period, exploring their sexuality and intimacy, independence from parents and choosing a career. All this may, eventually impact on their mental health.

A subgroup of young adults who usually have depression symptoms, anxiety and high rates of suicide are medicine students[9]. This is how some authors have compared such prevalence with those existing in the general population, thus getting disappointing results. Rotenstain et.al[10] made a systematic review published in JAMA in 2017, including 195 studies from 43 countries, in order to heterogenize prevalence of depression symptoms and suicidal risks on the existing evidence. This Review concludes that 27.2% of students had depression or depression symptoms. In turn, 11.1% reported suicidal ideas during their academic life. From those students showing a positive screening, only 15.7% was under treatment. On the other hand Dyrbye et al. systematic review conclude that both depression and anxiety symptoms were more evident than in the general population. It is necessary to perform more studies about the potential causes and solutions[11].

In this same line, Santander et al. investigated prevalence of depression symptoms, anxiety symptoms in students of Medicine at College "Pontificia Universidad Católica de Chile", in 2007[12]. This study reported that 39% of students had a risk of neuropsychiatric disorders and 25% had mostly mild to moderate depression symptoms. Among the associated variables Santander et al. state there is a higher prevalence in women and in those students who have experienced a stressful life event, understanding this is an acute economic/social/psychological/family event causing social maladjustment or psychological stress.

The objective of this work is to determine prevalence of depression symptoms, anxiety symptoms and suicidal risks in students of Medicine at College "Pontificia Universidad Católica de Chile", in order to study its relationship with other psychosocial variables and to obtain current results in order to compare them with previous results.

Method

This research deals with an Analytical, Individual and cross cutting study. This Study was carried out during the third and fourth week of June, 2019. It was previously authorized by the Undergraduate Department of the School of Medicine UC and it was approved by the Ethics Committte.

All Medicine students from first to seventh year of the Pontificia Universidad Católica de Chile (n=857) were invited to participate by using e-mail and social media. Prior to the results, the students expressed their informed consent explaining the objective and usefulness of the study and anonymity/confidentiality was granted, for further management of the data. 559 students answered the questions. This is 65.2% of the total. The survey was designed with Google Forms and data were exported to Microsoft Excel, at a first instance. The process was supervised by the Research Team.

In order to gather the information, a self reported survey was designed, including 4 Sections. The first Section was made up of 11 questions related with sociodemographic features. The second Section included tools: 12-Item General Health Questionnaire (GHQ-12)[13] and Beck Depression Inventory (BDI)[14] [15]. The third Section included questions from the Beck Anxiety Inventory (BAI). The fourth Section was made up of questions from the National Health Survey (ENS) on suicidal risk. The GHQ-12 is designed to detect the risk of anxiety and/or depression illness and it is applicable to clinical work, population survey or cross-cutting studies (16). The tool has 12 questions, 4 options each. Two of the answers have a score equal to zero, the two others have a score of 1. In this way the minimum and maximum scores are o and 12, respectively. The suspect and indicative category is deemed

as positive GHQ-12, with a score higher or equal to 5. This tool was chosen, because it may be applied to a significant group of people in a limited period of time, because it is easy to understand for the interviewee and because it is validated in Chile[17]. Additionally, this tool has been used in two other previous publications on medicine students from the same University, which allows us to compare results[18].

DBI is a tool with 21 questions assessing the presence and intensity of depression symptoms. The content of the items depicts the importance given by the authors to the cognitive feature of depression. Only a third part of the questions makes reference to physiological or behavioral aspects.[12]. It has been studied in the young population in Chile, showing a high internal consistency, an acceptable correlation between test and re-test and proper discrimination among the queried population with depression and anxiety emotional symptoms and the non queried population. The range of the score goes from 0 to 63. Depression was defined with a score equal or higher than 10, classified as "positive BDI ". Regarding depression intensity it was classified as "mild", with a score between 10 to 18; moderate, between 19 to 29; and severe, higher than 30 points.

BAI is a tool designed to obtain a self report on the anxiety level of the participant. DBI is a tool made up of 21 questions assessing the presence and intensity of anxiety symptoms. It has been studied and validated for college population in Chile, proving an acceptable psychometric performance, with proper validity of the construct, convergent and discriminating, and also with a solid internal consistency[20]. The range of the score goes from 0 to 63. This is classified within 4 ranges: 0-7 indicates minimum anxiety, 8-15 mild anxiety, 16-25 moderate anxiety and 26-63 severe anxiety (Beck and Steer, 1993). For the purposes of this study we have considered as "positive BAI" ranges going from "moderate" to "severe"[21].

Section on suicidal risks includes 3 questions extracted from the ENS National Health Survey (ENS) 2016-2017: Have you ever seriously thought about committing suicide?. During the last 12 months, have you ever devised a plan for committing suicide? and during the last 12 months, have you ever tried to commit suicide?. Potential answers were - Yes (1 point); No (0 points). In this way all the scores were considered and the participant were classified in low risk (total score=0); moderate risk (total score=1) high risk (score equal or higher than 2).

Dependent variables were depression symptoms (positive GHQ-12 or positive BDI), anxiety symptoms (positive BAI) and suicidal risks. Independent variables were - sex, age, course, type of higher education funding, living alone, failing one subject during the career, previous diagnosis of mental health pathology and occurrence of stressful life events during the last 12 months.

Category variables are presented as number of cases and percentages. In order to compare percentages the chi square test was used. Any p value lower or equal to 0.05 was considered as significant. All the analysis were made using the Program SPSS 17.

Results

The survey was voluntarily answered by 559 students, out of 857 (65.2%). From all the total survey respondents, 297 were women (53.1%) and 262 men (46.9%). The group with the highest amount of answers was the second year (n=99) and the one with the fewest answers was sixth year (n=62). 62.5% of students are within the ages 18 to 22. 34.6% between 23 to 27 and 1.8% 27 years old or older. 52,2% has his/her original family (father and mother) as his/her single source of study funding. On the other hand, 81.7% lives with some members of his/her original family. 9.5% lives alone. 8.1% has failed a subject during his/her career. 54,6% of the survey respondents reported to have experienced a stressful life event during the last 12 months. 32.9% has been diagnosed mental health pathologies. 24.7% is currently under treatment, because of previous mental health diagnosis.

From all the students, 33.6% scored positive GHQ-12, including categories as suspect and indicative of psychopathology. Sex variable is strongly associated with positive GHQ-12 (p=0,04). From all the survey respondents obtaining positive GHQ-12 (n=188), 61.7% (n=116) are women and 38.3% (n=72) are men.

When analyzing courses distribution, there is a strong correlation with positive GHQ-12 (p=0,09). Second year was the group with the highest amount of positive GHQ-12 students (43.4%, n=43). Next is third year (41.9%, n=39). The course with the lowest amount was seventh year (22,1%, n=17). There is a strong correlation between the type of higher education funding (credit, paid by third parties, and mixed) and positive GHQ-12 (p=0.02). From all the students funded by means of credit, whether it is a Credit granted by the State (CAE) or others (n=35), 54.3% (n=19) had a positive GHQ-12. On the other hand, from all the students who are funded by third parties (whether it is direct/extended family or scholarships (n=410), 32.7% (n=134) got a positive GHQ-12. There is a strong correlation with failing one subject during his/her career (p=0,024). From all the students who failed a subject during his/her career (n=45), 8.9% (n=22) has a positive GHQ-12. Finally, there is a strong correlation with experiencing a stressful life event during the last 12 months (p<0,001). From all the students who experienced a similar event, (n=305), 74.1% (n=226) had a positive GHQ-12. There was no significant correlation when living alone.

Regarding depression symptoms, 66.4% of students had a positive BDI. Sex variable has a significant correlation, where 73.4% of interviewed women had symptoms, compared with 58.4% in men. When making an analysis per courses, a significant correlation arises, with a value p<0.000. It is important to highlight that the course with the highest percentage of students with positive BDI was second year 78.6% (n=76). Next is fourth year, 74.6% (n=50), sixth year, 72.6% (n=45). Third year, 72% (n=67). Finally, 74.1% of the positive BDI students reported to have experienced a stressful life event during the last 12 months, and there is a positive correlation between both variables with p<0. There was no significant correlation between the tool and the higher education funding source, living alone or fail a subject during the career.

Regarding anxiety symptoms, 34.9% (n=195) had a positive BAI. The sex variable has a significant correlation, where 25.2% of interviewed men had symptoms, compared

with 43.4% in women. Regarding correlation with courses, this is significant, 67% (n=66) of the second year survey respondents had anxiety symptoms. Next is sixth year, 61.3% (n=38) had symptoms. Next is third year, 65.6% (n=61). There is a strong correlation among those students who lived alone and the anxiety symptoms, where p<0.049, that means 47.2% of the students live alone or had a positive BAI. Finally, 44.9% of students who had lived a stressful life event had symptoms, and there is a significant correlation between both. Correlation between BAI, funding source or subject fail is discarded (Table 1, Figure 1, Table 2).

Regarding suicidal risks, 19.1% of the survey respondents had a moderate risk. 6.1% had a high risk. There was a statistical significant correlation, p <0.02 between suicidal risks and subject fail during the career. In fact, of the 45 students who failed a subject during the career, 42.2% had a moderate or high suicidal risk. In turn, 32,5% of those who reported to have experienced a stressful life event during the last 12 months had a moderate or high suicidal risk. This correlation is statistically significant. Significant statistical correlation between suicidal risk, sex, course, higher education funding source, living alone is discarded. It is important to highlight that suicidal risk has a statistically significant correlation, with a p<0 value, with respect to the three previous tools. It is important to highlight that there is a significant statistical correlation between mild/moderate/severe suicidal risk and and the positive GHQ-12 tools, positive BDI and positive BAI. (Table 3)

Finally, 32.9% of all survey respondents have been diagnosed with a mental health pathology, and there is a significant statistical correlation. 48,4% of students with positive GHQ-12; 82.1% with positive BDI; 57.1% with positive BAI had a previous diagnosis. In turn, 45.7% of students having suicidal risks, had a previous diagnosis.

Out of all students with a diagnosis, 75% was under treatment. Most of them had a psychological and medication treatment. (Table 4)

Discussions and Conclusions

The percentage of answers in our study was 65.2% out of all students,. That is higher than the amount of answers observed in surveys about this same topic and submitted online. However, according to the type of sample selected, data cannot be extrapolated to the students from other faculties of College Pontificia Universidad Católica, to other colleges or the general population.

The rate of depression/anxiety symptoms and suicidal risk in Chilean population is lower than that found in this study. 15.6% of the population is estimated to have depression symptoms; 2,2% had suicidal ideas during the last few months, compared with our results where 66.4% had depression symptoms and 6.1% had high suicidal risk. However, these results are not strictly comparable, as various measuring tools were used. Regarding international literature, Rotenstain et al. in their systematic review concluded that 27,2% of medicine students had depression or depression symptoms. This figure is lower than the results in our study. In the systematic review, 24 studies used BDI as a tool, where 37.5% of the students had a positive BDI. Regarding suicidal risks, the review reported a risk of 11,1% during the academic period. However, the tools used -compared with this study- were different. Finally, out of all the students showing a positive screening, only 15.7% was under treatment, unlike our results where 24,7% was under treatment.

When comparing the results of this study with those of the previous edition published by Santander et al. we can observe some differences Currently, 33,6% of the students had a positive GHQ-12. This figure is lower to what was found at that time, when 39% had it. In comparison, the percentage of students with positive BDI increased from 25% a un 66.4%. Suicidal risks have not been addressed in previous publications. Finally, at that time 12% of the students was under mental health treatment. This figure is lower than what was found in our study. Regarding variables measured in that study, there is a constant correlation between depression/anxiety symptoms and being a woman or having experiences a stressful life event during the last 12 months.

Both international literature and local research have associated depression rate in medicine students with features related with their personality and with high academic demand[22]. There are no systematic reviews proving such correlation. It is stated only as a potential theory. It would be interesting to analyze this correlation in the coming studies.

As a conclusion, students of Medicine of the College Pontificia Universidad Católica have a high prevalence of depression symptoms, anxiety symptoms and suicidal risks than common citizens in Chile. Additionally, our students have higher rates against other studies made in the same population during previous years. As a next challenge we propose to study the potential causes associated to the increasing number of symptoms, in order to work on these aspects in the future.

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