Mental Health among Medical Students: Roles of Dorm Life and Exposure to Clinical Environment

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Abstract

Background: Medical students are exposed to high risk mental health disorders. Owing to the higher probability of exposure to the mentioned risk factors among dorm-resident students and senior students, the present study was conducted to explore mental health disorder and its relationship with higher academic year and dorm residence, among the medical students of Shiraz University of Medical Sciences.

Methods: This cross-sectional study was conducted among 270 medical students in 2019. A multi-stage random sampling was applied. A standardized self-administered questionnaire, which comprised of demographic variables and General Health Questionnaire-28, was used.

Results: The mean age of the participants was 22.52±2.26 years. About 166 individuals (61.5%, CI 95%: 55.69, 67.30) showed symptoms of mental health disorders, and anxiety was the most common mental disorder with a prevalence of 16.7% in medical students. There were significant relationships between mental health and higher age (P=0.001), clinical phase students (P<0.001), single students (P=0.044), dorm residence (P<0.001), and those in poor economic condition (P=0.047).

Conclusion: The chance of developing mental health disorders in dormitory students and in clinical phase students was 2.48 (CI 95%: 1.36, 4.53) and 2.97 (CI 95%: 2.12, 4.15) times higher than in non-dormitory and basic phase students, respectively. Due to the higher prevalence of mental health disorders among medical students compared to the general population, interventions should be done at the university level to promote the students' mental health, especially clinical and dormitory students. In addition, policymakers should design and implement a comprehensive student mental health care program nationally.

Introduction

Compared to ordinary population, medical students are exposed to a higher risk of mental health disorder (MHD),[1] so that the prevalence of the mentioned illnesses among medical students in Iran and in the world has been reported about 55% and 33.8%, respectively.[2, 3]

Mental health disorders may disturb educational, social, and professional performance in students. Depression and anxiety, for instance, can negatively affect academic achievement in students.[4, 5] Depression can, furthermore, disrupt their social function, through impaired social communication, diminished cooperativeness, and impairment of social perception,[6]

which, per se, compromise their professional performance, causing a decreased quality of patient care.[7]

Mental health disorders have also negative impacts on the professional performance of students, undesirably affecting health service provision across the society, including decreased professional performance, decline of the physicians' commitment to goals, and the physician's reduced empathy.[8, 9]

Any attempts for the prevention of these adverse effects require the identification of the risk factors of mental health disorders, which can be fueled by three groups of environmental factors, namely, being away from family and friends, hence being deprived of their emotional support, heavy workload, and death and suffering in hospital settings.[10-12]

Being away from family and friends can compromise the students' mental health as a result of inadequate emotional support,[10] and a higher probability of substance abuse due to absence of parental guidance.[13] Studies have shown that loneliness is an important risk factor of mental health disorders among medical students.[14]

Study and training workload is significantly associated with burnout syndrome in senior students.[15] Long working hours and workload have been shown to be significantly associated with stress and sleep disorders, which, in turn, cause a decline in personal accomplishment, deficits in academic performance, and a rise in the prevalence of mental health disorders in students.[11, 16] Also, medical students are exposed to major life events, like death and suffering of patients and countless pathological processes, which are significantly associated with anxiety, depression, and substance abuse.[12]

Given the higher probability of exposure to the foregone risk factors among dorm-resident students (who are away from family and friends) and senior students (who are exposed to death and suffering in hospitals and higher workload), compared to other students, and its impact on their quality of life and healthcare service provision, the present study aimed at investigating mental health and its relationship between higher academic year and dorm residence, among the medical students of Shiraz University of Medical Sciences in 2018-2019.

Methods

Study Design and Participants

This cross-sectional study was conducted among medical students of Shiraz University of Medical Sciences in 2018-2019. Shiraz University of Medical Sciences is a type one medical university in Iran, with roughly 400 medical student admissions annually. It currently has a total of over 2800 medical students. Here, medical students acquire the necessary skills for providing health services, following a seven-year curriculum (basic science: first three years – clinical science: final four years).

The inclusion criteria were being an actively enrolled medical student at Shiraz University of Medical Sciences in 2018-2019, and willingness to participate, and the exclusion criteria was being a guest student.

The sampling was done using multistage cluster random sampling with the probability proportional to size. The students were classified by being in their basic science or clinical science year, sex, and year of admission to the medical school. The sampling clusters in each category were classified by class or year of admission (in case of being in basic science phase) or by hospital (in case of being in clinical science phase). The clusters were drawn by convenience sampling, and then the samples were taken from each cluster using systematic random sampling.

According to a previous pilot study done before, assuming an odds ratio of MHD about 2 (comparing dorm-resident students and/or in clinical years with non-dorm-residents and/or in basic science years) and the prevalence of the outcome (MHD) in basic phase students group about 40%, type I error rate of 5%, type II error rate of 20%, the sample size was estimated at 270.

Survey Tools

Data were collected using a self-administered questionnaire, which comprised of the two sections of background information and mental health-related information. The data pertaining to demographic information were also gathered, including age, sex, marital status, record of mental diseases in family, study year (basic or clinical), accommodation arrangements (with family or at dorm), socioeconomic status and their satisfaction with their medical major.

The Persian version of General Health Questionnaire-28 (GHQ-28) was used to measure their mental health. The reliability and validity of this questionnaire have already been approved.[17, 18] The questionnaire has 4 subscales of somatic symptoms, anxiety, social dysfunction, and severe depression, with 7 questions to each subscale. The Likert scoring system of 0, 1, 2, 3 is used for scoring; accordingly, each subscale is scored 0 to 21, with an overall score ranging from 0 to 84. For each subscale, scores of 1 to 13 are categorized as healthy status and those of 14 to 21 as disorder status. The higher the score, the lower the mental health quality. Participants with overall scores of 23 and higher were assigned to the impaired group and those with lower grades to the healthy group.

Statistical Analysis

The data were collected and computerized and

then, using statistical techniques, refined for statistical analysis. Following the grading scale of GHQ questionnaire, five binary variables were introduced as the dependent variables of the study, namely the overall mental health (at risk of mental health disorder/mentally healthy), and symptoms including somatization (absent/present), anxiety (absent/present), social dysfunction (absent/present), and depression (absent/present). The main independent variables were being a dorm resident and studying at clinical stage. Using chi-square test, we assessed the underlying factors associated with the study outcomes. Binary logistic regression was adopted for modeling the factors associated with the study outcomes. To do this, in addition to the primary independent variables, the underlying factors with strong potential associations with the study outcomes (a bivariate P value of less than 0.25) including Gender, Age, Marital Status, Field Satisfaction and Economic Status were also entered into the regression model. P values of less than 0.05 (P<0.05) were regarded as significant. Data analysis was performed using SPSS software, version 19.

Ethical Consideration

Prior to distribution of the questionnaires, the students filled out informed consent forms. The questionnaires were anonymous and solely utilized for research purposes (Approval No. IR.sums.med. rec.1398.230).

Results

Two hundred seventy individuals, comprising 144

(53.3%) men and 126 (46.7%) women, entered the study. The mean age of the participants was 22.52±2.26 years. Of the participants, 52.2% were studying in the clinical science years and 47.8% in basic science years. Dormitory students comprised 51.9% of the students.

The mean general health score was estimated at 29.66 with a standard deviation of 15.47. According to the results of the present study, 61.5% of the medical students showed symptoms of mental health disorders, with the prevalence of somatization symptoms, anxiety, social dysfunction, and depression at 7%, 16.7%, 6.3%, and 10.7%, respectively. 30.7% of the males and females suffered from MHD. The prevalence of MHD was higher among single students than married ones. Also, younger students were more vulnerable to MHD and showed higher prevalence of anxiety and depression. The results of Chi-square test and t-test showed that there were significant relationships between mental health and higher age (P=0.001), clinical phase students (P<0.001), single students (P=0.044), dorm residence (P<0.001), and poor economic condition (P=0.047) (Table 1). Also, the prevalence of anxiety, social dysfunction, and depression was higher among dorm students. 22.6% of dormitory students and 37.8% of clinical phase students suffered from mental health disorders (Figures 1 and 2).

The chance of developing mental health disorders in dormitory students and in clinical phase students was 2.48 (CI 95%: 1.36, 4.53) and 2.97 (CI 95%: 2.12, 4.15) times higher than non-dormitory and students in basic sciences phase, respectively. Also, the chance of developing anxiety, depression, and social dysfunction

Table 1: General health Status and its subscales in Shiraz Medical students based on Demographic features

	Total N (%)	Abnormal	P value	Abnormal	P value	Abnormal	P value	Abnormal	P value	Abnormal	P value
Gender		Somatization		Anxiety		Depression		Social Function		GHQ28	
Male	144 (53.3)	8 (3)	0.309	20 (7.4)	0.190	11 (4.1)	0.078	11 (4.1)	0.453	83 (30.7)	0.165
Female	126 (46.7)	11 (4.1)		25 (9.3)		18 (6.7)		6 (2.2)		83 (30.7)	
Age											
19-24	179 (66.3)	10 (3.7)	0.191	25 (9.3)	0.095	16 (5.9)	0.180	11 (4.1)	0.886	97 (35.9)	0.001*
>25	91 (33.7)	9 (3.3)		20 (7.4)		13 (4.8)		6 (2.2)		69 (25.6)	
Marital Status											
Single	229 (84.8)	16 (5.9)	0.939	39 (14.4)	0.705	27 (10)	0.274	17 (6.3)	0.084	135 (50)	0.044*
Married	41 (15.2)	3 (1.1)		6 (2.2)		2 (0.7)		1 (0.3)		31 (11.5)	
Positive History of Psychiatric Disorder											
NO	237 (87.8)	18 (6.7)	0.485	43 (15.9)	0.081	28 (10.4)	0.147	15 (5.6)	0.953	146 (54.1)	0.912
Yes	33 (12.2)	1 (0.4)		2 (0.7)		1 (0.4)		2 (0.7)		20 (7.4)	
Field Satisfaction											
Satisfied	242 (89.6)	12 (4.4)	0.001*	37 (13.7)	0.074	21 (7.8)	0.005*	11 (4.1)	<0.001*	145 (53.7)	0.121
Not satisfied	28 (10.4)	7 (2.6)		8 (3)		8 (3)		6 (2.2)		21 (7.8)	
Economic Status											
Low	15 (5.6)	1 (0.4)	0.921	2 (0.7)	0.399	1 (0.4)	0.316	2 (0.7)	0.442	13 (4.8)	0.047*
Intermediate	170 (63)	13 (4.8)		25 (9.3)		22 (8.1)		11 (4.1)		107 (39.6)	
High	85 (31.5)	5 (1.9)		18 (6.7)		6 (2.2)		4 (1.5)		46 (17)	

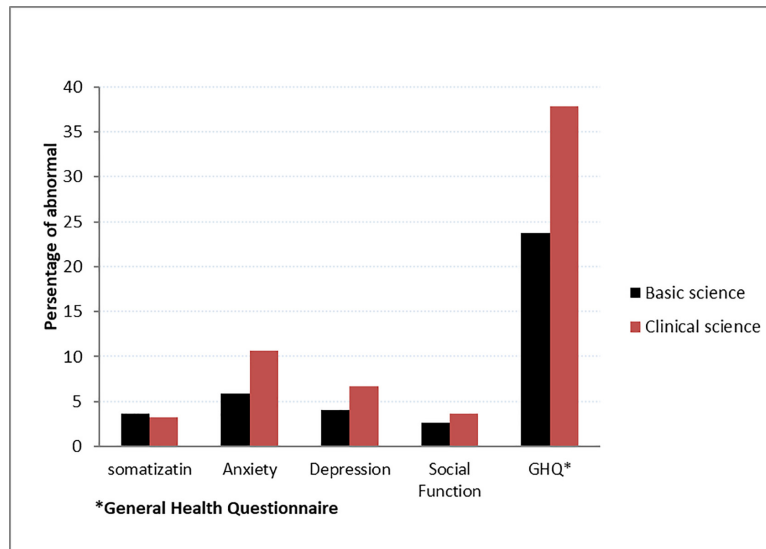*P value<0.05 is statistically significant; GHQ: General health Questionnaire

Figure 1: The prevalence of mental disorders among medical students by their educational phase
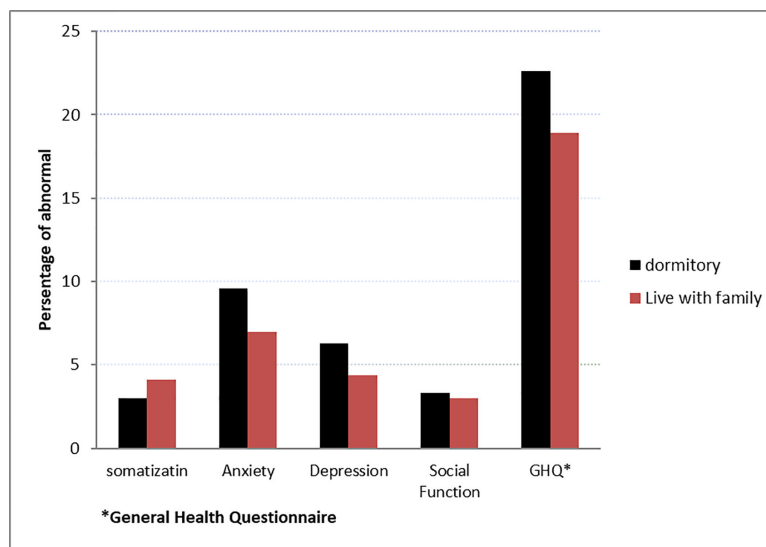

Figure 2: The prevalence of mental disorders in medical students by their location

in clinical year students was about 4 times (CI 95%: 1.8, 9.13), 3.5 times (CI 95%: 1.17, 10.96), and 5 times (CI 95%:1.27, 21.03), respectively (Table 2).

Discussion

According to the results of the present study, more than half of the medical students of Shiraz University of Medical Education (61.5%) showed symptoms of mental health disorders. One out of every six student had anxiety, and one out of ten showed symptoms of depression. The prevalence of somatization disorder and social dysfunction were, respectively, 7% and 6.3%. Based on the multivariable analysis of binary logistic regression, dorm students portrayed higher levels of anxiety and mental health disorder. Furthermore, the prevalence of anxiety, depression, social dysfunction, and mental health illness, was significantly higher for clinical phase students, compared to that in basic sciences students.

Our results indicated that the prevalence of mental health disorders among medical students was considerably higher than that of Iranian general population (roughly 23.4%),[19] a finding which conforms to the results from similar foreign studies.[20] Studies have maintained that pleasant life events, like marriage and giving birth, occur less among medical students compared to the general population, causing a higher prevalence of mental health disorders in medical students.[21]

Another point to note is that the rate of mental health disorders among medical students is higher in Iran compared to that of other countries. Only 32.1% of medical students in Dubai showed symptoms of mental health disorders.[22] Similar statistics for Nepalese medical students was 20.9%,[3] and another study on the mental health disorders of 951 medical students showed a rate of 48%.[23] Moreover, the prevalence of depression among the current study students (10.7%) indicated a higher rate compared to

Table 2: Multivariate analysis of mental health, Anxiety, Depression, Social Dysfunction, Educational level, and Living accommodation*

Independent variables	Crude OR (CI 95%)	P value	Adjusted OR (CI 95%)	P value
MHD				
Educational level				
Basic science students	Ref.		Ref.	
Clinical phase students	2.73 (2.02,3.69)	<0.001	2.97 (2.12,4.15)	<0.001
Living accommodation				
Non-dormitory life	Ref.		Ref.	
Dormitory life	1.55 (0.94,2.53)	<0.001	2.48 (1.36,4.53)	.003
Anxiety				
Educational level				
Basic science students	Ref.		Ref.	
Clinical phase students	1.96 (1.29,2.97)	<0.001	4.06 (1.80,9.13)	0.001
Living accommodation				
Non-dormitory life	Ref.		Ref.	
Dormitory life	1.41 (1.09,1.83)	<0.001	1.30 (0.99,1.69)	0.05
Depression				
Educational level				
Basic science students	Ref.		Ref.	
Clinical phase students	1.95 (1.17,3.25)	<0.001	3.54 (1.17,10.69)	0.025
Social Dysfunction				
Educational level				
Basic phase students	Ref.		Ref.	
Clinical science students	0.92 (.53,1.57)	<0.001	5.174 (1.27,21.03)	0.022

*Adjusted for all independent variables in the study including gender, age, marital status, history of psychiatric disorder, field satisfaction and economic status

that of the US medical students (3.8%).[24]

The higher prevalence of mental health disorders among Middle Eastern medical students has also been maintained by other studies.[24] Studies show that a higher prevalence of such factors as numerous exams, workload, and limited job opportunities may justify the foregone difference.[25] Another study has concluded that Iranian high school students undergo considerable psychological pressure before the entrance exam for admission to medical schools; consequently, after admission, this population is more prone to mental health disorders.[26] Factors like difficult economic circumstances and unstable political environment have also been suggested to account for the different prevalence of mental health illness among Middle-Eastern medical students.[27] Furthermore, this discrepancy could be due to different sampling selection and measurement tools used to assess mental health status of medical students.[28]

The prevalence of mental health disorders, anxiety, and depression was significantly higher for students in their clinical science years, compared to those in basic science years. The higher the stage of the studies in the program, the more exposed are the students to isolation and loneliness, due to being away from family and friends during clinical studies, and, as mentioned earlier, loneliness is a predisposing factor for stress and anxiety.[29]

It is, furthermore, demonstrated that, compared to the 1st and 2nd year medical students, those in senior year experience more negative life events like death

and suffering of patients, and also personal events such as illnesses and deaths of family members.[12, 21] These major life events are known to contribute to mental health illnesses.[30]

Our finding showed that the higher the stage of the studies in the program, the worse gets the students' mental health status; this conforms to the results of other studies, especially during the transition from basic to clinical science phase.[31, 32] Deterioration of mental health status starts in the first year of admissions and develops into the later years of study. In this regard, some associations have been made about financial concerns, burnout, academic pressure, worries about the future, and pedagogical shortcoming.[21, 33-35]

However, a few studies suggest a more prevalent depression and anxiety during the first years of training due to difficulties of adaptation from college to medical school.[33, 36] Also, dorm students, compared to others, showed higher rates of mental health disorders and anxiety, which conforms to the findings of a number of other studies.[29] As mentioned before, inadequate social and emotional support is related to depressive and anxiety symptoms.[37] Accordingly, dorm students, owing to being away from their families and as a result of inadequate emotional support, are at a greater risk of anxiety, depression, and mental health disorders, compared to others.[10] In addition, dorm life exposes the students to issues like non-hygienic conditions, homesickness, sleep deprivation, stress of studies, and lack of privacy due to sharing their room with

others.[38-40] Furthermore, the prevalence of substance abuse is higher among students living in dormitories, compared to others, in the absence of parental guidance and insistance of their peers.[13] All of the above will eventually bring about anxiety and a decline in mental health status of dorm-residing students.[10]

Considering the representativeness of the sample of the present study, and since Shiraz University of Medical Sciences is a first class top-ranking university in Iran, only admitting those with higher entrance exam ranks, it is acceptable to generalize our results to students of the Iranian top-one universities as well as those of developing countries.

Limitations

As a cross-sectional study, the present research solely states the presence or absence of a relationship between the study variables and mental health. Bringing into light the causal relationships between them requires further cohort studies. We should also note that some students who were not willing to participate in our study may differ from those who participated in study in some epidemiological features and even mental disorders. This can lead to underestimation of the prevalence of mental health disorders. Furthermore, as socioeconomic state is not a unified concept and is associated with many dimensions, including age, education of the family, occupation of the participants' fathers and mothers, and even race and ethnicity,[14] we did not verify the exact definition for different levels of socioeconomic status in our questionnaire, so we preferred to rely on the participants' self-report of their socioeconomic state according to their family situation. Thus, further studies are needed to determine the exact relationship between socioeconomic state and mental health among medical students.

Moreover, the authors conducted this study using GHQ-28 questionnaire. Therefore, there is a risk of bias due to self-reported data in this study. More in-depth studies are recommended in which the diagnosis of mental disorders are confirmed by psychiatric interviews.

Conclusion

Our findings showed a worrisome rate of mental health disorders among medical students of Shiraz University of Medical Sciences, Shiraz, Iran. Being a dorm-resident and a senior student were two important risk factors of mental health disorders among medical students, which were significantly associated with anxiety, social dysfunction, and depression.

Ethical Standards

This study was approved by the local Ethics Committee of Shiraz University of Medical Sciences (IR.SUMS. MED.REC.1398.230).

Authors' Contribution

Alireza Salehi and Aida Rastegarian conceived the idea of this article and supervised the research. Hossein Molavi Vardanjani, Malihe Sousani Tavabe and Aida Rastegarian performed the research, analyzed the data, and drafted the manuscript. Alireza Salehi, Malihe Sousani Tavabe and Hossein Molavi Vardanjani performed target prediction and analysis as well as related enrichment processes. All authors reviewed the manuscript, read, and approved the final version of the manuscript.

Conflicts of Interest: None declared.

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