

# Social and Mental Health Status monitoring program in medical sciences students: Better late than never

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## ABSTRACT

**Background:** as medical sciences students are going to be health care staff, and health care staff health affects the wellbeing of patients, monitoring of all aspects of their health including mental and social health are vital. In this study, we report the mental and social health status and the relation between them in medical sciences students.

**Methods:** This is a cross-sectional study which is done on 607 first semester medical sciences students of Shiraz University of Medical Sciences from September first to November first, 2017. Data collection was web-based. Twenty-eight item generalized health questionnaire and the 20-item Keyes questionnaire were used to investigate mental and social health, respectively. Ordinal logistic regression was used to investigate any independent association between mental and social health status and predictor factors.

**Results:** Of all students, 338(55.7%) were male. Mean age of the participants was 20.51±2.02 years. Of all participants, 144(23.7%) had abnormal mental health, and 499(82.2%) had intermediate social health. According to the multivariable analyses Keyes score was independently associated with the mental health status (Adjusted OR: 0.794; 95% CI: 0.761-0.828), lower GHQ score (Adjusted OR: 0.862; 95% CI: 0.826-0.898) and lower family dimension (Adjusted OR: 0.295; 95% CI: 0.110-0.794) were independently associated with social health status.

**Conclusion:** a very low proportion of students in this study had severe mental disorder and low level of social health status. Social health status of the students was independently associated with their mental health status and vice versa.

**Keywords:** Health status; Mental health; Community psychiatry; Students, Medical; Iran

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## INTRODUCTION

During the last decade, the world-wide prevalence of mental disorders has shown an increasing trend<sup>1-3</sup>. This trend has been more rising in developing/less developed regions, where socio-economic and cultural restrictions may cause more limitations in the life of their citizens<sup>4-6</sup>.

High prevalence of mental health disorders amongst university students is a matter of public health concern, globally<sup>7</sup>. Medical sciences students are more prone to develop mental disorders than the normal population<sup>8</sup>. A meta-analysis conducted by Rotenstein et al showed that almost one-third of the medical students were depressed and even 11.1% of them had suicidal ideation<sup>9</sup>. Such a higher prevalence of these disorders among them may be the result of academic overload<sup>10</sup> and can cause their role impairment<sup>6</sup>.

In addition to mental health disorders, social health problems may affect the quality of life, social efficacy, and social performance of students<sup>11</sup>. Social health includes five domains which are social integration (the evaluation of the quality of one's relationship to society and community), social acceptance (the construal of society through the character and qualities of other people as a general category), social contribution (the belief that one is a vital member of society, with something of value to give the world), social actualization (the evaluation of the potential and trajectory of society), and social coherence (the perception of the quality, organization and operation of the social world, including a concern for knowing about the world)<sup>12</sup>.

Social health may be a highly influential factor in the case of the academic performance of the medical sciences students (13). However, there are only a few studies conducted on this population<sup>14,15</sup>. Accordingly, there are scarce data on the current situation of social health among them.

In Iran, previous studies have reported that about 50 and 9% of medical science students probably suffer from mental and social health disorders, respectively<sup>5,15</sup>. In the state of dealing with such a high prevalence of mental disorders amongst these students lack of a proper health monitoring program in our universities to actively find and help the affected students is sensed. In this situation mentally or socially unhealthy people may enter the healthcare system and as a consequence it may have negative effects on the quality of healthcare services and population health. Apart from its devastating effect on healthcare services, lack of health monitoring programs at universities can cause catastrophic mental and functional problems for the affected students because it is found that only a few of them seek help<sup>9</sup>.

This study was designed and performed as the first phase of the monitoring program for the mental and social health of medical sciences students at Shiraz University of Medical Sciences.

## METHODS AND MATERIALS

This is a cross-sectional study that was done on 627 newly accepted students of Shiraz University of Medical Sciences from September first to November first, 2017. We analyzed

the baseline data of the web-based monitoring program for the mental and social health of Shiraz University of Medical Sciences students. All the participants had just passed the Iranian University Entrance Exam (IUEE) and got permission to study in a field of study based on their rank in the exam. The inclusion criteria were being a newly accepted student at Shiraz University of Medical Sciences and willingness to participate in the study and the exclusion criteria were incomplete answers or unwillingness to participate. Those who did not want to participate in the study were visited in the psychiatric counseling office of Shiraz University of Medical Sciences and were excluded from the study. Those who had the inclusion criteria for the study were asked to fill the electronic questionnaires at the prepared computers in the registration site after the verbal consent was taken. They were also allowed to fill the questionnaires at their home or wherever that they felt comfortable, to respect their privacy. A web-based platform was designed including three sections including socio-demographic, mental health, and social health questionnaires. The Ethics Committee of Shiraz University of Medical Sciences approved the study and its procedures (approval code: IR.SUMS.MED.REC.1397.057).

**Variables and instruments:** All participants were asked about their age, gender, family dimension, past physical or mental medical history, parental characteristics including monthly income and their job.

Data on social health was collected using a 20-items questionnaire developed by Keyes and Shapiro in 2004<sup>16</sup>. Based on studies that were done by Bagsorkhi. et al. in 2013<sup>17</sup> and Hashemi et al. in 2014<sup>18</sup>, Cronbach's alpha was 0.81 and confirmatory factorial analysis showed the best fit for this questionnaire.

The 20-items Keyes questionnaire includes four, three, three, five and five items that were about social actualization, social coherence, social integration, social acceptance, and social contribution, respectively. Scoring was done on the basis of the 5-point Likert scale. One represented strongly disagree and 5 represented strongly agree. The scoring was reversed for nine questions. The total scores between 20 to 46 (first tertile), 47 to 74 (second tertile), and 75 to 100 (last tertile) indicated low, intermediate, and high social health, respectively. In each subgroup, the score between 5 to 9 (first tertile), 10 to 14 (second tertile), and 14 to 20 (last tertile) were considered as low, intermediate, and high health status.

Twenty-eight item General Health Questionnaire (GHQ-28) which was developed by Goldberg and Hillier in 1979 was used to assess the students' mental health<sup>19</sup>. The Cronbach's alpha of the Persian version of the GHQ-28 developed by Malakouti et al. in 2006 was 0.9 (20). In another study done by Asadi et al. in 2007 Cronbach's alpha was 0.73<sup>21</sup>. GHQ-28 has four different subscales including somatization (items 1-7), anxiety (items 8-14), social dysfunction (items 15-21), and depression (items 22-28). Scoring was done on the basis of 4-point Likert scores (0 to 3). The total GHQ score between 0 to 22, 23 to 60, and 61 to 84 indicated healthy, mild to moderate mental disorder status, and severe mental disorder status, respectively. The scores between 0 to 6 in each subscale indicated healthy and 7 to 28 indicated an unhealthy status. The sum of the monthly income of the students' family (both of father and mother income) was categorized into

three monthly income groups including under 100 US \$ as low socioeconomic, between 100 to 230 as moderate, and more than 230 as high socioeconomic status.

Students with high ranks in the Iranian University Entrance Exam (IUEE) study medicine, dentistry, and pharmaceuticals; those with intermediate ranks in the exam study physiotherapy, radiology, and nursery, and those with low ranks in the exam study in other majors.

Using the International Standard Classification of Occupations<sup>22</sup>, the occupation of participants' parents was classified as professionals, clerks, elementary occupations, housewives, and other occupations.

**Data preparation and statistical analysis:** Data were described with means  $\pm$  standard deviation (SD) and relative frequencies. Bivariate correlations were assessed using the Chi-square test. An ordinal logistic regression model was applied to assess the independent association of mental and social health and two multivariable models were fitted. Variables with a p-Value of less than 0.25 were selected to be included in the multivariable analyses. Adjusted odds ratio (OR) and its 95% confidence interval (CI) were estimated. A p-Value of less than 0.05 was considered statistically significant. Statistical Package for the Social Sciences version 25 was used for statistical analysis of data.

## RESULTS

Of 627 participants, 607 students were included in the study (participation rate was 96.8%). Female/male ratio was at 1:1.26. The mean age of the participants was  $20.51 \pm 2.02$  years. Of all the participants, 16 (2.6%) reported that they had physical diseases and none of them reported any mental disorders. Only 2 (0.3%) participants reported mental disorders in their family members.

The mean score of GHQ questionnaire was  $16.96 \pm 14.28$ . The prevalence of mentally healthy students regarding GHQ questionnaire was 76.3% (Table 1). Also, the mean  $\pm$  SD scores for somatization, anxiety, social dysfunction, and depression subscales of the GHQ questionnaire were  $3.91 \pm 4$ ,  $4.22 \pm 4.41$ ,  $6.35 \pm 3.4$ , and  $2.46 \pm 4.1$ , respectively. The mean score of Keyes questionnaire was  $68.1 \pm 6.76$ . The prevalence of students with a high social health score was 17.5% (Table 1). The mean  $\pm$  SD scores for social actualization, coherence, integration, and contribution subscales of Keyes questionnaire were  $11.03 \pm 1.88$ ,  $13.6 \pm 2.03$ ,  $14.15 \pm 3$ ,  $13.31 \pm 2.24$ , and  $16 \pm 3.32$ , respectively.

Low social actualization was more common than the other dimensions of the social health among the participants (18.3%, Figure 1). Regarding the mental health status in different GHQ subscales, social dysfunction was the most impaired subscale among the participants with 54% non-healthy (Figure 2). None of the independent variables was independently associated with the mental health status except for the Keyes score (Adjusted OR: 0.793; 95% CI: 0.761-0.828). According to the multivariable analyses, lower GHQ scores (Adjusted OR: 0.862; 95% CI: 0.826-0.898) and lower family dimension (Adjusted OR: 0.295; 95% CI: 0.110-0.794) were independently associated with social health status (Table 2).

Table1. Demographic variables of students based on their mental and social health status

Demographic variables		Mental health status			p-Value**	Social health status			p-Value**
		Healthy	MMD*	SMD*		Low	Intermediate	High	
Gender	Female	257 (76)	72 (21.3)	9(2.7)	0.606	1(0.3)	284(84)	53(15.7)	0.423
	Male	206 (76.6)	59 (21.9)	4(1.5)		1(0.4)	215(79.9)	53(19.7)	
Participants' ranks in the IUEE	High	190(84.4)	33(14.7)	2(0.9)	0.002	1(0.4)	179(79.6)	45(20)	0.708
	Intermediate	85(68.5)	37(29.8)	2(1.6)		0(0)	104(83.9)	20(16.1)	
	Low	188(72.9)	61(23.6)	9(3.5)		1(0.4)	216(83.7)	41(15.9)	
Occupation of Participants' fathers	Professionals	134(77.5)	32(18.5)	7(4)	0.402	1(0.6)	138(79.8)	34(19.7)	0.489
	Clerks	96(78)	25(20.3)	2(1.6)		1(0.8)	91(74)	25(20.3)	
	Elementary occupations	99(73.3)	34(25.2)	2(1.5)		0(0)	112(83)	23(17)	
	Other	134(76.1)	40(22.7)	2(1.1)		0(0)	152(86.4)	24(13.6)	
Occupation of Participants' mothers	Professionals	122(79.2)	27(17.5)	5(3.2)	0.599	2(1.3)	123(79.9)	29(18.8)	0.368
	Clerks	22(78.6)	6(21.4)	0(0)		0(0)	24(85.7)	4(14.3)	
	Housewives	314(75.3)	95(22.8)	8(1.9)		0(0)	345(82.7)	72(17.3)	
	Other	5(62.5)	3(37.5)	0(0)		0(0)	7(87.5)	1(12.5)	
Family dimension	=<4 people	353(79.3)	86(19.3)	6(1.3)	0.011	1(0.2)	368(82.7)	76(17.1)	0.068
	5-6 people	87(66.4)	39(29.8)	5(3.8)		1(0.8)	111(84.7)	19(14.5)	
	>=7 people	23(74.2)	6(19.4)	2(6.5)		0(0)	20(64.5)	11(35.5)	
Socioeconomic status	Low	164(68.3)	66(27.5)	10(4.2)	0.001	1(0.4)	204(85)	35(14.6)	0.475
	Moderate	173(82.8)	33(15.8)	3(1.4)		1(0.5)	165(78.9)	43(20.6)	
	High	126(79.7)	32(20.3)	0(0)		0(0)	130(82.3)	28(17.7)	

\*MMD: Mild to Moderate Mental Disorder, + SMD: Severe Mental Disorder, ++chi-square test

Table 2: Results of ordinal logistic regression using mental and social health status as response three ordered categories

Mental health status as the dependent variable					
Parameters	Regression coefficient	Standard error	p-Value	Odds ratio	95% CI of OR
Intercept 1	-14.283	1.5144	0.000	6.267	3.221-1.219
Intercept 2	-11.051	1.4842	0.000	1.587	8.653-0.000
<b>Rank in IUEE (Low rank as reference)</b>					
High rank	-0.040	0.2884	0.890	0.943	0.546-1.691
Intermediate rank	0.423	0.2821	0.133	1.500	0.879-2.655
<b>Socio-economic status (High as reference)</b>					
Low	0.368	0.3065	0.229	1.445	0.793-2.635
Moderate	-0.412	0.3182	0.195	0.662	0.355-1.235
<b>Family dimension (&gt;=7 as reference)</b>					
=<4 people	-0.511	0.5256	0.331	0.600	0.214-1.681
5-6 people	0.019	0.5405	0.972	1.019	0.353-2.940
<b>Keyes score (covariate, No as reference)</b>					
Keyes score	-0.231	0.0215	0.000	0.793	0.761-0.828
<b>Social health status as the dependent variable</b>					
Intercept 1	-14.678	1.9165	0.000	4.219	9.861-1.805
Intercept 2	-1.312	0.4802	0.000	0.269	0.105-0.691
<b>Family dimension (&gt;=7 as reference)</b>					
=<4 people	-1.143	0.4494	0.011	0.319	0.132-0.770
5-6 people	-1.221	0.5044	0.015	0.295	0.110-0.794
<b>GHQ score (covariate, No as reference)</b>					
GHQ score	-0.149	0.0212	0.000	0.862	0.826-0.898

Figure 1: Students' social health status in different Keyes questionnaire subscales

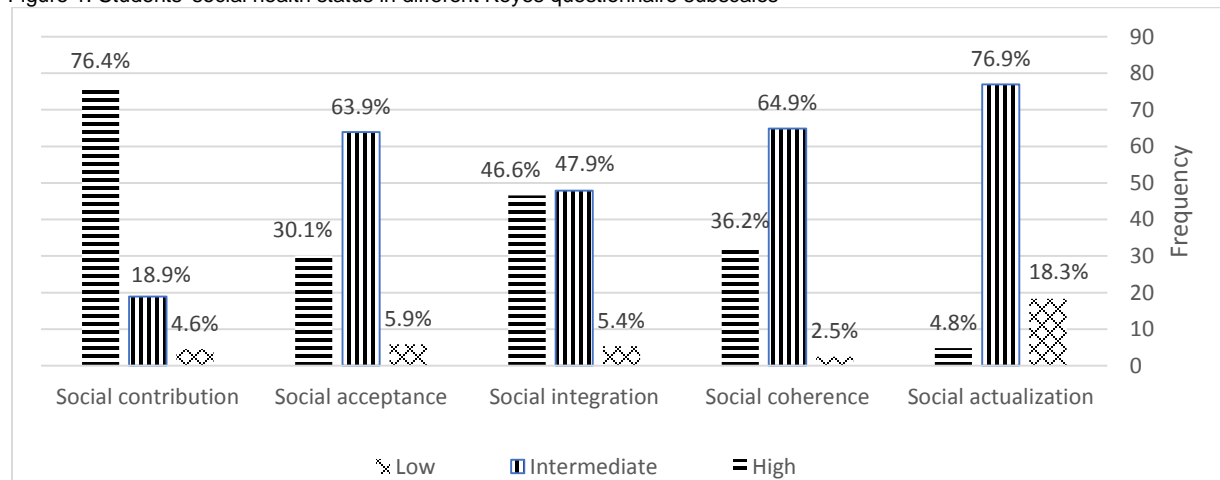
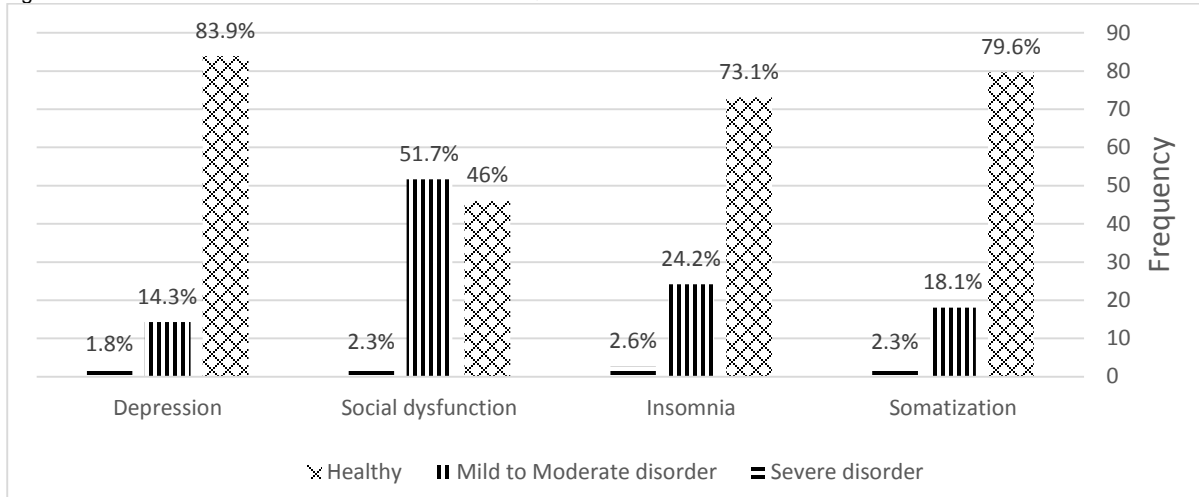


Figure 2: Students' mental health status in different GHQ subscales



**DISCUSSION**

In this study, we designed and performed the first phase of health monitoring program in the first-semester medical sciences students. Regarding this matter, we investigated mental and social health status and the relationship between them in these students. This study showed that most of the students were mentally healthy and had an intermediate social health status. We found that participants with higher ranks in the IUEE, lower family dimension, and higher socioeconomic status had better mental health status. We also found that social health status was independently associated with mental health status and vice versa.

Most of the participants were mentally healthy. Similar to our study result, a study which was performed on medical students of Vanderbilt University found that the majority of the students did not have anxiety disorders<sup>23</sup>. This result was in contrast to those of the studies done on medical students in Iran<sup>5</sup>, Egypt<sup>24</sup>, and Dubai<sup>25</sup>, of whom the majority had mental disorders. One reason for the difference might be the fact that we studied not only medical students, but also students of almost all fields of medical sciences. It is found that medical students are more prone to get mental health disorders than non-medical students as they progress through their course<sup>26</sup>, so if we had investigated mental health disorders among medical students exclusively, we would probably have had worse results regarding mental health status. Another reason is that all our participants were in the first semester of their field and were not involved in the university curriculum completely. These students had not still faced the possible sources of stress in the university like worrying about the future, dissatisfaction with the class lectures, frequency of examinations, high parental expectations, financial pressures, faculty-student relationships, and lack of leisure time<sup>27,28</sup>. Probably, these can be the reasons why they were not affected psychologically as much as older students.

The majority of the students had intermediate level of social health status. This result was in concordance to the results of our previous study on the nursing and midwifery

students<sup>14</sup> and another study conducted by Darabinia et al. on medical students<sup>15</sup>. The fact that the majority of the students had intermediate level of social health may not seem unsatisfactory, but if we want to improve their social health status to high level, the factors affecting social health must be known and addressed. According to a qualitative study performed by Chinekesh et al on young adults, sense of security, social capital, social support, family security, educational, and cultural needs were mentioned by them as influential factors affecting their social health<sup>29</sup>. Due to its multidimensional nature, it seems that the cooperation of different organizations and institutes is required to deal with social health improvement. By designing and performing health monitoring programs in the universities we can not only adjust students' curriculum to answer their educational needs, but also draw the attention of these influential organizations and institutes.

We found that with an increase in the Keyes score, there will be a 20% reduction in the odds of abnormal GHQ. This result was similar to those of the previous studies done by Carlson et al. in San Diego, California in which mental health was found to be related to functional social health with a Pearson's correlation coefficient between 0.42 and 0.50 for different subscales of mental health<sup>30</sup>.

We also showed that with an increase in GHQ score, there will be a 14% reduction in the odds of normal Keyes. Also, we revealed that with family dimension less than 7 people, there will be a 70% reduction in the odds of abnormal Keyes.

In this study, we reported the results of a newly-developed student health monitoring program at Shiraz University of Medical Sciences for the first time. The results of this study will be a basis that the next study results on students' mental and social health at Shiraz University of Medical Sciences will be compared to. The limitation to the study was that, because we were trying to develop a student health monitoring program to be used for a long time, we could not include as many demographic factors as needed to describe the population of the study in a better way although the most important ones were included.

## CONCLUSION

Although a very low proportion of students in this study had severe mental disorder and low level of social health status, it seems to be important to monitor the students' health status constantly because it is possible that their health diminishes as they progress through their course of study. Mental and social health were found to be independently associated with one another in this study.

We believe that developing a health monitoring program must be taken into consideration by all university principals.

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