Medical students' syndrome among medical students in Riyadh, Saudi Arabia

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Abstract

Background: Medical students' syndrome (MSS) refers to health complaints resulting from medical expertise rather than genuine pathology. It is a hypochondriasis or illness anxiety disorder in medical students that occurs while studying a medical condition whena medical student repeatedly develops fears and symptoms of illness relating to the diseases that they are looking at at the time, and as a consequence, it affects their performance.

Objective: To assess the prevalence of medical students' syndrome and measure the impact of the syndrome on the GPA among medical students in Riyadh, Saudi Arabia.

Method: The current cross-sectional study was conducted over six months on Riyadh's medical students. Data was collected by using an online self-reported questionnaire. The questionnaire included two sections; the sociodemographic and mental health sections. MSD-5 and HAI-18 tools were used to assess mental health and the medical students' syndrome.

Results: Four hundred and thirteen (413) medical students completed the study questionnaire. About half (50.8 %) were female, and 96.6 % were single. According to the Medical Students' Disease Distress scale (MSD-5), 88.9 % of the students had at least one mental health disorder. Anxiety was the major mental disorder found in 83.9 % of the medical students, followed by depression (73.6 %). According to the Health Anxiety Inventory tool (HAI-18) short-tool, the prevalence of medical students' syndrome (MSS) among medical students was 22.3 %. Marital status is a significant factor affecting the prevalence of MSS; being married significantly increases MSS among medical students (53.8 % vs. 21.3 %, P=0.018). There is a significant negative correlation between the score of HAI-18 and the student's Grade Point Average (GPA) (r=-0.111, P=0.024).

Conclusion: Medical students are more vulnerable to mental conditions like medical students' syndrome, which has negatively impacted their academic achievement. Since students face stress and pressure in their college life, medical students' mental and psychological health should be the top priority to overcome and prevent the occurrence of MSS among students.

Key words: medical student syndrome, Riyadh, Saudi Arabia

Introduction

It is widely believed that many medical students repeatedly develop fears and symptoms of illness relating to the diseases they are studying at the time [1,2]. Several different terms have addressed this disorder, but it has most popularly been referred to as medical students' disease (MSD), health-related anxiety, or hypochondriacal concerns [3–6]. MSS or MSD refers to health complaints resulting from medical expertise rather than genuine pathology [7]. MSS is a hypochondriasis or illness anxiety disorder in medical students that occurs in studying a medical condition [4]. Hypochondriasis is a medical condition and a part of somatoform disorders. Somatoform disorders are a group of psychiatric illnesses characterized by physical symptoms with no identifiable cause, and patients believe that a disease or more causes these symptoms. Hypochondriasis is characterized by a prolonged, strong fear of a serious disease or a conviction that they already have it when they don't. Medical evaluation and reassurance of their good health doesn't relieve or convince patients that they don't have the disease. They usually misinterpret their sensations or minor symptoms to fit their feared illness. This phenomenon is a kind of acute hypochondriasis and is more common among medical students than other college students [8]. Medical student syndrome has also been explored in a previous study by Woods et al. (1966). Their study indicated that 78.8 percent of the medical students surveyed had this syndrome during their studies. This finding was supported by Hodges (2004) [9]. For ten years, this subject has been partially investigated in several studies, and it seems that up to about 70% of medical students suffer from this phenomenon(4). Past studies from Pakistan have reported prevalence rates ranging from 44% to 70% [10–13]. Some studies reported higher anxiety levels among females than males [14]. Research has indicated that medical school causes students to experience much psychological pressure due to work required, the stress of examinations, the anxiety associated with new clinical experiences, and the competitive environment. This stress is thought to affect symptom detection by enhancing physical sensations through autonomic activation, making individuals more aware of their physical state, particularly enhancing pain. It is thought that this knowledge affects symptom perception via the expectations and illness beliefs ('schemata') that arise from it, leading to 'selective attention to specific bodily sensations and areas. The knowledge is also thought to affect symptom interpretation by causing medical students to discover how slim the line can be between health and illness and to reconceptualize previously neglected symptoms within the context of newly obtained knowledge. Previous researchers have suggested that this unique combination of stress and clinical knowledge causes medical students, after noticing some harmless bodily dysfunction, to attach unjustified importance and fear to what they have perceived and that this importance is normally either modeled after a patient they have seen or a clinical story they have heard [1,15–19]. According to Ferguson (1996), MSS ''points to the important role factual medical knowledge plays in interpreting physiological signs and symptoms''. To this view, some medical students tend to interpret vague bodily symptoms in terms of the latest disease they have learned about. This tendency would become stronger as medical knowledge grows [7]. Medical Student Syndrome (MSS) is one of the major reasons for stress among medical students throughout their undergraduate program and it affects their performance. The students focused on and correlated their vague symptoms with the studied disease. If the students were studying brain tumors, they assumed that their headaches might be one of the signs of tumors [4,20,21]. Coincidental physiological or psychological symptoms that do not necessarily point to an illness and in the past were regarded as ''normal'' may now be perceived as significant in the context of the knowledge concerning the pathologies to be studied [4]. This stress, on the one hand, and obtaining medical knowledge, on the other hand, causes medical students to relate previously neglected symptoms to the newly obtained knowledge [22]. Since success in medical school is highly correlated with personality and emotional factors, perhaps as much as intellectual ability, it is desirable to elucidate any area of potential stress [6]. Several studies have been done worldwide which divide the "Medical Student Syndrome" into two components. The first one is a cognitive component which includes the thoughts of a student that they have the disease being studied, and the second is a distress component, which includes anxiety due to the cognitive component. Comparing these two components shows that the cognitive component is present among all students and is progressing from medical education to the senior level. In contrast, the distress component is more among younger students. It is insignificant among older students because, with time, the students gain more knowledge and increase in maturity level [23–25]. To prevent the occurrence of MSS among medical students, medical students' mental and psychological health should become a priority, given the pressures they face in their university life. Thus, this study aimed to examine the prevalence of MSS complaints in a reasonably large sample of medical students [7] and to measure the impact of medical students' syndrome on the GPA among medical students in Riyadh, Saudi Arabia.

Methodology

The current cross-sectional study was conducted over six months. Data was collected by using an online self-reported questionnaire. The number of participants applying to the study was 413, with a 95% confidence level according to the Raosoft web tool. Inclusion criteria were any medical student who studies at Riyadh's medical colleges. Preparatory-year students and interns were excluded from the study. A pilot study was done on 15 individuals to support the questionnaire assessment and obtain the questions' validity, which helped avoid linguistics and comprehension issues. Participation consent was taken from each participant, personal information was secured, and data was utilized only for scientific purposes.

Many variables were assessed in this study's questionnaire, which consists of two sections. The first section concerns sociodemographic variables such as gender, marital status, year of study, GPA, and place of study. According to students' marital status, they were categorized as "single, married, divorced and widowed," while the year of study was grouped as "1, 2, 3, 4, 5" [26]. The place of study was classified into "IMSIU, KS, KSU-HS, PNU, and Other." Participants were asked about a parent's job and whether it is related to medicine [27]. The second section included two tools to assess medical students' mental health. Medical students' disease distress scale (MSD-5) was used [3], which included 23 questions. Participants were asked if they were feeling down, depressed or hopeless, as well as , if they have little interest in doing things or feel more irritated. In addition, they were asked if they slept less than usual and still had energy if they felt nervous and anxious and if they had suicidal thoughts. Participants responded to these questions on a scale that ranged from not at all to nearly every day, to what extent it applied to them. The Health Anxiety Inventory tool (HAI-18), which consists of 18 questions, was also used in this section to measure health anxiety [28]. HAI-18 questions include "I do not worry about my health, I occasionally worry about my health, I spend much of my time worrying about my health, I spend most of my time worrying about my health." "If I hear about an illness, I never think I have it myself; If I hear about an illness, I sometimes think I have it myself; if I hear about an illness, I often think I have it myself; if I hear about an illness, I always think I have it myself" was asked to help in the medical students' syndrome assessment. Participants were asked if they may have serious medical conditions such as heart disease, cancer, multiple sclerosis, etc. Then they would answer some questions such as "If I had a serious illness, I would still be able to enjoy things in my life quite a lot; if I had a serious illness, I would still be able to enjoy things in my life a little, If I had a serious illness, I would be almost completely unable to enjoy things in my life, If I had a serious illness, I would be completely unable to enjoy my life at all." Participants chose the correct answer that applied to them.

MS Excel was used for data entry, cleaning, and coding, while data analysis was done by using Statistical Package for the Social Science (SPSS) with data analysis experts' help. Frequency and percent were used to describe categorical variables such as gender, marital status, year of study, and GPA. Mean, and standard deviation was used to describe continuous variables as the tools' total scores. Medical students' disease distress scale consisted of 23 questions to assess the 13 mental disorders (Having two or more symptoms of each disorder indicate the diagnosis of this disorder). For HAI short version used in this study, the tool consisted of 18 questions with different answers for each question. However, all responses were coded from 0-3, where 0 means low concern for health while 3 shows high health concerns. This provides a resulting score ranging between 0 and 54. Illness anxiety disorder was diagnosed in a student who had a score over 18. Chi test and t-test were used to assess the relationship between having MSS and the participants' demographic factors. In contrast, the Pearson correlation test was used to determine the correlation between the student's GPA as an indicator of academic performance and the prevalence and severity of MSS. All statements were considered significant when the p-value was lower than 0.05.

Results

Four hundred and thirteen (413) medical students completed the study questionnaire. About half (50.8 %) were female, and 96.6 % were single. Moreover, 48.9 % of the participants were in 3rd year, while 16.7 % were in 1st year. About 40 % of the medical students reported studying at IMSIU, while 18.9 % were at KSU-HS and 18.6 % were at KSU. Considering the students' GPA, 55.7 % of the participants reported having a GPA of more than 4.5, while 17.4 % had a GPA of 4.25-4.5, 13.6 % less than 4, and 13.3 % of 4-4.25. Moreover, 41.4 % of the students reported having a monthly income of more than 5000 SR, while 30 % had between 1000-5000 SR, and 28.6 % had an income lower than 1000 SR. Furthermore, 77.5 % of the students reported that their parents' job is unrelated to medicine (Table 1).

According to the Medical students' disease distress scale (MSD-5), 88.9 % of the students had at least one mental disorder. Anxiety was the major mental disorder which is found in 83.9 % of the medical students, followed by depression (73.6 %), personality functioning (60.8 %), and mania (59.9 %) (Figure 1).

According to the Health Anxiety Inventory tool (HAI-18) short-tool, the prevalence of medical students' syndrome (MSS) among medical students was 22.3 % (Figure 2). The mean score of the main section of the sample was 12.3 (SD=7.32), the negative consequences were 2.8 (SD=2.5), and the total score of 15.13 (SD=8.86). Considering the demographic factors affecting the prevalence of MSS, we found that the prevalence of MSS among females is higher than reported in males (26.2 % vs. 18.2 %). However, this difference is not significant (P=0.052). Marital status is an important factor affecting the prevalence of MSS; being married significantly increases MSS among medical students (53.8 % vs. 21.3 %, P=0.018). Moreover, we found that year of study of the students affected the prevalence of MSS significantly (P=0.045); MSS prevalence was highest among students in the 4th (31.7 %), 1st (26.1 %), and 3rd year (22.8 %). On the other hand, the University of the students, their economic level, and whether their parents' job is related to medicine have no significant impact on the prevalence of MSS among medical students (Table 2).

Figure 1: The prevalence of some mental disorders as found using MSD-5

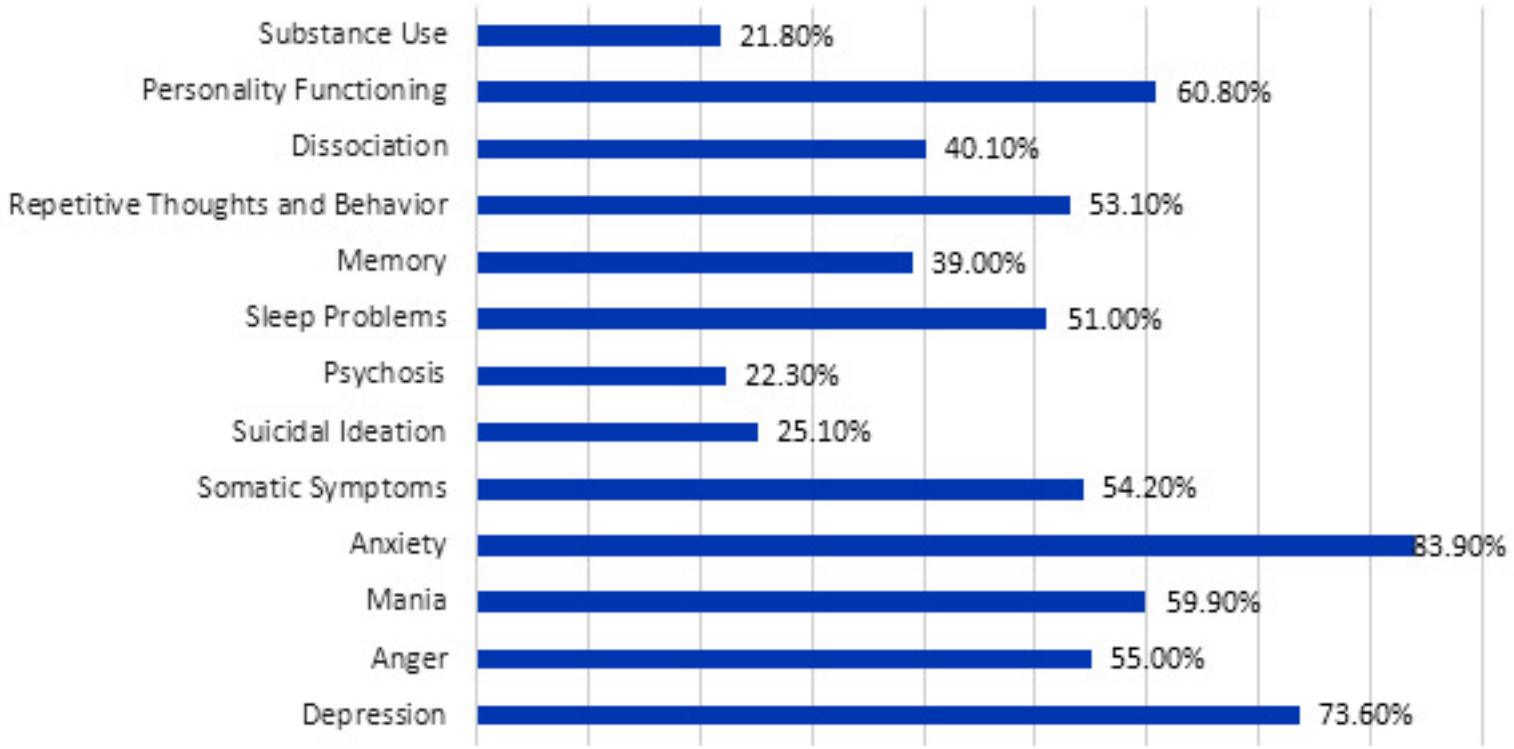

Figure 2: The distribution of students according to Health anxiety inventory score

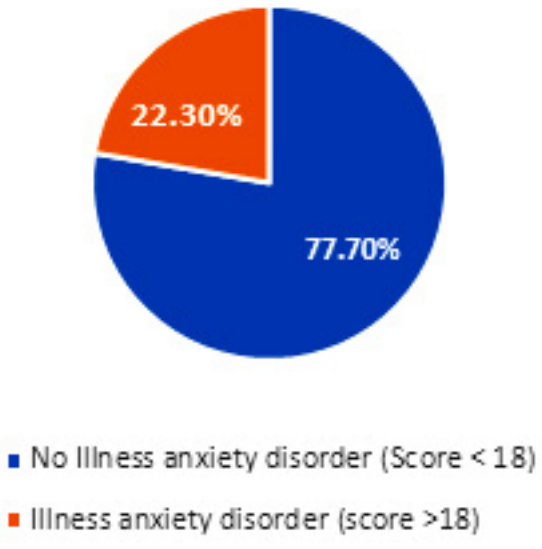

Table 1: Demographic factors of the participants (N=413)

		Count	Column N %
Gender	Male	203	49.2%
	Female	210	50.8%
Marital status	Single	399	96.6%
	Married	13	3.1%
	Divorced	1	0.2%
Year of Study	1st year	69	16.7%
	2nd year	51	12.3%
	3rd year	202	48.9%
	4th year	60	14.5%
	5th year	31	7.5%
University	IMSIU	166	40.2%
	KSU	77	18.6%
	KSU-HS	78	18.9%
	MENU	74	17.9%
	Other	18	4.4%
GPA	<4	56	13.6%
	4-4.25	55	13.3%
	4.25-4.5	72	17.4%
	> 4.5	230	55.7%
Economic level	< 1000 SR	118	28.6%
	1000-5000 SR	124	30.0%
	> 5000 SR	171	41.4%
Parent's job	Non-related to medicine	320	77.5%
	Related to medicine	93	22.5%

Table 2: The relation between demographic factors and health anxiety inventory score

		Health anxiety inventory score				
		No Illness anxiety disorder (Score < 18)		Illness anxiety disorder (score >18)		P-value
		Count	Row N %	Count	Row N %	
Gender	Male	166	81.8%	37	18.2%	0.052
	Female	155	73.8%	55	26.2%	
Marital status	Single	314	78.7%	85	21.3%	0.018*
	Married	6	46.2%	7	53.8%	
	Divorced	1	100.0%	0	0.0%	
Year of Study	1st year	51	73.9%	18	26.1%	0.045*
	2nd year	45	88.2%	6	11.8%	
	3rd year	156	77.2%	46	22.8%	
	4th year	41	68.3%	19	31.7%	
	5th year	28	90.3%	3	9.7%	
University	IMSIU	126	75.9%	40	24.1%	0.828
	KSU	62	80.5%	15	19.5%	
	KSU-HS	60	76.9%	18	23.1%	
	PNU	60	81.1%	14	18.9%	
	Other	13	72.2%	5	27.8%	
GPA	<4	42	75.0%	14	25.0%	0.031*
	4-4.25	36	65.5%	19	34.5%	
	4.25-4.5	53	73.6%	19	26.4%	
	> 4.5	190	82.6%	40	17.4%	
Economic level	< 1000 SR	91	77.1%	27	22.9%	0.878
	1000-5000 SR	95	76.6%	29	23.4%	
	> 5000 SR	135	78.9%	36	21.1%	
Parent's job	Non-related to medicine	252	78.8%	68	21.3%	0.353
	Related to medicine	69	74.2%	24	25.8%	

* Significant at a P value of lower than 0.05.

Table 3: Correlations between GPA of the students, HAI-18 score, and MSD score

		GPA	HAI-18 score	MSD score
GPA	Pearson Correlation	1	-.116*	-.181**
	Sig. (2-tailed)		.018	.000
	N	413	413	413
HAI-18 score	Pearson Correlation	-.116*	1	.499**
	Sig. (2-tailed)	.018		.000
	N	413	413	413
MSD score	Pearson Correlation	-.181**	.499**	1
	Sig. (2-tailed)	.000	.000	
	N	413	413	413

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Considering the impact of MSS on the student's GPA, we found a significant negative correlation between the score of HAI-18 and the student's GPA (r=-0.111, P=0.024) (Table 3). Having MSS was associated significantly with lower GPAs of the students, where the prevalence of MSS among students with a GPA of more than 4.5 was 17.4 % compared with 34.5 % of those with a GPA of 4-4.25 (P=0.031) (Table 2). Moreover, we found a significant negative correlation between GPA score and MSD-5 score (r=-0.181, P=0.000). Furthermore, there is a significant positive correlation between the score of HAI-18 and MSD-5 (r=0.499, P=0.000) (Table 3)

Discussion

This study aimed to tackle a significant, neglected problem observed among medical students in many countries [9]. Hypochondriasis is a psychiatric medical condition represented by a group of somatoform disorders where patients are convinced that they have serious medical conditions or are very worried about getting these conditions based on their misinterpretation of symptoms for at least six months [29]. In the current study, illness anxiety disorder was identified in 22.3 % of the medical students in Riyadh region, Saudi Arabia depending on the results of HAI-18. Another survey by Ezmeirly H et al. among medical students in Western Saudi Arabia reported a prevalence of 17 % [30]. Moreover, Al-Turki Y et al. said that 3.4 % of the medical students at King Saud University were diagnosed with hypochondriasis using DSM - IV criteria [8].

Moreover, our result was relatively higher than reported by other studies, including a study conducted at Mashhad University of medical science which reported a prevalence of hypochondriasis among medical students of 16 % [31]. A survey conducted by Zahid et al. among Pakistani medical students reported a prevalence of 11.9 % [24] and a study of Kellner et al. among American medical students reported a prevalence of 8.3 % [32]. Earlier studies conducted by Hunter et al. [1], Moss-Morris and Petrie [3], Woods et al. [6], Hodges [33], and Collier [2] supported that medical students are at higher risk for developing MSS and other anxiety disorders. On the other hand, other studies failed to report sufficient evidence of increased health-related anxiety among medical students compared to non-medical students [32,34–36].

In conjunction with the results of HAI-18, we used the medical students' disease distress scale (MSD-5) to assess the prevalence of 13 different mental aspects. Anxiety and depression were the main identified mental disorders in this study, presenting in 83.9 % and 73.6 %. Similar results were reported in some previous studies, including the study of Mehanna Z and Richa Z. They reported that the prevalence of anxiety and depression among medical students was 69 % and 27.63 % [37]. Moreover, another study conducted by Inam S and Saqib A showed that the prevalence of depression and anxiety among medical students was 60 % using the anxiety and depression scale [11], while the study of Rab F et al. showed that the prevalence of anxiety and depression among medical students in Pakistan was 43.7 % and 19.5 % respectively [38]. Furthermore, another study conducted by Khan M et al. showed that the prevalence of anxiety and depression among medical students was 70 % [13], while the study of Alvi T et al. showed that anxiety was present in 133 (47.7 %) students and depression in 98 (35.1%) students [14].

In the current study, we found that the prevalence of MSS was different among students of different years of study, whereas those in the 5th year showed the lowest prevalence of MSS (9.7 %). In a previous study, the authors showed that the medical student's disease distress component was significantly higher among younger students [24]. Moreover, another study among medical students of Taif University reported a statistically significant difference in health anxiety between students of preclinical and clinical years (21 % vs. 14 %) [39]. However, other studies showed no significant association between anxiety and the stage of training. However, these reported that health anxiety reduced as students advanced in medical training [24,39,40]. Moreover, in the current study, we found that gender was not associated significantly with the increased prevalence of MSS among medical students, with a slightly higher prevalence among female students, which is reported in some previous studies [30,40]. Moreover, having a medical professional in their family has no impact on the prevalence of MSS among medical students in this study which is in disagreement with the results of another study which showed that a lower prevalence of health anxiety is seen among students having a medical professional in their family [41–43].

The secondary goal of this study was to assess the impact of having MSS on the student's academic performance as represented by GPA. The results of our research showed that MSS had a significantly negative impact on students' academic performance. This is similar to other studies showing a significant correlation between anxiety, stress, and poor academic performance of medical students [44–46]. The same results were reported among non-medical students indicating that the impact of anxiety is generalized among all students [47–49].

In conclusion, medical students are more vulnerable to mental conditions like medical students' syndrome, which significantly negatively impacts their academic achievement. Therefore, there is a need to counsel medical students about the symptoms of MSS, highlight coping techniques, and support them by discussing different strategies to alleviate the stress level.

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