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Original Research Article

Medical student syndrome between clarity and ambiguity

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ABSTRACT

Background: Medical student syndrome (MSS) is a unique form of hypochondriasis observed in medical students, characterized by preoccupation with fears of having serious diseases based on misinterpreting bodily symptoms despite medical reassurance. Unlike hypochondriasis, MSS does not result in increased consultations. This phenomenon varies in prevalence among medical students compared to other health sciences students who do not study diseases as intensely. This study explores awareness of MSS and the prevalence of psychosomatic symptoms among medical and health sciences students in Saudi Arabia.
Methods: A cross-sectional study was conducted using online and face-to-face questionnaires, employing multistage and cluster sampling methods.
Results: The overall number of students collected is 383 students among all the medical students and other health science students the effect of MSS found higher in students of health science colleges.
Conclusions: The study highlights the high prevalence of MSS among health sciences students. It emphasizes awareness and risk factors.

Keywords: Cross-sectional, Medical student syndrome, Saudi Arabia

INTRODUCTION

Medical students often develop illness-related symptoms linked to the diseases they study.[1,2] Known as "medical student syndrome (MSS)," this phenomenon arises from psychological stress, including frequent exams, new clinical experiences, and competition.[1,3] Stress enhances physical sensations via autonomic activation, leading students to focus on bodily states, particularly pain.[4,5] Their extensive medical knowledge heightens symptom perception and interpretation through selective attention and illness beliefs.[6,7]

Research suggests that stress and clinical exposure trigger MSS. However, while hypochondriasis is supported by increased consultations, MSS remains inconclusive.[8] Early studies in the 1960s indicated a prevalence of MSS, but later studies found no significant difference between medical and non-medical students.[9,10] Some research even showed greater health anxiety in law and English students than in medical students.[11,12] In 2001, Moss-Morris and Petrie found year 1 medical students hyperaware of their health but lacked year 1 non-medical controls, leaving findings inconclusive.[13]

This research aims to assess MSS awareness, the prevalence of psychosomatic symptoms, and its impact on academic performance among medical students.

METHODS

Study design

A cross-sectional study was conducted to assess MSS awareness and the prevalence of psychosomatic symptoms among undergraduate medical and health sciences students

in Saudi Arabia. Data were collected via online and face-to-face questionnaires using multistage and cluster sampling from August 2023 to August 2024.

Study population

Male and female undergraduate students studying medicine and other health sciences in various Saudi colleges.

Sample size

The study included students from all regions of Saudi Arabia (King Fahd Hospitals). According to the Ministry of Health and Ministry of Education, the total population of students in health colleges and other colleges was 75,084 and 1,682,617, respectively. A 5% significance level, 95% confidence level, and 90% test power determined a required sample size of 383 participants based on World Health Organization (WHO) recommendations.[14,15]

Data collection and sampling

Trained data collectors used multistage and cluster sampling to select students. Four colleges from each region were randomly chosen, and students were sampled from various levels using simple random sampling. Participants signed electronic informed consent before completing the questionnaire.

Data management and analysis

Students under 18 were excluded. Data were analyzed using statistical package for the social sciences (SPSS) (v.22, IBM: Chicago), with a significance threshold of 0.05 for statistical tests.

Statistical analysis

Data were described using mean and standard deviation for continuous variables and frequencies (number and percentages) for categorical data. The MSS score was calculated from 14 questions (9–22) on a 5-point Likert scale (1=strongly disagree to 5=strongly agree), with one question using a reversed scale. The nosophobia score was derived from 4 questions (23, 32, 49, 50) with binary responses (0=no, 1=yes). Fear of diseases before and after COVID-19 was assessed using 6 questions (3 per period) with binary responses (0=no, 1=yes).

Chi-square (c^2) was used for categorical data comparisons, while independent sample t-tests compared numerical variables between groups. Paired sample t-tests analyzed changes within the same group before and after COVID-19.

A p value ≤0.05 was considered statistically significant. Analyses were conducted using IBM SPSS v25 (IBM Corp, Armonk, NY, USA).

RESULTS

Gender distribution showed no significant difference (p=0.841); males constituted 26.5% in medicine and 25.6% in health sciences, with females making up the majority in both groups. Age distribution was also similar, with 67.6% of medical students and 56.2% of health sciences students aged 20 to under 25 years.

Regional distribution showed a significant difference (p<0.001). The Southern region had the highest enrollment in health sciences (47%), while the Western region led in medical students (40%). Financial status revealed no significant difference, with 34.1% of medical students and 30.6% of health sciences students reporting good financial conditions (p=0.414).

Figure 1 shows the distribution of the collected sample between medical students and students from other health sciences; 43.70% of the collected sample were from medical school and 56.2% are students from other health sciences.

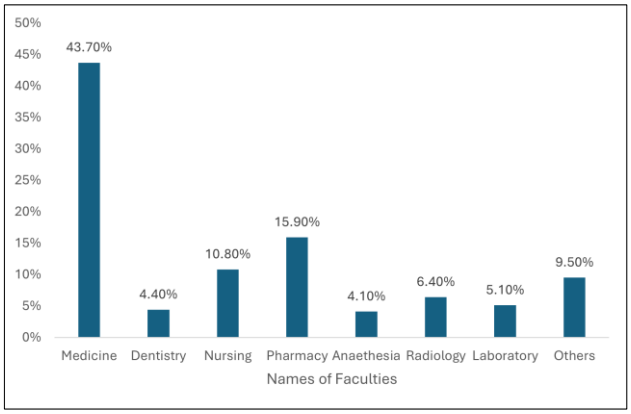

Figure 1: Names of faculties of the studied students.

A comparison of past history between medical students and other health sciences students shows that 75.8% of all students did not need psychic support, compared to 24.2% who did, with no significant difference (p=0.004). Among medical students, 82.9% did not need support, while 70.3% of health sciences students reported the same. Psychic support was needed by 17.1% of medical students and 29.7% of health sciences students.

Regarding academic failure, 81.5% of students across both groups had never failed, while 18.5% had, with no significant difference (p=0.026). Similarly, no significant difference was observed for a history of psychic illness (p<0.018).

Figure 2 shows that 49.4% of medical students and 59.4% of students of other health sciences schools reported that they felt symptoms of certain disease after studying it without a statistically significant difference (p=0.051) between the two groups.

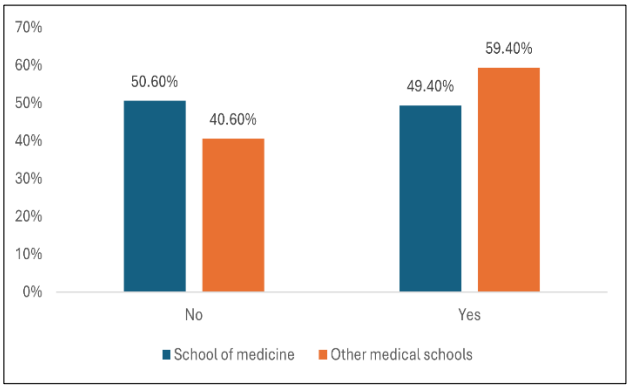

Figure 2: Percent of medical student syndrome in studied groups.

Table 1: Medical student syndrome, nosophobia and fear of illness before and after COVID-19 era among the studied groups.

Variables	School of medicine	Other health sciences schools	P value
Medical student syndrome			
Min-max	17-59	18-63	0.002*(1)
Mean±SD	34.26±7.8	36.76±7.5	
Nosophobia			
Min-max	0-6	0-6	0.016*(1)
Mean±SD	2.05±1.39	2.4±1.37	
Fear from diseases			
Before COVID-19			
Min-max	0-3	0-3	0.007*(1)
Mean±SD	0.57±0.06	0.82±0.07	
After COVID-19			
Min-max	0-3	0-3	0.057(1)
Mean±SD	1.1±0.91	1.3±0.96	
P value	<0.001*(2)	<0.001*(2)	

*Statistically significant at p≤0.05, (1) independent sample t test, (2) paired sample t test

A significant difference was found between medical students and health sciences students regarding MSS, nosophobia, and fear of diseases before and after COVID-19, with p values of 0.002*, 0.016*, and 0.007*, respectively. However, there was no significant difference in fear of diseases after COVID-19 (p=0.057*).

Within both groups, fear of diseases showed a significant difference before and after COVID-19 (p<0.001* for both). The mean score for MSS was higher among health sciences students (36.76±7.5) compared to medical students (34.26±7.8), with a statistically significant difference (p=0.002*(1)).

The mean of presence of nosophobia was higher among students of other health sciences schools than medical students (36.76±7.5, 34.26±7.8) respectively with a statistically significant difference of a p value of (0.016*(1)).

The study of the fear of diseases before COVID-19 shows that the mean was higher among the students of other health sciences schools than in medical students (0.82±0.07, 0.57±0.06) respectively, with a statistically significant difference of p value (<0.001*, <0.001*).

However, the study of the fear of diseases after COVID-19 was higher among students of other health sciences schools but without statistically significant difference. There was statistically significant difference regarding fear of diseases before and after COVID-19 within each group with p value of (<0.001*, <0.001*) respectively.

A significant difference was observed between medical students and health sciences students regarding MSS and nosophobia in relation to the decision to study medicine based on previous illness, with p values of 0.491*, 0.115*, <0.001*, and <0.001*, respectively (Table 2).

Table 2: Medical student syndrome and nosophobia as regard the decision of studying medicine based on previous illness among the studied groups.

Variables	Decision of studying medicine based on previous illness		P value
	No	Yes	
School of medicine			
Medical student syndrome			
Min-max	17-59	21-50	0.491
Mean±SD	34.05±7.8	35.02± 7.5	
Nosophobia			
Min-max	0-5	0-6	0.115
Mean±SD	1.97±1.3	2.37±1.6	
Other health sciences schools			
Medical student syndrome			
Min-max	18-63	18-54	<0.001*
Mean±SD	35.42±8.03	39.52±7.22	
Nosophobia			
Min-max	0-6	0-6	<0.001*
Mean±SD	2.08±1.33	3.1±1.2	

*Statistically significant at p≤0.05, independent sample t test

In medical students, no significant difference was found for MSS or nosophobia with p values of 0.491* and 0.115*, respectively. However, among health sciences students, a significant difference was identified regarding the decision to study medicine based on previous illness, with p values of <0.001* for both.

The mean decision to study medicine based on previous illness was higher among students from other health sciences schools than those from the school of medicine, with values of (39.52±7.22, 35.02±7.5) for MSS and (3.1±1.2, 2.37±1.6) for nosophobia, respectively.

Table 3 shows a statistically significant difference between medical students and other health sciences students regarding previous academic failures, with p values of (0.347*, 0.219*, <0.559*, <0.971*). No significant differences were observed in the medical students group for MSS and nosophobia regarding academic failures (p=0.347*, 0.219*). However, significant differences were found in other health sciences schools (p<0.559*, <0.971*).

Table 3: Medical student syndrome and nosophobia as regard previous academic failing among the studied groups.

Variables	Previous academic failing		P value
	No	Yes	
School of medicine			
Medical student syndrome			
Min-max	17-59	22-51	0.347
Mean±SD	34.05±7.6	35.65±7.2	
Nosophobia			
Min-max	0-6	0-6	0.219
Mean±SD	2±1.39	2.39±1.33	
Other health sciences schools			
Medical student syndrome			
Min-max	18-63	18-54	0.559
Mean±SD	36.54±8	37.3±8	
Nosophobia			
Min-max	0-6	0-5	0.971
Mean±SD	2.4±1.4	2.4±1.3	

*Statistically significant at p≤0.05, independent sample t test

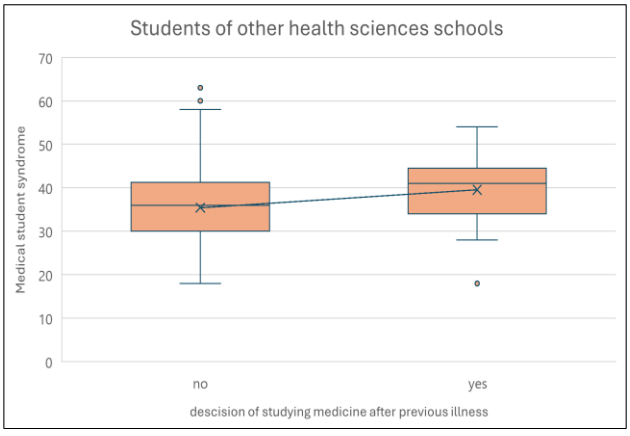

Figure 3: Mean value of medical student syndrome as regard the decision of studying medicine based on previous illness among students of other health sciences school.

Regarding the mean of previous academic failures, students from other health sciences schools had higher values than those from the school of medicine. For MSS, the mean was (2.39±1.33, 35.65±7.2) respectively. Similarly, for students with nosophobia, the mean values were (2.4±1.3, 2.39±1.33) respectively Figure 3.

DISCUSSION

MSS is an anxiety disorder where individuals worry excessively about having a serious illness, often accompanied by nonspecific somatic symptoms like abdominal pain, nausea, tachycardia, and weakness. This condition negatively impacts academic performance and work attendance. This study aimed to compare MSS prevalence, risk factors, and effects between medical and other health sciences students.

The study found higher needs for psychic support and a history of psychological illness among health sciences students compared to medical students. Previous research indicates that, despite longer university hours, medical students often have lower anxiety scores, possibly due to undiscovered stressors in health sciences. Medicine is viewed as a highly competitive field, which may be more daunting for those with health challenges, while other health sciences are perceived as less stressful.

These results are discussed in a paper on medicine as a career choice, which concluded that students view medicine as a competitive field, which is always a challenge for individuals who have experienced health challenges. The study also suggests that students may opt for other health sciences, perceived as less stressful.[17]

In this study, the prevalence of MSS among medical students was 49.4%, compared to 22.3% among medical students in Riyadh, Saudi Arabia.[18]

A survey in Western Saudi Arabia reported a 17% prevalence of MSS among medical students. Al-Turki et al found 3.4% of medical students at King Saud University diagnosed with MSS.[19] The difference may stem from varying diagnostic tools, as this study included students from all regions of Saudi Arabia. The high prevalence of MSS can be explained by the psychological pressures in medical school, including workload, exam stress, anxiety from new clinical experiences, and competition, which may enhance physical sensations through autonomic activation, making students more aware of their physical state and pain.

This knowledge is believed to influence symptom perception through expectations and illness beliefs, leading to selective attention to specific bodily sensations. It also affects symptom interpretation by helping medical students recognize the fine line between health and illness, prompting them to reconsider previously overlooked symptoms in light of their new knowledge.[18]

In this study, no significant difference was found in MSS prevalence between medical students (49.4%) and students of other health sciences schools (59.4%). A previous study also found no significant differences in MSS prevalence when comparing medical students to peers of the same age, gender, and cultural background. This challenges the idea that medical students are more likely to experience symptoms of the diseases they study. Possible explanations include greater contact with tutors for medical students, which may help reduce anxiety, and the rise of "cyberchondria" in seeking diagnoses online.[20]

Health sciences students tend to develop hypochondriacal concerns, with cyberchondria exaggerating these worries. In contrast, medical training boosts students' confidence in self-diagnosis, potentially preventing the progression to MSS despite heightened symptom detection.[21] The difference between this study and previous ones may lie in methodology: earlier studies compared medical students with non-medical students, while this study compared medical students with other health sciences students who study diseases less in detail, increasing their interest in cyberchondria.[2]

In this study, before COVID, non-medical students showed more fear of diseases than medical students. After COVID, there was no significant difference, but fear increased in both groups. A previous study found that the COVID-19 pandemic heightened stress, fear of disease, social isolation, and mental health issues, especially among health sciences students.[21]

In this study, MSS was higher among students with previous academic failures in both groups, but the difference was not significant. A previous study also showed that MSS is more common in students with a history of failure and negatively affects academic performance, similar to other studies linking anxiety and stress to decreased achievements in medical students.[22] Similar results were found among non-medical students, indicating that anxiety impacts all students.[18] This study, which sampled from multiple universities, compared medical students to other health sciences students, resulting in positive effects on the outcomes.

Limitations

The study's cross-sectional nature means it captures data at a single point in time. This limits the ability to establish causal relationships between MSS and psychosomatic symptoms or other variables.

The study primarily focuses on MSS and related fears without exploring other potential psychosomatic or mental health conditions that could coexist, providing an incomplete picture.

Without longitudinal tracking of students over time, it is difficult to assess how MSS evolves during their academic careers or in response to specific stressors.

CONCLUSION

This study shows that MSS is prevalent among both medical and other health sciences students in Saudi Arabia, with a higher degree among other health sciences students, possibly due to less knowledge and experience. The findings raise awareness about MSS's prevalence, risk factors, and consequences, potentially improving healthcare systems. It recommends further studies to gather better data and explore the impact of diagnostic tools and early interventions for affected students.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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