



Medical Student Syndrome and Self-Medication among Medical Students at Zagazig University, Egypt

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ABSTRACT

Background: Medical student syndrome (MSS), which is the idea held by students that they might have the illness being studied, and self-medication are closely related concepts often affecting medical students as they become more familiar with diseases and medications. **Objectives:** To determine the prevalence and risk factors of medical student syndrome and to identify the prevalence of self-medication practices among students. **Methods:** A cross-sectional study was conducted between November 2024 and March 2025 at Zagazig University. It targeted medical students during their last three academic years. A structured questionnaire was used. It was composed of three sections: sociodemographic data, medical student syndrome and self-medication practices. **Results:** A total of 334 students were included. The mean age was 22.4 ± 2.2 years and 57.8% were females. MSS affected 78% of the students. Among those who experienced MSS, only 9.6% found the symptoms severe enough to consult a doctor, whereas 74.7% chose to ignore them. Additionally, 30.7% reported using medication without medical consultation to manage these symptoms. The primary risk factors associated with MSS among students included gender and the use of psychiatric sleep medications. Regarding self-medication, 97.9% of students reported practicing it within the past six months. The main causes cited for self-medication were saving time (50%) and managing non-acute conditions (61.7%). **Conclusion:** The study findings showed that MSS and self-medication are prevalent among medical students at Zagazig University, Egypt. The findings underscore the need for intervention programs focusing on awareness of the problem along with psychological support.

INTRODUCTION

Medical Student Syndrome (MSS) is a condition in which medical students begin to experience anxiety about their own health as they learn about various diseases, often mistakenly attributing their own symptoms to that illness.¹ For instance, a student learning about brain tumors might worry that a headache they have is a symptom of a tumor, or if studying appendicitis, they may interpret normal stomach noises as signs of the condition. Also known as nosophobia, or the fear of illness,

Medical Student Syndrome came into focus in the mid-1960s after studies revealed that 70% of medical students reported facing different mental health challenges while undergoing their psychiatry training.²

Globally, MSS is categorized into two components: cognitive and distress. The cognitive component involves the student's belief that they have the disease they are studying, while the distress component refers to the anxiety that arises from these thoughts.³

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The cognitive aspect is experienced by all students and tends to increase as they advance through their education. On the other hand, younger students tend to experience higher levels of distress, whereas older students usually develop greater knowledge and emotional maturity over time, which helps alleviate their anxiety.²

Self-medication is commonly observed in the general public, with even higher rates observed among medical students. The increasing tendency toward self-medication is driven by factors such as urgency, convenience, time constraints, and cost savings. However, this behavior often occurs without proper supervision or guidance from licensed healthcare professionals.⁴

Engaging in self-medication without professional medical advice can result in improper or ineffective treatment, overlooked diagnoses, delays in receiving appropriate care, the development of drug-resistant pathogens, and a rise in health complications.⁵

MSS negatively impacts the health and mental wellness of medical students, potentially leading to poor academic outcomes, dishonest academic behavior, increased cynicism, and substance misuse. Additionally, the widespread use of self-medication plays an important role in the emergence of antimicrobial resistance. It may also pose significant health risks, resulting in extended illness and complications.^{4,5} Despite the risk of these problems, few studies have been carried out in Egypt. So, in this study we aimed to determine the prevalence and risk factors of medical student syndrome and to identify the prevalence of self-medication practices among medical students at Zagazig University, Egypt.

METHODS

A cross-sectional study was carried out at faculty of Medicine, Zagazig university, during the period from November 2024 till March 2025 after receiving the approval of Institutional Review Board (IRB) of Faculty of Medicine, Zagazig University.

Table 1: Demographic characteristics of the medical students (N=334)

	Number (%) Mean $\pm$ SD
Age (years)	
Mean $\pm$ SD	22.4 $\pm$ 2.2
Gender	
Male	141 (42.2)
Female	193 (57.8)
Academic years	
Third year	91 (27.2)
Fourth year	137 (41)
Fifth year	106 (31.8)
Residence	
Rural	144 (43.1)
Urban	190 (56.9)
Levels of parental education	
Primary education	21 (6.3)
Secondary education	48 (14.3)
University education	165 (49.40)
Post graduate education	100 (30)

The study targeted medical students during their last three academic years. Clinical education isn't introduced to students during the first and second academic years and just started during the third academic year. Therefore, we included the students of the third, fourth, and fifth academic years.

Assuming that the prevalence of medical student syndrome among medical students was 62.2%.⁶ So, sample size was 334 students, based on a 95% confidence level. Sample selection was done by using stratified random technique. The students were classified according to the year of education to third, fourth and fifth years. Then, the sample was proportionally allocated and was taken randomly from each group. The students from each group were selected randomly and the questionnaire was sent to them to fill it online.

The study questionnaire: Based on a literature review, an online questionnaire was made and was composed of 3 sections: *Section I:* sociodemographic data including age, gender, year of study, residence, levels of parental education.⁷ *Section II:* medical student syndrome knowledge and experience including

Table 2: Distribution of basic knowledge and experience with MSS among medical students (N=334)

	Number (%)
Visiting a psychiatrist	48 (14.5)
Using any psychiatric or sleep-related medications	81 (24.5)
Know the meaning of medical student syndrome	174 (52.1)
Felling any sign/symptoms of a disease when reading about it (prevalence of MSS)	261 (78)

knowing meaning of MSS, going to a psychiatrist, ever feeling sign or symptom of disease after reading about it, taking psychiatric/sleep medications and MSS determinant including the strength of the felt stimuli, the response to the stimuli, duration of the feeling and going to a doctor for that suspected disease or using medication without prescription.⁸ *Section III: self-medication practices including self-prescribed medications, indication for medication, person who advised self-medication practice, reasons for self-medication and response if the medicine had no effect.*^{9, 10}

Tool validation: A pilot study was conducted to test the validity and reliability of the questionnaires through interviewing 10% (34 students) of the required sample. A reliability test was conducted using reliability coefficients, and the results showed a high Cronbach's alpha, indicating that the tool was appropriate for scientific use (Cronbach's alpha for medical student syndrome questions was 0.0,78, and for questions of self-medication was 0.90). Since no modifications were required, the pilot sample was included in the main study sample.

Statistical analysis: The obtained data were coded and entered into excel file. All statistical analysis was done using SPSS program version 25. The sample size was determined using the statistical software Epi Info, version 6.

RESULTS

A total of 334 students were included. Table (1) shows the demographic characteristics of the

Table 3: Responses and reactions to perceived illness symptoms among medical students (N=261)

	Number (%)
The strength of the stimuli	
I talk to someone	92 (35.2)
I ignore it	144 (55.2)
Go to a doctor	25 (9.6)
The response to the stimuli	
Investigate further	66 (25.3)
Ignore	195 (74.7)
Duration the feeling last	
Minutes	123 (47.1)
Hours	59 (22.6)
Days	79 (30.3)
Reactions	
Visiting a doctor for that disease you suspect to have	44 (16.9)
Using a medication (without consulting a doctor) for the suspecting disease	80 (30.7)
Feeling bothered at night sleep	83 (31.8)

medical students. The mean age was 22.4 ± 2.2 years and 57.8% were females. The majority of participants were in their fourth year (41%), followed by the fifth year (31.8%), and the least were in their third year (27.2%). The majority lived in urban areas (56.9%) and the highest percentage of participants' parents had a college (49.40%), followed by postgraduate education (30%), primary education (6.3%), and secondary education (14.3%).

Table (2) showed that 14.5% of participants visited a psychiatrist, 24.5% of the participants had taken psychiatric or sleep medications, 52.1% of participants were aware of Medical Students' Syndrome, 78% of participants had felt signs or symptoms of a disease after reading about (prevalence of MSS).

Figure (1) shows the prevalence of MSS and self-medication among medical students. Approximately 78% of the participants studied experienced symptoms of MSS and 97.9% practiced self-medication in the past 6 months. Table (3) showed that students were feeling symptoms after reading about a disease, 55.2% of participants ignored it, while 35.2% would talk to someone, and 9.6% would visit a doctor,

Table 4: Factors influencing self-medication practices among medical students (N=334)

	Number (%)
Drugs taken without prescription in the last 6 months	
Analgesics	284 (85.0)
Antibiotics	156 (46.7)
Vitamins and minerals	158 (44.3)
Proton Pump Inhibitors	50 (14.9)
Antipyretics	139 (41.6)
Antidiarrheal	53 (15.9)
Sedatives	28 (8.4)
Steroids	21 (6.3)
Antidepressants	15 (4.5)
Anti-laxatives	10 (2.9)
Others	57 (17.1)
Indications for taking drugs without prescription for the last 6 months	
Headache	258 (77.2)
Cough	132 (39.5)
Cold	214 (64.1)
Flu	179 (53.6)
Insomnia	42 (12.6)
Tooth pain	64 (19.2)
Infections	82 (24.6)
Disorders of digestion	89 (26.6)
Others	39 (11.7)
The person who advised you to take the medicine	
Yourself	261 (78.1)
Family	126 (37.7)
Colleague	24 (7.2)
Friends	45 (13.5)
Pharmacy clerk	48 (14.4)
Reasons for self-medication	
Saving money	76 (22.8)
Privacy	24 (7.2)
Saving time	167 (50.0)
Non acute diseases	206 (61.7)
Urgent treatment	84 (25.1)
Confidence of academic knowledge	104 (31.1)
Poor quality of medical centers	23 (6.9)
Uncertainty about physician science	17 (5.1)
Possess a home pharmacy	214 (64)
Response when medication has no effect	
Stop taking medicine and see physician	224 (67.1)
Stop taking medicine and consult a pharmacist	41 (12.3)
Increase the dose on my own	24 (7.18)
Decrease the dose on my own	6 (1.8)
Others	69 (20.7)

25.3% of participants would investigate their symptoms further, while the majority (74.7%) chose to ignore them, the duration of the symptoms varied, with 47.1% of participants

experiencing the symptoms for minutes, 22.6% for hours, and 30.3% for days, only 16.9% of participants had actually visited a doctor for the disease they suspected, 30.7% of participants

admitted to use medication without a doctor's consultation for a condition they believed they had, 31.8% of participants reported that the feeling of having an illness disturbed their sleep at night.

As shown in Table (4), a high percentage of participants (85%) reported using analgesics without a prescription in the last six months, followed by antibiotics (46.7%) and vitamins/minerals (44.3%). The primary reasons for self-medication included headaches (77.2%), cold (64.1%), and flu (53.6%). The majority of participants (78.1%) were self-medicated. However, family members (37.7%) were also a common source of advice, and 14.4% had advice from pharmacy clerks. The main reasons for self-medication were saving time (50%), non-acute diseases (61.7%), the confidence in academic knowledge (31.1%), and saving money (22.8%). Approximately 64% of participants reported having a pharmacy at home. When medications were not effective, the majority of participants (67.1%) opted to stop taking the medicine and see a physician, a smaller percentage of participants (12.3%) consult a pharmacist, while a few percentages of participants (7.18%) would increase the dose, and an even smaller percentage (1.8%) would decrease the dose on their own.

As shown in Table (5), logistic regression analysis showed that gender and the use of psychiatric sleep medications were the only statistically significant factors influencing the experience of MSS ($P < 0.05$).

DISCUSSION

Medical Students' Syndrome (MSS) is a condition characterized by psychosomatic symptoms that arise when students misinterpret vague bodily sensations as signs of serious illnesses they have recently studied whether through textbooks, lectures, or clinical exposure.¹¹

Self-medication refers to the practice where individuals choose and use medications without a prescription, based on their own judgment, to

treat illnesses or symptoms they have identified themselves.⁴

This study aimed to address a significant yet often overlooked issue among medical students. Specifically, it sought to explore the prevalence of Medical Students' Syndrome and self-medication practices within students at Zagazig University, with the goal of promoting their mental health and overall quality of life. Additionally, the research aimed to support the maintenance of high professional standards in the practice of medicine in Egypt.

Our results revealed that the mean age of students was 22.4 ± 2.2 years. The sample included 141 males (42.2%). Most students were in their fourth year (41%), followed by those in the fifth year (31.8%), and the fewest were in the third year (27.2%). The majority of students resided in urban areas (56.9%). Regarding parental education, the highest proportion had parents with a college degree (49.4%), followed by postgraduate education (30%), secondary education (14.3%), and primary education (6.3%).

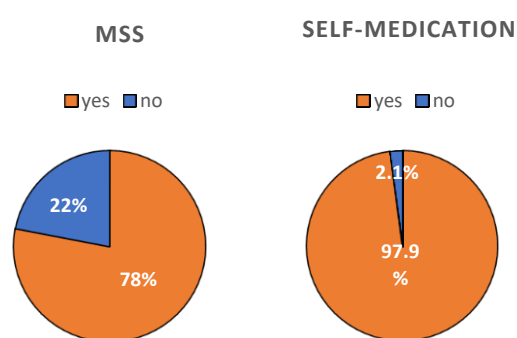
This study agreed with Abdullah et al.¹² who investigated how common MSS is and explored the awareness of it among medical students. They reported that the mean age of the students was 20.6 years. Females made up the majority of the sample, accounting for 71% and most participants were in their final year of study (41.6%).

Similarly, Sadiq et al.⁸ examined how widespread MSS is in Pakistan and its relationship with factors such as age, maturity, and medical knowledge. They reported a mean participant age of 21.94 years. Of the participant, 49 (43%) were male and 65 (57%) were female. The highest proportion of students were final-year students, accounting for 36 individuals (31.6%).

In our study, the prevalence of MSS among the students was 78%. Our findings are consistent with those of Abdullah et al.¹² and Sadiq et al.⁸, who reported MSS prevalence rates of 70.8% and 81%, respectively, in their study populations.

Table 5: Univariate logistic regression analysis identifying risk factors associated with MSS among medical students (N=334)

	Odds ratio	95% confidence		P-value
		Lower limit	Upper limit	
Age (years)	1.00	0.91	1.09	0.917
Gender	2.02	1.06	3.85	0.034
Years of study	1.51	0.92	2.46	0.102
Residence	1.35	0.70	2.61	0.370
Levels of parental education	1.10	0.75	1.60	0.623
Visiting a psychiatrist	0.81	0.34	1.94	0.638
Using psychiatric sleep medications	2.71	1.08	6.79	0.033

**Figure 1: Prevalence of MSS and self-medication during the last 6 months among medical students (N=334)**

However, our results showed a relatively higher prevalence of MSS compared to other studies. For instance, A study carried out at Mashhad University of Medical Sciences in Iran found a prevalence of 16% among medical students.¹³ Likewise, Zahid et al. conducted a survey among Pakistani medical students and reported a prevalence of 11.9%,¹⁴ whereas Kellner et al. found a prevalence of 8.3% among American medical students.¹⁵

The results showed that 52.1% of the participants were already familiar with MSS. One possible explanation is that psychology has become a more prominent part of medical education, leading to increased interest among students. Moreover, the significant stress faced by medical students may make them more conscious of their mental health and physical condition³, which might contribute to their moderate level of awareness about MSS.

Furthermore, in the current study, we found that when participants experienced symptoms after reading about a disease, 55.2% ignored them, 35.2% talked to someone, and 9.6% visited a doctor. Additionally, 25.3% of participants investigated their symptoms further, while the majority 74.7% chose to ignore them. The duration of symptoms varied: 47.1% experienced symptoms for minutes, 22.6% for hours, and 30.3% for days. Only 16.9% of participants had actually visited a doctor for the disease they suspected, while 30.7% admitted to using medication without consulting a doctor. Moreover, 31.8% reported that the feeling of having a disease bothered them at night while trying to sleep.

Sadiq et al⁸. reported that out of 129 students, 18 had visited a psychiatrist, while 26 (22.8%) admitted to using psychiatric medication either for relaxation or sleep. Only 49 students (43%) were aware of medical student syndrome. Although the majority (81%) reported experiencing symptoms related to the diseases they studied, 56% said they ignored these symptoms and continued with their activities. The tendency to either move forward without concern or to discuss symptoms with someone increased as students progressed through medical school. Only 28% of respondents investigated their symptoms further, with the highest proportion being third-year students. Although only 12 participants (9%) reported self-medicating to treat the condition, this is a significantly lower percentage compared to our

study and another study conducted in Saudi Arabia, which found that approximately 40.9% of students self-medicated for MSS.¹⁶

The secondary objective of this study was to assess the risk factors associated with medical student syndrome. We found that gender with a slightly higher prevalence among female students and the use of psychiatric sleep medications were the only statistically significant factors influencing the experience of symptoms after reading about a disease ($P < 0.05$).

This comes in agreement with Abdellatif, et al¹⁷ who reported that females had higher illness anxiety scores (median of 6.00) compared to males (median of 4.00), with a p-value below 0.01. Additionally, a study conducted at Tanta University found that women were more likely to experience hypochondriasis compared to men.¹⁸

Also come in agreement with Abdulghani et al¹ study which aimed to assess the prevalence of MSS among health profession students, examine its impact on academic performance, and evaluate awareness of MSS. It was found that female students experienced significantly higher levels of MSS compared to male students. Specifically, Karger¹⁹, Moskalewicz et al.²⁰ and Fawzy & Hamed²¹ shows that women are more prone than men to experience intense anxiety about their health.

This aligns with the findings of Elobaid et al.⁶ who reported that several risk factors were significantly associated with MSS. The study revealed that MSS was much more common in females (66.5%) than in males (51.5%). Additionally, students with a positive family history of psychiatric conditions showed a significantly higher prevalence (76.1%) compared to those without such a family history (59%).

These findings reinforce our conclusion that MSS is notably more prevalent among female students, aligning with the commonly held belief that women tend to react more quickly to the initial signs of illness and are generally more attentive to their bodies and any health-related issues they may encounter. Additionally, they

often have a stronger inclination to discuss their health with others and are more likely to consult a specialist to address their concerns. The common stereotype in our culture that men delay or avoid visiting healthcare professionals seems to be accurate.¹⁸ Besides environmental influences and social, work, and family pressures, women often juggle multiple social roles outside of their academic responsibilities, which may contribute to their increased burnout rates. These additional roles drain the time and energy needed for studying and rest. Moreover, female students generally have a lower tolerance for stress, even if they don't necessarily encounter more stressors compared to their male counterparts.²²⁻²³

In our study, visiting a psychiatrist does not affect the prevalence of MSS among medical students, which contrasts with findings from other studies that reported a lower occurrence of health anxiety and MSS in students who had sought psychiatric help.²⁴⁻²⁵

On the other hand, the study by Abdulrahman et al. revealed that the prevalence of MSS is different among students in different study years, with fifth-year students showing the lowest prevalence (9.7%).²⁶

Self-medication is a widespread public health issue, especially common in developing nations. Its prevalence ranges from 11.2% to 93.7%, related to the country and population studied. Variations in self-medication rates may be influenced by national legislation, socio-economic conditions, data collection methods, and research techniques.²⁷

In this study 97.9% reported taking medication without prescription in the past 6 months while 2.1% admitted didn't practice self-medication. Multiple previous national studies have documented the prevalence of self-medication among university students. Helal and Abou-ElWafa²⁸ a study among university students at Mansoura University in 2017, reported a prevalence of 62.9%. Similarly, Ramadan et al.²⁹ a study conducted among medical students at the Faculty of Medicine, Alexandria University in 2018 reported a prevalence of 52.77%. Also, Mahrous et al³⁰ study conducted at medical

students of Misr University found that the majority of students practiced self-medication at least once (98.3%). Only 1.6% of students reported that they never self-medicated. These findings, along with the finding of our study, indicate that the rate of self-medication in Egypt is increasing.

Research conducted in the Middle East has revealed elevated levels of self-medication. For instance, in Oman, 94% of university students reported practicing self-medication.³¹ In Sana'a, Yemen, 90% of health science students engaged in self-medication.³² Similarly, in Hail, Saudi Arabia, the prevalence of self-medication among university students was 98.2%.³³

In our study, the high prevalence of self-medication could be explained by that approximately 214 students (64%) had a home pharmacy, along with easy access to over-the-counter medications and the lack of strict regulations governing their use in developing countries.³⁴

In the current study, a high percentage (85%) of medical students reported taking analgesics without a prescription within the last six months, followed by antibiotics (46.7%) and vitamins/minerals (44.3%). This also align with Mahrous et al³⁰ who showed that analgesics were the most frequently used drugs for self-medication and antipyretics (82.3%), followed by antibiotics and antimicrobials (52%), and vitamins (50%). These results were also in line with earlier research that also found analgesics to be the most frequently used drugs for self-medication.^{29,32} El Ezz and Ez-Elarab³⁵ also revealed that the most commonly used drugs for self-medication were analgesics, antibiotics, and vitamins, with usage rates of 87.2%, 58.8%, and 54.4%, respectively.

In this study headaches were identified as one of the primary reasons for self-medication (77.2%), followed by colds (64.1%), and flu (53.6%).

Consistent with our findings, a previous study by Alshogran et al.³⁶ identified headache, cold, and flu as the main health issues prompting self-medication. Research involving 572 students in Pakistan showed that the most common reasons

for self-medication were headache (72.4%), flu (65.5%), and fever (55.2%).³⁷ Similarly, Helal et al.²⁸ found that headaches, colds, and flu were the most common health issues prompting self-medication.

In this study the main causes for self-medication were saving time (50%), non-acute diseases (61.7%), the confidence in academic knowledge (31.1%), and saving money (22.8%) was another reason. Also, in Mahrous et al³⁰ the primary reasons for self-medication were time and money saving (high expenses of doctors' visits) cited by 78.7% of the students, followed by a lack of awareness of associated risks (46.1%). Multiple studies have pointed out various motivations for self-medication, including factors such as the belief that the illness is minor, previous experience with similar symptoms, saving time, ease of access, and affordability.^{29,32,33,38} However, while self-medication may appear to save time and money, it can ultimately result in serious health consequences. Treating perceived illnesses without a proper diagnosis may lead to misdiagnosis, delayed treatment, and further health complications.³⁹

CONCLUSIONS

Considerably high prevalence of MSS has been observed among students at the College of Medicine, Zagazig University. The primary potential risk factors linked to this condition were gender and the use of psychiatric medications for sleep. Our study also revealed that self-medication is widespread among students, with headaches being the most frequent condition prompting it, and analgesics being the most used type of medication. The findings underscore the need for intervention programs focusing on awareness of the problem along with psychological support. Future research may focus on how this syndrome affects the skills and academic performance of medical students.

Ethical Approval

The study obtained all required approvals from the Institutional Review Board of Zagazig University (ZU-IRB #789/5).

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Conflict of Interest

All authors have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Author Contributions

A M A: Idea, literature search, and writing; AS: analysis, and critical review; A M F: methodology writing, critical review, and literature search; AI: Critical review, writing.

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