

## Perception of Hypochondriasis among Medical Students during COVID-19 at Tanta University, Egypt

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### Abstract:

**Background:** It is believed widely that medical students develop symptoms of illness and fears relating to the diseases they are studying. This phenomenon known as hypochondriasis or medical students' syndrome (MSS). The COVID-19 pandemic was considered as an additional factor which increased the frequency of depression and anxiety related to diseases.

**Aim:** to find out the prevalence and determinants of hypochondriasis among students in the Faculty of Medicine, Tanta University, Egypt. **Methodology:** This study included 500 students at Tanta Faculty of Medicine. The used questionnaire consisted of: sociodemographic data, a structured questionnaire to assess some determinants of hypochondriasis, and a 14-item version of Whiteley Index (WI). **Results:** 78.8% of the included students diagnosed as having hypochondriasis with females, 4<sup>th</sup> year students, and students from rural areas affected more than others. Also, significant associations were found between having hypochondriasis and existence of its determinants. **Conclusion:** Medical students are vulnerable to be affected by hypochondriasis, so they are in need for continuous psychological counseling and support.

**Keywords:** COVID-19, Egypt, Hypochondriasis, Medical Students, Medical Student Syndrome.

### Introduction:

Medical schools are known to be a stressful environment that causes students to experience high levels of psychological pressure, affecting their academic performance as well as their physical and mental health.

Medical students are at risk of developing anxiety due to heavy work, stress of examinations, and new clinical experiences. In the literature, this condition is known as medical students' syndrome, hypochondriasis of medical students, or nosophobia.<sup>(1)</sup>


Hypochondriasis is a psychological disorder in which the students develop a fear of suffering from a specific disease

they are studying as they falsely relate the vague symptoms they feel to the disease symptoms; it is characterized by strong anxiety.<sup>(2)</sup>

Moreover, the students are likely to change the diagnosis of their condition according to their current clinical rotation. Even after medical reassurance, these fears unfortunately persist, causing stress and affecting the students' concentration during their training.<sup>(3)</sup>

Hypochondriasis of medical students consists of 2 components; the cognitive component which is manifested as the student' thoughts of having the disease they study. The second component is distress

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which is manifested as feeling of anxiety caused by the cognitive component.

Researchers have reported that health-related anxiety is more common in the preclinical years and decreases as clinical exposure starts during final years of medical training. (4)

Medical students are more vulnerable to hypochondriasis than students of other colleges as medical studying is very stressful and affects the students' physical and mental health negatively. (5)

This stress affects the perception of disease symptoms by increasing physical sensations as it causes autonomic activation, making students more aware of their body state and sensations, especially pain perception. These hypochondriacal feelings involuntarily force the student to search for reassurance of being not affected by the disease.

This can be achieved through doing medical checkup, laboratory investigations, or by repeatedly asking doctors or even family members and friends to ensure the absence of a serious disease. (6)

An additional factor that we considered is the COVID-19 pandemic which raised public awareness of the possibility of infection and also contributed to an increase in the frequency of anxiety and depression.

This pandemic led to isolation from family and friends and limited involvement in social activities. It forced students to stay in their residence and most of teaching was delivered remotely which exacerbates anxiety, lack of concentration, and sleep disturbances.

Isolation has an impact not only on people with mental disorders but also on healthy people. One of the most vulnerable groups in this situation are students and medical staff. (7)

Earlier studies in 1960 and 1964 was postulated that hypochondriasis affects 70-80% of students but these studies were conducted on small number of students. (8,9)

On the other hand, new researches (1998-2014) didn't report significant differences between medical and non-medical students regarding hypochondriasis.

Due to these contradictory results between past and new studies and lack of data on the situation in Egypt, we decided to study this phenomenon among medical students. (5, 10)

The aim of this study was to find out the prevalence and determinants of hypochondriasis among medical students in the Faculty of Medicine during COVID-19 pandemic at Tanta University, Egypt.

**Participants and Methods:**

**Study design:** A descriptive cross-sectional study.

**Study setting:** Faculty of Medicine, Tanta University, Egypt. The study was carried out in October 2021 during the first semester of the academic year 2021-2022.

**Study population and sampling technique:**

Data were collected from medical students in the first year as a representative of the pre-clinical medical years and students from the fourth year as a representative of clinical years over a period of 2 weeks. Sample size was found to be 320 as it was calculated according to a level of confidence of 95%, expected prevalence of 50%, and precision of 0.05.

This sample size was increased up to 500 medical students for the sake of better accuracy and validity. The study sample was chosen from the first and fourth years by proportional allocation random sampling technique (251 students from the 1<sup>st</sup> year and 249 students from the 4<sup>th</sup> year).

**Study tool:**

A self-administered questionnaire consisting of 3 parts was used in this study; (1) Sociodemographic data and relevant family history, (2) A structured medical students' syndrome related questionnaire developed by Sadiq et al. 2018 to assess

some determinants of medical student syndrome (MSS) which is a form of hypochondriasis among medical students.<sup>(11)</sup>

This questionnaire consisted of 10 questions including if the student knew what MSS is, felt any symptom/sign while studying any disease, severity, duration and strength of the stimuli, their effect on sleep, and whether the student ever consulted a doctor or took any medications even without consultation for their symptoms. (3) A 14-item version of Whiteley Index (WI) developed by Pilowsky to diagnose hypochondriasis or health anxiety.<sup>(12)</sup>

It consists of 14 items; each item answered in original true/false response format. Response to these items is dichotomous. So, the total score ranges from zero to 14 <sup>(13)</sup>. A score of  $\geq 7$  is considered as a cut-off point to diagnose hypochondriasis of medical students.<sup>(14,15)</sup> This was a valid and reliable questionnaire (Cronbach's Alpha 0.89).

**Data analysis:**

Collected data were tabulated and then analyzed using Statistical Package for Social Sciences program (SPSS IBM Chicago, version 23). Descriptive presentations were done and relation between groups was determined using chi square test. Level of significance was at  $p < 0.05$ .

**Results:**

This study included 500 medical students in Tanta Faculty of Medicine (251 students from the 1<sup>st</sup> year and 249 students from the 4<sup>th</sup> year) with a mean age of 20.36 years and a standard deviation of 1.25 years. 56.2% of the participants were females, while 43.8% were males.

More than half of the students (58.2%) live in rural areas. The majority of students' parents (77.6%) don't work in medicine and 60% of the students don't have a positive family history of chronic diseases (Table 1).

Only 68 students (13.6%) went to a psychiatrist, and 20% had previously taken psychiatric/sleeps medications. More than two thirds of the students (66%) were aware of medical students' hypochondriasis (medical student syndrome). After reading about the disease, 65.8% of students reported feeling signs/symptoms of it, while only 8% had severe symptoms requiring them to see a doctor.

The majority of students (70.6%) ignored these symptoms which were discovered to last only a few minutes in approximately half of them (48.6%). Only 36.8% of students went to a doctor after suspecting of having a disease, but a higher percentage (47.4%) reported using medicines for the disease without consulting a doctor. 40.4% of students

reported that the thought of having a disease kept them awake at night. (Table 2).

Regarding the prevalence of hypochondriasis among medical students, 78.8% were found to have it, while only 21.2% were found to be free of it (Table 3).

Females, clinical year students (4<sup>th</sup> medical year), and those from rural areas were found to be more prone to hypochondriasis than others (55.6%, 51.5%, and 58.6% respectively). More than three quarters of those having hypochondriasis (77.2%) were students whose parents did not work in medicine, and more than half of them didn't have family history of chronic diseases (58.4%) (Table 4).

The majority of hypochondriac medical students (84.8 %) had never seen a psychiatrist and 77.7% had never taken psychiatric/sleep medications.

Approximately two-thirds of students diagnosed with hypochondriasis (66.8%) were aware of the condition, also known as medical students' syndrome. 72.8% of students with hypochondria admitted that they feel the disease symptoms they read about compared to 39.6% of students who did not have it with a significant difference between them.

More than half of the students having hypochondriasis (53.6%) experienced mild

stimuli as they ignore them. In response to these stimuli, 33% of the students investigated further. These feelings lasted for days in 24.9% of students.

After suspicion of having a disease, 40.6% of them diagnosed with hypochondriasis went to a doctor, while 49.2% used medicines without consulting a doctor. 45.2% were found bothered at night in sleep because of the feeling of having a disease compared to only 22.6% of those not having hypochondriasis with a significant difference between them (Table 5).

### Discussion:

The extensive medical knowledge students get during studying medicine make them more anxious and extensively aware of their body symptoms and falsely relate these symptoms to the illness they felt.<sup>(6)</sup> Hypochondriasis of medical students causes stress to them and affects their academic performance. Furthermore, with COVID-19 pandemic, high levels of depression among medical students have been reported, with rates as high as one-third, indicating some form of mental distress during medical school years.<sup>(16)</sup>

Regarding hypochondriasis determinants, the current study found that 13.6% of the included medical students went to a psychiatrist before and 20% of

them took psychiatric /sleeps medications. These results are almost similar to Sadiq et al., 2018 results who found that 13.9% of their medical students had been to a psychiatrist and 22.8% said that they took psychiatric medications before.<sup>(11)</sup>

In the present study, we found that 66% of students knew the hypochondriasis of medical students or students' syndrome which was higher than that found by Sadiq et al., 2018 (only 43%).<sup>(11)</sup>

While the majority of students in Sadiq et al. study (81%) admitted that they felt symptoms of diseases while studying them, we found that a lower percentage of students (65.8%) felt symptoms of diseases when they read about them, but nearly similar percentages of students in both studies ignored the symptoms of hypochondriasis they felt.<sup>(11)</sup> 36.8% of students in the current study admitted that they visited a doctor for diseases they suspect to have; this percentage is higher than that of the students who went to doctors for their symptoms in Sadiq *et al.* study (23%). Also, a much higher percent of students included in the current study (47.4%) reported self-medication for their symptoms without consulting a doctor compared to only 9% of students included in Sadiq et al. study.<sup>(11)</sup> However, findings of other studies done on medical students in

Saudi Arabia were more consistent with our results where they reported that 40.9% of their students admitted that they were self-medicated for the symptoms they felt.<sup>(17)</sup>

This can be attributed to higher awareness of Pakistanian medical students about the proper usage of drugs and also due to the availability of drugs only when prescriptions are available in Pakistan; however, drugs are freely available to anyone in Egypt and Saudi Arabia without prescriptions.

Regarding the prevalence of hypochondriasis among medical students, we found that 78.8% of the included medical students in our study suffered from this disease. Our results are similar to Moss-Morris and Petrie findings who revealed that from 70% to 80% of the included medical students in their studies experienced hypochondriasis.<sup>(18)</sup>

These percentages are much higher than those found by Eslami et al., 2018 in their study conducted in Iran where they found that only 11% medical students suffered of probable hypochondriasis.<sup>(19)</sup> Also, Talaei, 2009 found that 16% of medical students at Mashhad University, Iran diagnosed as having hypochondriasis.<sup>(20)</sup>

Moreover, Althagafi et al., 2019 in their study in Saudi Arabia found that 17.4% of medical students at Taif University

diagnosed with hypochondriasis.<sup>(3)</sup> Moreover, a much lower prevalence of hypochondriasis (3.4%) was found among medical students at King Saud University.<sup>(17)</sup>

However, other studies from China showed higher prevalence of hypochondriasis than that found in Iran and Saudi Arabia, but less than the disease prevalence in Egypt where 48% of students included in Meng et al., 2017 study and 55.3% of Chinese medical students included in Zhu et al., 2017 study diagnosed as having hypochondriasis.<sup>(2,21)</sup>

These extreme differences in the prevalence of hypochondriasis in different countries can be attributed to the differences in the degree of awareness of medical students about diseases and which symptoms can make them worry about and being in need for medical help.

The current study found that hypochondriasis was more prevalent among female medical students than among males (55.6% vs 44.4%). This is consistent with findings reported by Talaei, 2009 in his study in Iran and Sadiq et al., 2018 in their study in Pakistan.<sup>(11,20)</sup>

Moreover, other studies done on medical students from different countries also favored our study findings.<sup>(22,23)</sup> This can be explained as the proportion of female

students is usually higher than male students in the medical colleges.

Different findings were found by Khan et al. in a study done in Karachi as they found that female students exhibited lower levels of health anxiety that can be due to the ability of females to cope with stress and health anxiety more than males.<sup>(24)</sup>

However, Al-Turkia et al., in a study done on medical students in Saudi Arabia didn't show any differences in hypochondriasis prevalence between male and female medical students.<sup>(17)</sup> Also, Creed and Barsky in their studies didn't find any effect of students' gender on the prevalence of hypochondriasis.<sup>(25)</sup>

The present study showed that the higher percentage of students diagnosed as having hypochondriasis was the percentage of students in the clinical year (4<sup>th</sup> year) compared with those in the preclinical year (1<sup>st</sup> year). Our findings are supported by Azuri et al., 2010 and Sadiq et al., 2018 findings.<sup>(11,26)</sup>

These results are also supported by Al-Turkia et al., study as they found that the prevalence of hypochondriasis among students at King Saud University at the basic medical years was lower than that among students in clinical years.<sup>(17)</sup>

This can be explained by the fact that students in the 4<sup>th</sup> year or any of the clinical

years start to study more about the symptoms and signs of diseases and begin to know how to make clinical examination of patients, while students in the 1<sup>st</sup> year or any of the pre-clinical years have little exposure to clinical aspects of diseases.

In contrast to our results, Althagafi et al., in their study in 2019 found that hypochondriasis was higher among students in pre-clinical years of medicine than among students in clinical years.<sup>(3)</sup>

Their results are also supported by other studies done in different countries which reported that the higher percentage of students with hypochondriasis was among students in the initial years of medical college, while the percentage decreases with progressing in studying medicine.<sup>(27,28)</sup>

This is possibly because students during the pre-clinical medical years have a high sense of body awareness and also do not have the right medical knowledge to differentiate between the true and fake symptoms.

However, Barikani in his study in 2009 didn't agree with any of these findings as he found that the percentage of medical students affected with hypochondriasis was equal throughout all the years of medical education.<sup>(29)</sup>

In relation to students' parents' job, the present study found that 77.2% of students

having hypochondriasis were students whose parents with jobs not related to medicine; this can be attributed to the inability of students to ask their parents about their symptoms and get true medical information to exclude or confirm existence of a disease.

This is in contrary with Eslami et al., 2018 who found that the percent of students with MSS was higher among students whose parents with jobs related to medicine.<sup>(19)</sup>

### **Conclusions:**

The present study concluded that hypochondriasis of medical students or medical students' syndrome is prevalent among a large sector of medical students as 78.8% of our included medical students diagnosed as having hypochondriasis.

Female students, students at the clinical year, and those from rural areas suffered from hypochondriasis more than other students.

### **Recommendations:**

In these stressful times of COVID-19 pandemic, most of people are prone to develop hypochondriasis, especially medical students who are the most vulnerable group to develop this syndrome. Therefore, improving student mental health becomes a greater priority to reduce mental distress. So, universities should provide

psychological counseling for students about hypochondriasis and its symptoms in addition to supportive services to overcome their stress. These services should be provided through skilled counselors to give the right guidance to students.

### **Declaration:**

### **Ethical approval:**

Approval of Ethical committee of Tanta Faculty of Medicine was obtained before conducting the study (no 33527/9/21). Objectives of the study were explained to all the students who participated in the study. Data confidentiality was assured to all included students. Informed oral consents were obtained from those who agreed to participate prior proceeding with the study.

### **Conflict of interest:**

The authors declared that there is no conflict of interest.

### **Funding:**

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### **Acknowledgement:**

We would like to thank all students for their valuable participation in our study.

**Author contribution:** Walaa M. Shehata put the idea of this research, wrote the initial protocol of the study, and performed the fieldwork. Doaa E. Abdeldaim did the data statistical analysis. Walaa M. Shehata and Doaa E. Abdeldaim collected and



interpreted the data of this study. Both authors wrote and reviewed all parts of the manuscript and approved its final version.

**Data availability:** not applicable.

**Consent to participate:** Not applicable.

**Consent for publication:** Not applicable.

#### **Limitation of the study:**

The limitation of the current study was that it was done in only one medical college. Thus, we recommend for further studies to include more medical colleges at different regions of Egypt.

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**Table 1: Socio-demographic characteristics among the studied participants:**

Socio-demographic characteristics	Study subjects (N=500)
	No(%)
<b>Sex:</b>	
▪ Male	219(43.8)
▪ Female	281(56.2)
<b>Medical educational year:</b>	
▪ Preclinical year (1 <sup>st</sup> year)	251(50.2)
▪ Clinical year (4 <sup>th</sup> year)	249(49.8)
<b>Parents' job:</b>	
▪ Related to the medicine	112(22.4)
▪ Non-related to the medicine	388(77.6)
<b>Residence:</b>	
▪ Urban	209(41.8)
▪ Rural	291(58.2)
<b>Family History of Chronic disease:</b>	
▪ Yes	200(40)
▪ No	300(60)

**Table 2. Determinants of hypochondriasis among medical students:**

Determinants of hypochondriasis among medical students (medical student syndrome)	Study subjects (n=500)	
	No.	%
<b>Have you ever been to a psychiatrist?</b>		
▪ Yes	68	13.6
▪ No	432	86.4
<b>Have you ever taken psychiatric/sleep medications?</b>		
▪ Yes	100	20.0
▪ No	400	80.0
<b>Do you know what medical students syndrome is?</b>		
▪ Yes	330	66.0
▪ No	170	34.0
<b>Have you ever felt any sign/symptoms of a disease when you read about a disease?</b>		
▪ Yes	329	65.8
▪ No	171	34.2
<b>How strong the stimuli do you feel?</b>		
▪ I ignore it	285	57.0
▪ I talk to someone	175	35.0
▪ Have to go to a doctor	40	8.0
<b>What is your response to the stimuli?</b>		
▪ Ignore	353	70.6
▪ Investigate further	147	29.4
<b>How long does the feeling last?</b>		
▪ Minutes	243	48.6
▪ Hours	141	28.2
▪ Days	116	23.2
<b>Been to a doctor for that disease that you suspect you have?</b>		
▪ Yes	184	36.8
▪ No	316	63.2
<b>Have you ever used medicines (without consulting a doctor) for the disease you are suspecting?</b>		
▪ Yes	237	47.4
▪ No	263	52.6
<b>Does the feeling of having a disease bother you at night in sleep?</b>		
▪ Yes	202	40.4
▪ No	298	59.6

**Table 3: Prevalence of hypochondriasis among medical students:**

<b>Whiteley Index</b>	<b>Yes N (%)</b>	<b>No N (%)</b>
1-Do you often worry about the possibility that you have got a serious illness?	365(73%)	135(27%)
2-Are you bothered by many aches and pains?	324(64.8%)	176(35.2%)
3-Do you find that you are often aware of various things happening in your body?	358(71.6%)	142(28.4%)
4-Do you worry a lot about your health?	406(81.2%)	94(18.8%)
5-Do you often have the symptoms of very serious illnesses?	161(32.2%)	339(67.8%)
6-If a disease is brought to your attention (through the radio, television, newspapers, or someone you know) do you worry about getting it yourself?	327(65.4%)	173(34.6%)
7-If you feel ill and someone tells you that you are looking better, do you become annoyed?	259(51.8%)	241(48.2%)
8-Do you find that you are bothered by many different symptoms?	294(58.8%)	206(41.2%)
9-Is it easy for you to forget about yourself and think about all sorts of other things?	337(67.4%)	163(32.6%)
10-Is it hard for you to believe the doctor when he tells you there is nothing for you to worry about?	262(52.4%)	238(47.6%)
11-Do you get the feeling that people are not taking your illness seriously enough?	321(64.2%)	179(35.8%)
12-Do you think that you worry about your health more than most people?	277(55.4%)	223(44.6%)
13-Do you think there is something seriously wrong with your body?	285(57%)	215(43%)
14-Are you afraid of illness?	379(75.8%)	121(24.2%)
<b>Total score:</b>		
Having hypochondriasis	394(78.8%)	
Not hypochondriasis	106(21.2%)	

**Table 4. Relationship between hypochondriasis and students' socio-demographic characteristics**

Socio-demographic characteristics	Having hypochondriasis (n=394)		Not having hypochondriasis (n=106)		P value
	No	%	No.	%	
<b>Sex</b>					0.6
▪ Male	175	44.4	44	41.5	
▪ Female	219	55.6	62	58.5	
<b>Medical educational year</b>					0.1
▪ Preclinical year (1 <sup>st</sup> year)	191	48.5	60	56.6	
▪ Clinical year (4 <sup>th</sup> year)	203	51.5	46	43.4	
<b>Parents' job</b>					0.6
▪ Related to the medicine	90	22.8	22	20.8	
▪ Not related to the medicine	304	77.2	84	79.2	
<b>Residence</b>					0.7
▪ Urban	163	41.4	46	43.4	
▪ Rural	231	58.6	60	56.6	
<b>Family History of Chronic disease</b>					0.2
▪ Yes	164	41.6	36	34.0	
▪ No	230	58.4	70	66.0	

**Table 5: Relation between hypochondriasis frequency and its determinants among medical students:**

Determinants of hypochondriasis	Having hypochondriasis (n=394)		Not having hypochondriasis (n=106)		P value
	No	%	No	%	
<b>Have you ever been to a psychiatrist?</b>					0.041*
▪ Yes	60	15.2	8	7.5	
▪ No	334	84.8	98	92.5	
<b>Have you ever taken psychiatric /sleep medications?</b>					0.012*
▪ Yes	88	22.3	12	11.3	
▪ No	306	77.7	94	88.7	
<b>Do you know what medical students syndrome is?</b>					0.5
▪ Yes	263	66.8	67	63.2	
▪ No	131	33.2	39	36.8	
<b>Have you ever felt any sign/symptoms of a disease when you read about a disease?</b>					0.000*
▪ Yes	287	72.8	42	39.6	
▪ No	107	27.2	64	60.4	
<b>How strong the stimuli do you feel?</b>					0.008*
▪ I ignore it	211	53.6	74	69.8	
▪ I talk to someone	147	37.3	28	26.4	
▪ Have to go to a doctor	36	9.1	4	3.8	
<b>What is your response to the stimuli?</b>					0.001*
▪ Ignore	264	67.0	89	84.0	
▪ Investigate further	130	33.0	17	16.0	
<b>How long does the feeling last?</b>					0.007*
▪ Minutes	177	44.9	66	62.3	
▪ Hours	119	30.2	22	20.8	
▪ Days	98	24.9	18	17.0	
<b>Been to a doctor for that disease that you suspect you have?</b>					0.001*
▪ Yes	160	40.6	24	22.6	
▪ No	234	59.4	82	77.4	
<b>Have you ever used medicines (without consulting a doctor) for the disease you are suspecting?</b>					0.1
▪ Yes	194	49.2	43	40.6	
▪ No	200	50.8	63	59.4	
<b>Does the feeling of having a disease bother you at night in sleep?</b>					0.000*
▪ Yes	178	45.2	24	22.6	
▪ No	216	54.8	82	77.4	

## الملخص العربي

### ادراك توهم المرض لدى طلاب الطب خلال جائحه كوفيد 19 – فيجامعه طنطا-مصر

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**الخلفية:** علي نطاق واسع ، قد وجد ان الطلاب تظهر عليهم اعراض المرض و المخاوف المتعلقة بالأمراض التي يدرسونها. تعرف هذه الظاهرة بالمراق او متلازمة طلاب الطب. وتعتبر جائحه كوفيد ١٩ عاملا إضافيا يزيد من معدلات الاكتئاب والقلق المتعلقين بالأمراض. **الأهداف:** لمعرفة مدي انتشار ومحددات توهم المرض بين طلاب كلية الطب، جامعه طنطا ، مصر. **طرق البحث:** يضم البحث ٥٠٠ طالب من كلية طب طنطا. ويضم الاستبيان بيانات اجتماعيه ديموغرافيه، استبيان لتقييم محددات المراق و ١٤ عنصر من استبيان وايتلي. **النتائج:** ٧٨,٨٪ من الطلاب الذين تم تشخيصهم بالمراق من الاناث، طلاب السنه الرابعه، و القاطنين في القرى. **الاستنتاج:** طلاب الطب أكثر عرضه للمراق لذلك فهم في حاجه الي التقييم والدعم النفسي المستمر.