Determinants of illness anxiety disorder among medical students in Hyderabad, Pakistan.

Manzoor Ali Jamali[1], Tariq Feroz Memon [2,*] , Ghulam Hussain Baloch[3], Partab Puri[4], Gotam Kumar[5], Muhammad Azeem Khan[6].

ABSTRACT:
Objective: To determine the burden and determinants of Illness anxiety (IA) among medical students in Hyderabad, Pakistan.
Methodology: This Cross-sectional study was conducted from September-December 2024 at the Isra University, Hyderabad, Sindh. Participants regardless of their age and gender selected from 3rd, 4th and 5th years of MBBS at Isra University, Hyderabad through stratified sampling. A self-administered questionnaire was distributed. Illness anxiety was assessed using Whiteley Index-7 and stress levels were assessed using Perceived stress scale-4. Data entered and analyzed in SPSS 27.
Results: Among the 234 participants, 42.0% of them had IA. Female participants having higher prevalence 63.3 % of IA compared males. The prevalence of IA was higher among 3rd year students (46.2%) compared to the 4th and 5th year. Moreover, the highest GPA scores (<3.0) had a higher probability of IA compared to their counterparts (p = 0.003). Stress showed the strongest association with IA. Female gender (aOR=2.40, p=0.001), 3rd-year status (aOR=1.85, p=0.02), high stress (aOR=3.05, p<0.001), poor sleep (aOR=2.60, p=0.001), and family anxiety history (aOR=2.10, p=0.01) were found as a significant determinants of IA.
Conclusion: Significant proportion of medical students experience health anxiety in Hyderabad. Whereas, female students, those in earlier clinical years, lower GPA, with a family history of mental disorders, high levels of stress and inadequate sleep are all more affected by this problem and are significant determinants for this disorder.

Key words: Anxiety, Hypochondriasis, Illness Anxiety disorder, Medical students, Whiteley Index-7, Perceived stress scale-4

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Introduction:

Hypochondriasis or illness anxiety (IA) is a mental disorder that is defined as the state of preoccupation with or person's fear or false belief that he or she is suffering from some serious illness.[1] It is characterized by an excessive fear of acquiring or having a serious medical condition despite being healthy with a normal physical examination, negative tests, and medical reassurance. Accompanied by insignificant bodily signs or symptoms or none at all.[2, 3]
Currently, IA or health related anxiety is one of the existing entities in the category of "Somatic Symptom Disorders Manual" of mental disorders.

1. Associate Professor, Dept. of Psychiatry, Isra University, Hyderabad
2. Assistant Professor, Dept. of Community Medicine, LUMHS, Jamshoro
3. Assistant Professor, Dept. of Community Medicine, Isra University, Hyderabad
4. Assistant Professor, Dept. of Community Medicine, Ibn-e-Sina University, Mirpurkhas
5. Professor, Dept. of Community Medicine, PUMHS, Nawabshah
6. Associate Professor, Institute of Psychiatry, Benazir Bhutto Hospital, Rawalpindi Medical University. Rawalpindi

**=corresponding author :*
Email: drtariqferoz@gmail.com

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The symptoms of IA can range from mild to severe, transient or chronic. The underlying etiology of this disorder of IA is presently unclear and yet to be understood. However, it can take place within the lifespan and predominate in the midlife years. While regardless of any biasness, it can affects roughly both genders in an equal manner.[4]
Over 70% of medical students suffer from it at one time or another during their undergraduate years.[1,5] Based on the literature, many papers argued the increase in the prevalence of hypochondriasis and the causality between being a medical student and developing health-related anxiety with prevalence rates reaching 78.8%.[3] Numerous studies conducted over the world have concluded that medical students have a substantially higher proportion of prevalence of stress, depression, anxiety, burnout, suicidal ideations, mental disorders and addictions.[6,7]
The purpose of this study was to address a serious, underestimated issue that exists amongst medical students worldwide. Individuals with IA, a psychiatric medical disease characterized by a collection of somatoform disorders, believe they have serious illnesses or are extremely concerned about developing them because they have misinterpreted their symptoms for at least six months.[8,9] Despite the significant impact of the condition on medical students, this issue remains underexplored in Pakistan, with scarce data available on IA among local medical students. Recognizing this significant gap in the literature regarding IA among Pakistani medical students, this study is designed with an objective to determine the burden and determinants of IA among medical students in Hyderabad, Pakistan. The findings of this study may help bridge this gap in the literature and advance knowledge of the mental health problems that medical students in the area face.

Objective:
To determine the burden and determinants of Illness anxiety (IA) among medical students in Hyderabad, Pakistan.

Methodology:
This cross-sectional study was conducted by the department of community medicine in collaboration with department of Psychiatry, Isra University, Hyderabad conducted during September-December 2024 after getting ethical approval from ethical review committee of Isra University, Hyderabad. Medical students, studying in third, fourth and fifth year of MBBS, belongs to either gender were included in the study. Whereas, medical students from non-clinical years (first and second year MBBS), those registered in dental and other sections and those who refused to fill the questionnaire or participate were excluded. Sample size was calculated using finite population sample size formula

$$n = {}^{N}/_{1 + N * e^2}$$

Where n=sample size, N= total medical students in the selected study years (450 in Isra university) and e=margin of error (5%). By keeping confidence level of 95%, the sample size of 212 was calculated. By adding 10% more students for non-response the final sample was 234. Participants were selected using stratified sampling technique. By using stratified sampling, we picked n=78 students from each year.

The data were collected at the end of the day's academic session. All students were informed of the study's purpose, and their consent was obtained. Following that, a self-administered questionnaire was distributed, which included information such as socio-demographics, academic year, marital status, smoking history, residence, housing, grade point average (GPA), and others. A standardized Whiteley Index-7 tool was utilized to gather information about illness anxiety. This questionnaire included seven questions on a Likert scale. Based on the findings, participants scored 0-7 (mild IA), 8-14 (moderate IA), and 15 or more (severe IA). Participants' stress levels were assessed using the Perceived Stress Scale (PSS-4). The acquired data was entered into SPSS version 27 for analysis. For normally distributed data, descriptive statistics such as frequency and percentages were used. Chi-square was used to analyze the correlation and difference between categorical variables, and binary logistic regression was performed to find predictors of sickness anxiety disorder. The level of significance was set at p-value ≤ 0.05.

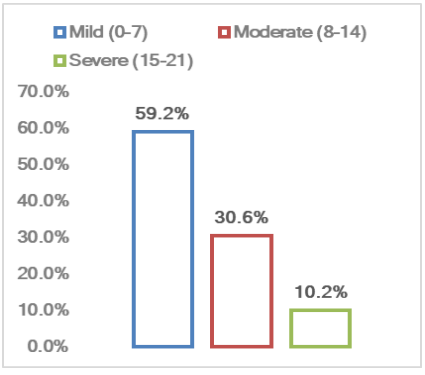
Results:
A total 234 students from third, fourth and fifth year MBBS of Isra University, Hyderabad were invited for the participation in the study. Table 1 is presenting the socio-demographic and personal information of participants with comparison of several factors between people with illness anxiety and those without IA. The proportion of females who experienced IA was higher than that of males indicating a statistically significant difference in gender (p=0.008). Another factor was the academic year; as majority of third-year students reported feeling anxious about illness, which was significantly higher than the students of fifth-year (p=0.02). Another important factor was GPA; a statistically significant difference (p=0.03) among the participants with a GPA of <3.0 compared to those with GPA 3.0 and above of feeling anxious about getting sick. According to smoking status, a greater proportion of non-smokers (75.5%) than current smokers (18.4%; p=0.04) reported feeling anxious about getting sick. Finally, there was a significant correlation between family history of mental disorders and illness anxiety (p=0.003). Nevertheless, there were no discernible variations according to marital status, housing status, and place of residence.

Table No 1: Demographic and general characteristics of participants (n=234)

Variable	Category	Total	Illness Anxiety Present (n=98)	No Illness Anxiety (n=136)	p-value
Gender	Female	124	62 (63.3%)	62 (45.6%)	0.008
	Male	110	36 (36.7%)	74 (54.4%)	
Marital Status	Single	192	80 (81.6%)	112 (82.4%)	0.89
	Married	42	18 (18.4%)	24 (17.6%)	
Academic Year	3rd Year	78	42 (43.0%)	36 (26.5%)	0.02
	4th Year	78	30 (30.6%)	48 (35.3%)	
	5th Year	78	26 (26.5%)	52 (38.2%)	
GPA	>3.5	75	20 (20.4%)	55 (40.4%)	0.03
	3.0-3.5	90	28 (28.6%)	62 (45.6%)	
	<3.0	69	50 (51.0%)	19 (14.0%)	
Smoking Status	Non-smoker	190	74 (75.5%)	116 (85.3%)	0.04
	Current smoker	33	18 (18.4%)	15 (11.0%)	
	Ex-smoker	11	6 (6.1%)	5 (3.7%)	
Place of Residence	Hyderabad	122	56 (57.1%)	66 (48.5%)	0.19
	Other cities	112	42 (42.9%)	70 (51.5%)	
Housing	Day scholar	96	38 (38.8%)	58 (42.6%)	0.31
	Hostelite	122	52 (53.1%)	70 (51.5%)	
	Sharing apartment	16	8 (8.1%)	8 (5.9%)	
Family History of Mental Disorders	Yes	46	28 (28.6%)	18 (13.2%)	0.003
	No	188	70 (71.4%)	118 (86.8%)	

Based on the Whiteley Index-7, nearly half of the participants (42%) were suffering from IA compared to those without illness anxiety(58%). Those found suffereing from IA, 58.2% reported it mild, among the participants suffering from mild IA (58.2%) while 30.6% reported it moderate and 10.2% were found to have severe IA as shown in graph 1.

Graph No 1: Severity of illness Anxiety.



We found a significant correlation between stress levels, sleep patterns, and the severity of IA among study participants (p<0.001). High stress levels were 5.4 times higher in the moderate-severe IA anxiety group compared to the no-minimal IA group, showing a strong dose-response association between stress and IA. Sleep patterns indicated

equally striking trends: students who slept fewer than 6 hours were more likely to experience mild IA anxiety and moderate-severe IA than those who had no IA. Students with IA were more likely to report sleep difficulties than those without IA (p<0.01). In contrast, more over half of the students in the IA group experienced daytime dysfunction compared to their contemporaries. The difference was likewise statistically significant (p<0.01). These findings suggest that poor sleep quality and high levels of stress serve as complementary risk factors for illness anxiety as shown in table no 2.

Table No 2: Differences of stress levels and sleep patterns with severity of IA (n=234)

Variable	Category	No-minimal IA (n=136)	Mild IA (n=58)	Moderate -Severe IA (n=40)	p-value
Stress levels	Low (0-6)	94 (69.1%)	24 (41.4%)	8 (20.0%)	<0.001
	Moderate (7-12)	32 (23.5%)	22 (37.9%)	16 (40.0%)	
	High (13-16)	10 (7.4%)	12 (20.7%)	16 (40.0%)	
Sleep patterns					
Sleep duration	<6 hours	62 (45.6%)	42 (72.4%)	28 (70.0%)	<0.001
	6-8 hours	66 (48.5%)	14 (24.1%)	10 (25.0%)	
	>8 hours	8 (5.9%)	2 (3.5%)	2 (5.0%)	
Sleep disturbances	Yes	82 (60.3%)	48 (82.8%)	34 (85.0%)	<0.001
	No	54 (39.7%)	10 (17.2%)	6 (15.0%)	
Daytime dysfunction	Frequent	46 (33.8%)	34 (58.6%)	25 (62.5%)	<0.001
	Occasional/Rare	90 (66.2%)	24 (41.4%)	15 (37.5%)	

Table No 3: Logistic Regression Analysis of Factors Associated with Illness Anxiety

Variable	Adjusted Odds Ratio (AOR)	95% CI	p-value
Female Gender	2.40	1.42-4.05	0.001
3rd Year Students	1.85	1.10-3.12	0.021
High Stress	3.05	1.75-5.30	0.000
Poor Sleep	2.60	1.48-4.58	0.001
Family History	2.10	1.18-3.72	0.01

Table 3 shows the logistic regression analysis of the significant independent predictors of IA. The findings demonstrated that female students had 2.4 times the odds of acquiring IA as male students (aOR=2.40, 95% CI:1.42-4.05, p=0.001), showing that gender is a potential risk factor for IA. Academic development, on the other hand, showed distinct impacts, with third-year students having 85% higher odds than fourth- and fifth-year students (aOR=1.85, 95% CI: 1.10-3.12, p=0.02). The largest link was found with stress, with students with high stress levels having three times the odds of IA (aOR=3.05, 95% CI: 1.75-5.30, p=0.000). Poor sleepers had 2.6-fold greater risks (aOR=2.60, 95% CI: 1.48-4.58, p=0.001), demonstrating that sleep quality is also a significant determinant. Furthermore, pupils with a family history of anxiety or mental illness had a higher odds of acquiring IA than those without a family history (aOR=2.10, 95% CI: 1.18-3.72, p=0.01).

Discussion:

Anxiety due to health-related concerns comprises a disorder which has been described by multiple terms in the literature that includes health related anxiety, hypochondriasis, medical students' disease or IA.[10,11] To the best of our knowledge, the present study is first to evaluate about the IA and its determinants among medical students in Hyderabad, Sindh. In order to assess this underexplored issue and provide future guidelines or strategies to reduce its impact, it is critical to ascertain the burden of IA among the future healthcare providers. In the present study, we determined the burden of IA and its determinants among medical students of Isra University, Hyderabad. The burden of IA among our study participants was 42.0% while IA was more prevalent among female participants (63.3%) compared to their counterparts. The prevalence of IA among medical students in our study is consistent with Elobaid et al., Terra et al and Szczurek et al.[7,12,13] Whereas, other studies by Abdulghani et al., Abdulrahman et al. and Al-Samhori reported lower prevalence of IA (between 7% and 32%) in their studies.[11,14,15] Moreover, couple of other Pakistani studies also reported prevalence of IA (20.4% and 30.3%) among medical students that is much lower than the present study.[10,16] Despite the low prevalence and variations, all studies reported the higher prevalence of female were suffering from IA compared to their counterparts which shows consistency with the present study. According to an established hypothesis states that IA peaks in the initial clinical year. Our analysis confirms this hypothesis revealing a greater prevalence of IA among third-year students (43.0%). Majority of these third-year students in our study reported feeling anxious about illness, which was significantly higher than the students of fifth-year (p=0.02).Stevanofic et al., Rohila et al., Sadiq et al. and Aqeel et al. have also validated these findings with reporting higher prevalence of IA among 3rd year medical students in their studies.[1,10,17,18] We believe this is because students begin studying disease pathology in their third year and that constant learning of new diseases throughout the academic years and advanced medical knowledge would sustain the cognitive component, yet, students experience a state of maturity which progresses during clinical years with further understanding and attaining more comprehensive disease pictures that earlier years. Moreover, hypochondriacal concerns and health-related anxiety in medical students can be reduced due to the development of coping mechanisms which progress towards senior years. Students at higher academic medical years would have sufficient bases and more correct interpretations of the signs and symptoms of diseases under study.

Our study discovered a significant correlation between family history of psychiatric illness and IA (p=0.003). Moreover, students with family history of anxiety or mental illness having higher odds of developing IA compared to those without any family history (aOR=2.10, 95% CI: 1.18-3.72, p=0.01). These findings are consistent with different other studies who reported the significant relationship between family history of any psychiatric illness and IA.[12, 18,19]

Our findings indicate a significant association between IA and students' contentment with their academic results. Specifically, participants who expressed satisfaction with

their academic achievements (GPA 3 and above) also reported lower levels of health anxiety than their dissatisfied peers with GPA less than 3 (p=0.03). This relationship is particularly noteworthy given that, as established in prior studies reported that IA can have a detrimental effect on the academic performance of medical students.[7,20]

Our study determined a significant correlation between stress levels, sleep patterns, and the severity of IA among the study participants (p<0.001). There was a clear dose-response relationship observed as high stress was 5.4 times more common in the moderate-severe IA group than in the no-minimal IA group, indicating. Similarly, students with less than 6 hours of sleep were more likely to have mild IA anxiety and moderate-severe IA than no-minimal IA. Moreover, a higher proportion of students with IA reported sleep disturbances, compared to students in no-minimal IA (p<0.01). Whereas, over half participating students in IA group reported daytime dysfunction compared to their counterparts. This difference was also found statistically significant (p<0.01). Other studies also established a foundational link between higher stress levels and IA.[2, 21] Similarly, studies reported a consistent significant positive relationship with sleep quality and IA.[6,7,22] This may be due to the "vicious cycle," where IA disrupts sleep, and poor sleep, in turn, exacerbates IA. In our study, daytime dysfunctions are significantly more prevalent in IA group compared to non-IA group. This further elaborate the relationship between the higher IA levels along with sleep disturbance that results in the negative daytime consequences like fatigue, lack of alertness and poor academic performances.

There are several limitations to the study. Initially, the cross-sectional design of this study due to which establishing causality is not possible. Second, due to determining of IA measuring was through subjective reporting that only provide a glance at the symptoms. Moreover, this study carried out in one institute only.

Conclusion:

The current study's findings suggest that a considerable proportion of medical students in Hyderabad suffer from health anxiety. However, these data also suggest that female students, those in earlier clinical years, lower GPA, with a family history of mental disorders, high levels of stress, and insufficient sleep are all more affected by this condition and are important predictors of this disorder.

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"Authors' Contribution"	
Dr. Manzoor Ali Jamali	Conceptualization
Dr. Tariq Feroz Memon	Data curation
Dr. Ghulam Hussain Baloch	Formal analysis
Dr. Partab Puri	Methodology
Dr. Gotam Kumar,	Writing Original draft
Dr. Muhammad Azeem Khan	Writing Review & editing