Original Article

Assessment of Mental Health among Medical Students of RMU Rawalpindi

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Abstract

Background: Mental health is an essential part of our general health. Students, especially those studying in medical colleges, are more prone to disturbed mental health, which can further affect the performance of medical students when they enter professional practice.

Objectives: The objective of this study is to assess the mental health and psychosocial well-being of MBBS students studying at Rawalpindi Medical University and to analyse factors affecting it.

Materials and Methods: This cross-sectional study enrolled 315 students from all five medical years through consecutive sampling. Data were collected using a 3-part questionnaire: demographics, GHQ-28 (cutoff = 24), and a 14-item Factors Affecting Mental Health (FAMH) questionnaire. Analyses included descriptive statistics, Chi-square, T-test, Mann-Whitney U, Kruskal-Wallis H, and binary logistic regression to assess associations between GHQ scores, demographics, and FAMH factors.

Results: Of 315 participants, 34% (107) were male, 66% (208) female; mean age = 21.1 years (SD = 2.65). Non-boarders were 72.1% (227). GHQ scores <24 occurred in 50.7% of basic-year vs. 35.2% of clinical-year students (p = 0.006). Boarders had 34.5% vs. 46.2% for non-boarders (p = 0.060). Significant factors were physical appearance (p<0.001), MBBS choice (p = 0.002), fear of exam failure (p = 0.003), staff support (p = 0.001), social habits (p = 0.030), sports (p = 0.001), physical health, financial issues, and chronic illness (all p<0.001). Family structure, study demands, foreign exam, family support, and substance abuse showed no significance.

Conclusion: Clinical year students are at higher risk of mental health issues. Physical appearance, fear of failure of exams, financial stress, and social habits affect mental health adversely. Moreover, the stress of medical education and lack of awareness also affects mental health.

Keywords: Mental health, GHQ, Factors affecting mental health, medical students, university.

Introduction

The World Health Organization defines mental health as the state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively, and is able to contribute to his or her community.[1] Conditions such as substance abuse, mental and neurological disorders, suicide risk, psychosocial and intellectual disabilities. All of this makes mental health as important as basic physical health. This may be a neglected factor of human health, only being given recognition recently, but it is very much a basic human right.[2, 3]

Poor Mental health is a highly prevalent but often overlooked issue in medical students. Many medical students tend to neglect their mental health, sometimes believing, mistakenly, that they are immune to such issues. Medical students have extensive routines and greater expectations in the field which leads to the development of mental health disorders such as depression and anxiety. Another factor that affects the mental health of medical students in conjunction with the hard schedule and study hours is exams as the difficulty level of exams can lead to further exaggerated stress levels.[4] Even more so, stressors associated with medical education such as unrealistic expectations of perfection, lack of leisure time, financial indebtedness, high personal standards, lack of support from family, teaching faculty, and unnecessary educational pressure from the institution contribute to the development of psychiatric issues. Medical students, who are often between the ages of 17 and 24 and represent the future workforce of the healthcare system, are particularly vulnerable to mental health issues. In research conducted in Egypt, 16% of students were diagnosed with mental health issues with 6.5% being before enrolment.[5] Similar results were obtained for Morocco (16%), Italy (9%), and Brazil (16%). Burnout (88%) was reported as a major factor.[5] In the research conducted on medical students of Islamabad prevalence of depression was found as 40.9% while the prevalence of anxiety was 74.2%.[6] In another study, the prevalence of depression among undergraduate medical students at a private university was almost 63%.[7] Such high prevalence of psychological distress can significantly interfere with students' daily functioning.

The development of anxiety and depression is associated with lowered academic performance and poor social life. The social life of medical students is badly affected due to their academic stress and the higher frequency of exams being conducted. Moreover, the stress of expectations increases the risk of development of mental health issues. All of which ultimately leads to decreased efficiency and deteriorating academic performance.[8] Medical students were found to be at increased risk of mental health-related issues as the training years progressed especially during COVID-19 years raising the global impact on mental health of medical students up to 45% and 48% for anxiety and depression, respectively.[9,10] Compared to graduates among the general population, medical students have higher rates of mental illness including anxiety, depression, mood disorders, and suicidal ideas.[11] This increased

vulnerability is due to a combination of academic and personal stressors such as frequent examinations, heavy workload, financial challenges, inadequate sleep, peer competition, and fear of failure.[12,13] The development of anxiety and depression is associated with lowered academic performance and poor social life.[14,15] Medical bodies such as the Association of American Medical colleges has advocated the formation of groups and counsel the students who are suffering from such conditions covertly. Mental wellbeing is a precursor to physician wellbeing which then translates to enhancement of patient health, professionalism, and patient wellbeing.[11]

Despite the magnitude of medical students suffering from mental illnesses, they do not get the adequate care they need, leading to an increase in overall burden on society.[15] Similarly, COVID-19 affected the mental health of medical students worldwide as depicted in the meta-analysis conducted in PRC and the study conducted by *Cap et al.*[15,16]

To address these issues, we conducted a study with the aim to assess the mental health status of medical students at Rawalpindi Medical University and uncover the factors that might affect their mental well-being and hamper their function in society since very limited literature is available in our study setting.

Materials and Methods

This is a cross-sectional study conducted in MBBS students of all years of Rawalpindi Medical University for a duration of 6 months. The sample size was calculated using the formula:

$$n = \frac{Z^2 \times p \times (1-p)}{d^2}$$

where Z is the Z-score for a 95% confidence interval, p is the estimated prevalence (50% for maximum variability), and d is the margin of error (5%). Using a consecutive sampling technique, 314 students were selected and rounded off to 315 for adequate representation. This technique ensured an unbiased selection of participants without prior knowledge of their characteristics.

Students were approached in their classrooms during non-lecture hours. Those who met the inclusion criteria and provided informed consent were included. All students, regardless of age, gender, or residency status (boarder or non-boarder), were eligible. Students with a known, clinically diagnosed psychiatric disorder within the past six months who had not fully recovered were excluded.

Data collection involved two tools: the General Health Questionnaire-28 (GHQ-28) and a self-structured 14-item questionnaire to assess factors affecting mental health (FAMH). The GHQ-28 is a validated self-report screening tool assessing psychological well-being, using a 4-point Likert scale (0–3). Total scores range from 0 to 84, with higher scores indicating greater psychological distress. A cutoff score of 24, based on GHQ mean data, was used to categorize students as mentally healthy or unhealthy. Demographic information including age, gender, academic year, and residence was also recorded.

Printed questionnaires were distributed in person after obtaining written informed consent. Confidentiality and anonymity were

assured throughout. Data were analyzed using SPSS v28. Descriptive statistics (mean, frequency, percentage) summarized the data. Analytical tests included the Chi-square test for categorical variables and the t-test for comparing means between two groups. When data did not meet normality assumptions, the Mann-Whitney U and Kruskal-Wallis H tests were used. Binary logistic regression was applied to assess predictive relationships between demographic/FAMH variables and GHQ outcomes.

The study received ethical approval from the Rawalpindi Medical University Ethical Review Board, ensuring adherence to

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guidelines for research involving human participants.

Results

Out of 315 students, 107 (34%) were male while 208 (66%) were female. The mean age of the participants was 21.1 (SD=2.65). Regarding residency 227 (72.1%) were non-boarder and 87 (27.6%) were boarders. Samples were taken from 1st year to Final year, with 63 samples from each class. Table 1 shows the frequency and percentages of all the variables' options.

Table 1 *Demographic Details of the Study Participants.*

Variable	Frequency	Percentage
Age		
15-20 years	111	35.2
21-25 years	203	64.4
26-30 years	1	0.3
Gender		
Male	107	34.0
Female	208	66.0
Year of Study		
1st Year	71	22.5
2nd Year	61	19.4
3rd Year	63	20.0
4th Year	68	21.6
Final Year	52	16.5
Residence		
Boarders	87	27.6
Non-Boarders	227	72.1

Table 2 *Binary Logistic Regression Analysis of Demographic Variables Predicting GHQ Scores Among Medical Students.*

Variable	GHQ <24	GHQ >24	p-Value	Unadjusted odds ratio (CI=95%)
Age				
Group 1 (15-20)	55 (40.4%)	81 (59.6%)	0.093	1.491
Group 2 (21+)*	56 (31%)	123 (68.7%)		
Gender				
Male	43 (40.2%)	64 (59.8%)	0.443	0.832
Female *	93 (44.7%)	115 (55.3%)		
Year of Study				
Clinical Years*	63 (35.2%)	116 (64.8%)	0.006	1.896
Basic Years	69 (50.7%)	67 (49.3%)		
Residence				
Boarders	30 (34.5%)	57 (65.5%)	0.060	0.612
Non-Boarders *	105 (46.2%)	122 (53.7%)		

Note. *Represents the reference group of the variable.

The general mental health of the students was assessed using the General Health Questionnaire (GHQ). Binary logistic regression was used to examine the association between demographic characteristics (age, gender, year of study, and residence) and mental health status (GHQ score >24 indicating poor mental health). GHQ score >24 was used as the dependent variable. Odds ratios with 95% confidence intervals are reported along with corresponding p-values. A significant difference was observed in the year of study (p=0.006), with 50.7% of individuals in basic years and 35.2% in clinical years having GHQ scores less than 24. In terms of residence, 34.5% of boarders and 46.2% of non-boarders had GHQ scores less than 24, but the difference was not statistically significant (p=0.060) **(Table 2).**

Younger students aged between 15-20 years are 1.5 times more likely to have a worse GHQ score, clinical year students are almost 89% more likely to have a worse GHQ score than basic year students, and non-boarders have a risk of 61.2% higher chance of having a worse GHQ score.

Table 3 *Cross-Tabulation of Psychosocial and Environmental Factors (FAMH) Potentially Affecting Mental Health Among Medical Students.*

Variable	Frequency	Percentage	Variable	Frequency	Percentage
FAMH1			**FAMH8**		
Single Family	250	79.4	Always, supported	219	69.5
Joint Family	55	17.5	Sometimes	82	26.0
Broken Family	10	3.2	Never supported	14	4.4
FAMH2			**FAMH9**		
Bad (1-3)	21	6.7	Always (social life)	76	24.1
Satisfactory (4-6)	176	55.9	Sometimes	176	55.9
Good (7-10)	118	37.5	Never (social life)	62	19.7
FAMH3			**FAMH10**		
Personal Interest	216	68.5	Always (sports)	42	13.3
Parent's Will	82	26.0	Sometimes	146	46.3
Peer Pressure	15	4.8	Never (sports)	127	40.3
FAMH4			**FAMH11**		
Always pressured	88	27.9	Yes, have addiction	26	8.3
Sometimes	188	59.7	No addiction habit	289	91.7
Never pressured	39	12.4			
FAMH5			**FAMH12**		
Always fearing	87	27.6	Yes, financial issues	41	13.0
Sometimes	154	48.9	No financial issues	271	86.0
Never fearing	74	23.5			
FAMH6			**FAMH13**		
Yes, preparing	63	20.0	Yes, physical health	74	23.5
No, not preparing	127	40.3	No physical ailment	241	76.5
Not Sure	49	15.6			
FAMH7			**FAMH14**		
+Always support	47	14.9	Yes, chronic illness	59	18.7
Sometimes	141	44.8	No chronic illness	254	80.6
Never supported	127	40.3			

Note. Frequencies and percentages represent distribution of responses across various psychosocial, family, academic, and lifestyle-related variables (FAMH1–FAMH14) possibly associated with mental health status.

Table 3 shows the individual demographic data of each factor affecting mental health. Most students live in single unit families (FAMH 1), have a satisfactory outlook on their appearance (55.9%), studying MBBS in their own interest (68.5%), feel pressurized by medical education (59.7%), have a fear of failure of exams (27.6% + 48.9%), are not supported by their faculty (44.8% + 40.3%) and have a good social life.

Table 4 *Binary Logistic Regression Analysis of Factors Affecting Mental Health (FAMH) Among Medical Student.*

Variable	GHQ <24	GHQ >24	S.D	p-Value	Exp (B) (CI=95%)
FAMH1	**Functional Family**: 135*, **Non-Functional Family**: 1	**Functional Family**: 170*, **Non-Functional Family**: 9	1.060 1.079	.064	7.147
FAMH2	**Bad looks**: 69*, **Good looks**: 67	**Bad looks**: 128*, **Good looks**: 51	0.238 0.352	<.001	.410
FAMH3	**Personal Interest**: 106*, **Other's Interest**: 29	**Personal Interest**: 110*, **Other's Interest**: 68	0.260 0.351	.002	2.260
FAMH4	**Yes (Always/Sometimes)**: 114*, **No**: 22	**Yes (Always/Sometimes)**: 162*, **No**: 17	0.345 0.405	.078	.544
FAMH5	**Yes (Always/Sometimes)**: 93*, **No**: 43	**Yes (Always/Sometimes)**: 148*, **No**: 31	0.270 0.354	.003	.453
FAMH6	**Preparing**: 21, **Not Preparing**: 80*	**Preparing**: 42, **Not Preparing**: 96*	0.307 0.556	.096	.600
FAMH7	**Supported**: 95*, **Not supported**: 41	**Supported**: 93*, **Not supported**: 86	0.239 0.348	.001	2.143
FAMH8	**Supported**: 131*, **Not supported**: 5	**Supported**: 170*, **Not supported**: 9	0.570 0.604	.566	1.387
FAMH9	**Engaged in Social Activities**: 116*, **Not engaged**: 19	**Engaged in Social Activities**: 136*, **Not engaged**: 43	0.303 0.374	.030	1.930
FAMH10	**Engaged in sports**: 95*, **Not engaged**: 41	**Engaged in sports**: 93*, **Not engaged**: 86	0.239 0.348	.001	2.143
FAMH11	**Yes**: 13, **No**: 123*	**Yes**: 13, **No**: 166*	0.410 0.793	.465	1.350
FAMH12	**Yes**: 8, **No**: 127*	**Yes**: 33, **No**: 144*	0.412 0.798	.001	.275
FAMH13	**Yes**: 16, **No**: 120*	**Yes**: 58, **No**: 121*	0.310 0.579	<.001	.278
FAMH14	**Yes**: 12, **No**: 122*	**Yes**: 47, **No**: 132*	0.347 0.659	<.001	.276

Note. GHQ score >24 was used as the outcome variable indicating poor mental health. Odds ratios (Exp(B)) with 95% confidence intervals represent the likelihood of having GHQ >24 based on each predictor. *Represents the reference variable in FAMH.

Mann-Whitney U test and Kruskal-Wallis H test paint a similar picture as in Table 5.

FAMH1, FAMH2, FAMH3, FAMH5, FAMH7, FAMH9, FAMH10, FAMH12, FAMH13, and FAMH14 are all statistically significant factors affecting mental health. Tukey's post hoc analysis of these factors reaffirms the results with a p-value varying between 0.001 and 0.035.

Table 5 *Mann Whitney U test and Kruskal Wallis H test on FAMH*

Variable		Mann Whitney U Test			Kruskal Wallis H Test
		Mean rank	Difference in mean rank	p-value	p-value
FAMH1: Type of family	Functional family	155.41	81.444	0.005	0.011
	Non-functional family	236.85			
FAMH2: Person looks	Bad looks	172.52	38.76	<0.001	<0.001
	Good looks	133.76			
FAMH3: Reason to apt medical studies	Personal interest	144.82	39.29	<0.001	<0.001
	Others interest				
FAMH4: Feel pressurized by studies	Yes	160.44	19.72	0.205	<0.001
	No	140.72			
FAMH5: Fear of failure in exam	Yes	169.20	47.69	<0.001	<0.001
	No	121.51			
FAMH6: Preparing for any foreign test	Preparing	131.14	15.13	0.136	0.432
	Not Preparing	116.01			
FAMH7: Supported by faculty	Supported	142.49	38.47	<0.001	<0.001
	Not Supported	180.96			
FAMH8: Supported by family	Supported	156.42	35.51	0.154	<0.001
	Not Supported	191.93			
FAMH9: Engage in social activity	Engaged	152.14	27.13	0.035	0.001
	Not Engaged	179.27			
FAMH10: Engage in sport	Engaged	145.37	31.32	0.003	<0.001
	Not Engaged	176.69			
FAMH11: Addiction habit	Yes	143.00	16.35	0.380	-
	No	159.35			
FAMH12: Financial issue	Yes	199.60	49.62	0.001	-
	No	149.98			
FAMH13: Physical health issue	Yes	204.52	60.8	<0.001	-
	No	143.72			
FAMH14: Physical disability/chronic illness	Yes	201.47	54.8	<0.001	-
	No	146.67			

To validate the findings of the logistic regression analysis, non-parametric tests were also applied. The Mann-Whitney U test was used for comparing two groups, while the Kruskal-Wallis H test was used where more than two categories were involved. Both tests assessed differences in GHQ score distributions across categorical variables. In the Mann-Whitney U test and Kruskal-Wallis H test, FAMH1, FAMH2, FAMH3, FAMH5, FAMH7, FAMH9, FAMH10, FAMH12, FAMH13, and FAMH14 show p-values less than 0.05, and thus show significance as shown in Table-5.

Discussion

In this cross-sectional study, we studied the mental health of medical students studying at Rawalpindi Medical University. As expected, our study showed the mental health relationship with general demographic factors and factors affecting mental health. These factors encompass family dynamics, personal interests, support systems, engagement in social activities, and various other aspects of students' lives. It is important to note that these factors can interact in complex ways and dynamically influence mental health.

The global prevalence of depression in undergraduate students was found to be at 33% of the population.[17] Depression had a pooled prevalence of 11%, with South Asia and Middle East having an incidence of 30% or higher, which is alarming in its own right.[18-22] This statement agrees with the systemic reviews found in the references which studied the prevalence of depression in undergraduate medical students and their mental health issues.[11,23] In Pakistan, the incidence of depression is a staggering 70% which garners immediate attention.[18]

Our study is a one-of-a-kind study that was conducted on the students at Rawalpindi Medical University, which assessed not only the mental health status of medical students, but also the factors that affect their mental health. Out of the 315 participants in the research study, over 58.8% had scores over 24 in the GHQ-28 and were labeled as unhealthy by the scoring method. This can amount to disastrous effects later if left unchecked. Such a high score may be due to mental distress owing to academic stress, fear of failure to perform adequately in exams due to the very high frequency of exams, personal issues, financial issues, lack of support from family, lack of social activities etc. This score is higher than a study conducted in Iran (54.4%), and much higher than that same study conducted in Türkiye (48%) and Nepal (20.8%) with students employing various coping strategies to tackle mental health issues.[22,23] The prevalence of depression, suicidal ideation, and anxiety is also dangerously high especially post COVID-19 era, as studied in this meta-analysis in China.[16] It was also discovered that clinical year students, 3rd year to final year, are at a much higher risk and have higher scores than basic year students. This can also be due to the same reason that academic pressure increases significantly in these years. Measures need to be taken to curb this rise in ailing mental health status, lest be too late.

Some notable findings include the influence of family dynamics on mental health (FAMH1), where individuals from functional families appeared to have better mental

health scores, although not statistically significant. Similarly, personal interest in choosing their field of study (FAMH3) appears to have a positive impact on mental health. This was also found to be consistent with the findings in the research conducted by Saman Farahangiz et al.[12]

However, other factors such as appearance (FAMH2) and engagement in sports (FAMH10) showed statistically significant associations with mental health. Additionally, the Mann-Whitney U test and Kruskal-Wallis H test further validate the significance of these factors in shaping mental health outcomes. Factors like personal interest in the field of study (FAMH3) and having support (FAMH7) were associated with better mental health scores, while factors like appearance (FAMH2) and engagement in sports (FAMH10) also played a role. This trend clearly shows the need for much more aggressive, potent, and holistic support to be provided to future healthcare workers to provide them with the best health in their student years so that they can perform best in society.

The matter of physical outlook is affecting mental health significantly and living under the fear of failure has a progressive and significant effect on students' health not only affecting the motivational drive toward their educational and clinical performance. However, other factors such as appearance (FAMH2) and engagement in sports (FAMH10) showed statistically significant associations with mental health. These findings point towards the need for a holistic approach to support students. As discussed in the research, fear of failure is conceptualized

as an avoidance motivation when individuals predict the aversive consequences of failing.[24]

According to the results, discussions, and analysis, the mental health of students at Rawalpindi Medical University is greatly affected. It is ascertained from the FAMH table (refer to annexure A) that clinical years have a higher risk of mental health disorders (where clinical years are the ones when the students face direct university policy and clinical exposure). These findings suggest that environmental, insidious, personal, and individual factors affect mental health.

Further recommendations are on specific mental health issues that should be evaluated so that specific mental health issues can be identified more precisely. Gender, age, and residence can be further studied in detail to understand these factors more precisely. Factors that affect mental health need to be further investigated and suggestions, policies, and educational system overall to be structured according to the research to maximize student mental well-being, so that better healthcare professionals can be trained.

This study's strength lies in our use of a self-designed FAMH questionnaire and pairing it with a validated tool such as the GHQ-28. This provides the reader with a multi-faceted view of the mental health status of medical students. Moreover, use of various statistical tests and techniques provide a much more comprehensive analysis of various factors affecting mental health.

This study is limited by the possibility of response bias and the cross-sectional study design. Future research should introduce a

longitudinal study design for a much better understanding and capturing changes in mental health over time.

To combat the mental health challenges faced by medical students, medical universities should adopt a comprehensive and proactive approach. Regular mental health screenings should be implemented, accompanied by a robust counselling program designed to support the well-being of future medical professionals. Institutions must also organize mental health workshops and stress management seminars to equip students with coping strategies. Additionally, it is essential to train existing faculty and healthcare staff to recognize signs of psychological distress and provide empathetic mentorship. Encouraging participation in extracurricular and recreational activities can further help students build resilience. Finally, universities should establish peer support groups and working committees, while also creating opportunities for students to actively contribute to their curriculum and co-curricular development, fostering a sense of inclusion and purpose.

Conclusion

The student's mental health was affected by the year of study with the clinical year being affected about 1.89 times more than the basic year. Age and residence showed trends toward association, although not statistically significant, while gender had no significant impact. Moreover, aesthetic perception of oneself (FAMH1), personal interest (FAMH3), consistent engagement in extra-curricular activities (FAMH4 and FAMH5), support from family and university faculty (FAMH9), and engagement in sports (FAMH10) affect mental health. Proper measures should be taken to improve the mental health of the students of RMU which includes counseling of the students and arranging workshops to teach them how to cope with stress. In conclusion, high prevalence of mental health concerns among medical students highlights the urgent and dire need for institutional reforms and restructuring to ensure safe doctor and professional development.

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