

Stigma toward Mental Disorders among Pakistani Medical, Pharmacy and Allied Health Sciences Students: A Cross-sectional Study

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ABSTRACT

Introduction. People with mental health disorders face significantly more negative judgments and stigmatization than sufferers of other illnesses, negatively affecting patients' quality of life. **Objective.** This study aimed to assess the stigma surrounding mental disorders among Pakistani medical, pharmacy, and allied health sciences students. **Method.** A cross-sectional survey was conducted among students at the University of Lahore between April and May 2022. Mental health stigma was evaluated using a modified version of the Discrimination-Devaluation (D-D) scale. **Results.** A total of 315 students were included in the study (mean age = 22.4 years, males = 51.1%). The majority of participants were pharmacy students (51.1%), followed by allied health sciences (35.2%) and medical students (13.7%). In multiple regression analysis, students who were in a relationship/married had lower scores for perceived public stigma scales than those who were single ($p = .024$). In the multivariable adjusted model for perceived personal stigma toward mental health problems, medical students had significantly better attitudes toward mental health issues than other students. **Discussion and conclusion.** Stigma surrounding mental health disorders is prevalent in Pakistani society, even among the highly educated. Educational interventions are therefore required to improve university students' awareness and attitudes toward mental health disorders.

Keywords: Mental health, mental illness, stigma, students, Pakistan.

RESUMEN

Introducción. Las personas con trastornos de salud mental se enfrentan a juicios negativos y estigmatización significativamente mayores que quienes padecen otras enfermedades. Esto tiene un efecto perjudicial grave en la calidad de vida de los pacientes. **Objetivo.** Este estudio tuvo como objetivo evaluar el estigma que rodea a los trastornos mentales entre estudiantes pakistaníes de medicina, farmacia y ciencias de la salud afines. **Método.** Se realizó una encuesta transversal entre estudiantes de medicina, farmacia y ciencias de la salud afines en la Universidad de Lahore, entre abril y mayo de 2022. El estigma de la salud mental se evaluó utilizando una versión modificada de la escala de Discriminación-Devaluación (D-D). **Resultados.** Se incluyó a un total de 315 estudiantes en el estudio (edad media = 22,4 años, hombres = 51,1%). La mayoría de la muestra fueron estudiantes de farmacia (51,1%), seguidos de estudiantes de ciencias de la salud afines (35,2%) y estudiantes de medicina (13,7%). En un análisis de regresión múltiple, los estudiantes que tenían una relación o estaban casados obtuvieron puntuaciones más bajas en las escalas de estigma público percibido que los solteros ($p = .024$). En un modelo multivariable ajustado para el estigma personal percibido hacia los problemas de salud mental, los estudiantes de medicina mostraron actitudes significativamente mejores hacia estos problemas que otros estudiantes. **Discusión y conclusión.** El estigma en torno a los trastornos de salud mental es un problema importante en la sociedad pakistaní, incluso prevalente entre los estratos con mayor nivel educativo. Por lo tanto, se necesitan intervenciones educativas para mejorar la concienciación y las actitudes de los estudiantes universitarios hacia los trastornos de salud mental.

Palabras clave: Salud mental, enfermedad mental, estigma, estudiantes, Pakistán.

INTRODUCTION

The prevalence of mental disorders has risen globally over the past three decades, from 654.8 million in 1990 to 970.1 million in 2019 (GBD 2019 Mental Disorders Collaborators, 2022). These disorders are not only the leading causes of disability, but also significant contributors to premature mortality. Although mental health problems affect all countries, certain countries are disproportionately affected, such as those facing natural catastrophes, war and conflict, economic turmoil, domestic violence, and poverty (Newnham et al., 2015; Alloh & Regmi, 2017; Alloh et al., 2018). These challenges mostly affect low- and middle-income countries (LMICs). Consequently, LMICs have a high prevalence of mental disorders, accounting for $\approx 80\%$ of those living with mental disorders (Ojagbemi & Gureje, 2022). An umbrella review suggested a higher prevalence of mental disorders in South Asian countries (Hossain et al., 2020).

Pakistan, a lower-middle-income country in Southeast Asia, is the fifth most populous country in the world, with nearly 40% of its inhabitants living below the poverty line (Rana, 2023). Accordingly, the status of mental health issues there is a cause for concern. Although mental disorders account for at least 4% of the total disease burden in Pakistan, there is a dearth of qualified psychiatrists in the country (.19 psychiatrists/100,000 people) (Malik, 2023; Sikander, 2020). The majority of psychiatrists are clustered in major metropolises. Moreover, limited awareness of disease, religious and cultural beliefs, financial constraints, and lack of faith in psychological treatment prevent most families from seeking timely treatment of mental disorders (Alvi et al., 2023; Choudhry et al., 2023; Husain, 2020). Unfortunately, in addition to dealing with their illness, people with mental illness have to endure stigmatization (including stereotyping, prejudice, and discrimination). This leads to adverse consequences, such as reluctance to access psychiatric care, treatment non-compliance, poor self-esteem, hopelessness, social isolation, difficulty securing employment, bullying, and harassment (Alloh et al., 2018; Rössler, 2016).

Earlier research from Pakistan has shown that mental health issues are significantly stigmatized (Husain et al., 2020; Shafiq, 2020; Sultan, 2012; Waqas et al., 2014). In a recent study by Husain et al. (2020), the general public, students, and even healthcare professionals had higher stigma scores for mental than physical disorders. Waqas et al. (2014) reported that Pakistani university students have limited awareness of mental disorders, with many attributing these illnesses to supernatural causes, and some believing spiritual healers can cure them. An earlier survey of social sciences and education students showed that Pakistani students perceived higher stigma toward mental illnesses and negative attitudes toward psychological help-seeking than Turkish students (Sultan, 2012). Stigma among health sciences students is crucial, as they are future healthcare

providers whose attitudes will have a major impact on patient care and public health education. However, to the best of our knowledge, no study has assessed perceived public and personal stigma toward mental disorders in Pakistani medical, pharmacy, and allied health sciences students. The primary objective of our study was therefore to investigate perceived public stigma and personal stigma toward mental illnesses among health sciences students. The secondary objective included identifying the factors associated with stigma toward mental illnesses in the study sample.

METHOD

Study design

A cross-sectional research design was used to achieve the study objectives.

Participants

This study was conducted among health sciences students (medicine, pharmacy, and allied health sciences) at the University of Lahore (UOL), from April to May 2022. UOL is one of the largest private universities, with over thirty thousand students, and multiple campuses across the Punjab province of Pakistan.

The sample size for the present study was calculated using the OpenEpi calculator for descriptive studies (<https://www.openepi.com/SampleSize/SSPropor.htm>). Setting a population size of 2,000 medical sciences students, 50% anticipated frequency, 95% confidence interval, and 5% margin of error yielded a sample size of 323.

Measurements

An anonymized, self-administered questionnaire was developed based on previous studies (Lally et al., 2013; Sultan, 2012; Link et al., 2001; Vogel et al., 2007). The questionnaire was thoroughly examined by a panel of seven experts from the field of health sciences. The panel recommended minor modifications to improve the clarity, comprehensibility, and cultural relevance of certain items. After the revisions, the questionnaire was approved for data collection. As the tertiary education instruction medium in Pakistan is English, the questionnaire was not translated into the local language (Urdu) (Salman et al., 2020a; Salman et al., 2020b; Salman et al., 2022a). The study instrument was pilot tested among 50 students, with findings revealing that both scales had acceptable internal consistency (Perceived public stigma scale: Cronbach's $\alpha = .731$; Personal stigma scale: Cronbach's $\alpha = .790$). The final draft of the study instrument had four sections.

- Section-I: This section collected demographic information on the study participants (age, gender, relationship status, and educational attainment).
- Section-II: This section explored the history of mental illness and its treatment and knowledge about someone having mental health issues.
- Section-III: This section evaluated perceived public stigma (PPS) toward individuals with mental illness. PPS was determined using the modified version of the Discrimination-Devaluation (D-D) scale (Lally et al., 2013; Link, 1987). This scale has been validated in general as well as university populations (Link et al., 2001; Link et al., 2001). It contains 12 items assessing respondents' level of agreement (5-point Likert scale; 1 = strongly agree and 5 = strongly disagree) on how most people will devalue or discriminate against a person suffering from a mental illness or a history of mental health treatment. The scale is designed so that a high level of perceived devaluation or discrimination is indicated by agreement with six of the items (Items 1–4, 8, and 10) and by disagreement with six others (reverse-coded questions: Item 5–7, 9, 11, and 12). A cumulative score was calculated by adding the scores of all 12 items (score range = 12–60), with a higher score corresponding to a higher degree of perceived stigma.
- Section-IV: This section evaluated respondents' personal stigma (PS) toward people with mental ailments and/or a history of mental illness treatment. PS was assessed using a 4-item scale, drawn from the D-D scale used in previous studies (Eisenberg et al., 2009; Lally et al., 2013). The scale contains two positively worded and two negatively worded items. The scores of all four items were added to formulate a cumulative score (range 4–20), with a higher score corresponding to a higher degree of personal stigma toward mental illness.

Procedures

We used a convenience sampling approach to recruit study participants. Students were approached by the researchers during university hours, who explained the study objectives. Those willing to take part in the study answered the anonymized study instrument.

Statistical analysis

All data analyses were performed using SPSS V 25. Continuous variables were presented as mean and standard deviation (*SD*) or median and interquartile range (*IQR*), depending on the distribution of continuous data. Numbers and percentages were reported for categorical variables. Continuous data

were compared among dichotomous variables using the Mann-Whitney U test, while the Kruskal-Wallis test was used for polychotomous variables. Pairwise comparisons were made using Dunn's test to determine intragroup significance, and alpha inflation was controlled by the Bonferroni adjustment. Effect size was assessed by calculating r and ε^2 (epsilon-squared estimate) for the Mann-Whitney U and Kruskal Wallis H tests, respectively (Tomczak & Tomczak, 2014). Multiple linear regression analysis was performed to determine factors associated with stigma attached to mental illness. A p -value of less than .05 was taken as statistically significant for all data analysis procedures.

Ethical considerations

Ethical approval for the present study was obtained from the Research Ethics Committee, Department of Pharmacy Practice, Faculty of Pharmacy, UOL (REC/DPP/FOP/22). Informed consent was obtained from every student before enrolling them in the study.

RESULTS

Sample characteristics

As shown in Figure 1, a total of 400 students were approached by the researchers, 321 of whom provided consent and administered the study questionnaire (response rate = 80.3%). After cleaning the data and removing incomplete cases, we included 315 cases in the final analysis. Study participant demographics are given in Table 1. The mean age of students was 22.4 years ($SD = 1.92$). The proportion of male and female university students was 51.1% and 46.3%, respectively. The majority of the sample were pharmacy students (51.1%), followed by allied health sciences (35.2%) and medical students (13.7%). Fifty-eight students (18%) reported having a history of mental illness, and 42 reported having sought treatment for mental illness in the past year. Approximately 53% of the students reported knowing someone suffering from mental illness.

Perceived public and personal stigma toward mental illness

The median public stigma scale score was 37, indicating that nearly half the survey participants mirrored the negative attitude of the public toward mental health issues. Additionally, the *IQR* ($Q1 = 35$ and $Q3 = 40.5$) indicated that the majority of participants scored in the top quartile, reflecting a higher level of stigma toward mental disorders among the general public. Participants' responses to items assessing the stigma of mental health issues are shown in

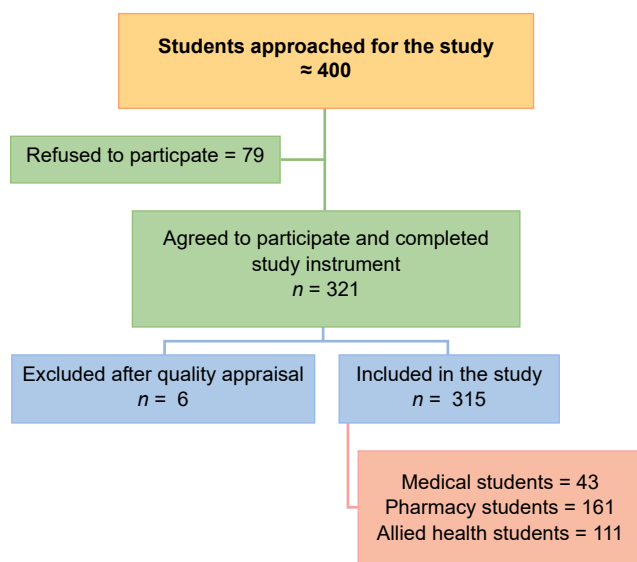


Figure 1. Participant recruitment flowchart.

Table 1
Sample characteristics

Characteristics	N	%
Age (22.44 ± 1.92 years)		
≤ 22 years	147	46.7
> 22 years	168	53.3
Gender		
Male	161	51.1
Female	146	46.3
Not indicated	8	2.5
Relationship status		
Single	251	79.7
Married/in a relationship	64	20.3
Degree course		
Medicine	43	13.7
Pharmacy	161	51.1
Allied health sciences	111	35.2
Self-reported history of mental illness		
Yes	58	18.4
No	257	81.6
Treated for mental illness in the past 12 months		
Yes	42	13.3
No	273	86.7
Do you know someone with a mental illness?		
Yes	168	53.3
No	147	46.7
Relationship to the person suffering from mental illness		
Friend	86	27.3
Family/relative	61	19.4
Partner	10	3.2
Acquaintance	16	5.1

Table 2. Only 56% believed most people would willingly accept a person who had received mental health treatment as a close friend, while 48.9% reported that the public would consider a person with a history of mental health treatment to be as intelligent as an average person. Moreover, a significant proportion of students believed it would be difficult for these individuals to secure employment even if they had fully recovered after receiving mental health treatment.

The median personal stigma scale score was 11, indicating that at least half the study sample had unfavorable attitudes toward individuals with mental health disorders. The IQR (9 to 12) revealed that most students scored in the upper range of the personal stigma scale, reflecting predominantly negative attitudes. Although 80% of students reported that they might befriend a person with a history of receiving mental health treatment, only 67% believed them to be as trustworthy as those without mental health illness (Table 2). Moreover, only 47.9% disagreed with the statement “I would think less of a person who had received mental health treatment”. Lastly, 40% of students reported they would be reluctant to become involved in a relationship with someone who had received treatment for their mental health. Taken as a whole, the findings indicate significant stigma toward mental health in Pakistani society.

Factors associated with the stigma of mental illness

The comparison of stigma scale scores between participants' demographic and clinical variables is given in Table 3. There was no significant difference in PPS scores among all the variables except for relationship/marital status, with students in a relationship or married having significantly lower scores than those who were single ($p = .006$). Regarding personal stigma toward mental health issues, females had significantly lower scores than males ($p = .011$). Those reporting a positive history of mental illness had significantly lower stigma scores than other participants ($p = .037$).

We observed a statistically significant association between education and personal stigma scores ($p = .006$, $\epsilon^2 = .026$). In pairwise comparisons using Dunn's test (Table 4), medical students had significantly lower stigma scores than pharmacy ($p = .012$) and allied health sciences students ($p = .006$).

We performed multiple regression analysis for both perceived public stigma and personal stigma scale scores to confirm the aforementioned associations. In multivariate analysis, students who were in a relationship or married had lower scores for perceived public stigma scales than those who were single ($\beta = -.128$, $p = .024$).

In our regression model for personal stigma toward mental health problems, education was found to be the only significant factor associated with stigma scores as medical students had better attitudes toward mental health issues than pharmacy and allied health sciences students ($\beta = .165$, $p = .055$ and $\beta = .189$, $p = .024$, respectively).

Table 2
Distribution of participants' responses to statements assessing mental health stigma

Statements	Agreement N (%)	Neutral N (%)	Disagreement N (%)
Perceived public stigma scale			
Most people would willingly accept a person who has received mental health treatment as a close friend	329 (55.9)	49 (15.6)	90 (28.6)
Most people believe that a person who has received mental health treatment is just as intelligent as the average person	154 (48.9)	58 (18.4)	103 (32.7)
Most people believe that a person who has received mental health treatment is just as trustworthy as the average person	159 (50.5)	69 (21.9)	87 (27.6)
Most people would accept a fully recovered person who has received mental health treatment as a teacher of young children in a public school	134 (12.5)	76 (24.1)	105 (33.4)
Most people feel that receiving mental health treatment is a sign of personal failure	179 (56.8)	51 (16.2)	85 (26.9)
Most people would not hire a person who had received mental health treatment to take care of their children, even if they had been well for some time	196 (62.2)	60 (19.0)	59 (18.8)
Most people would think less of a person who had received mental health treatment	185 (58.7)	59 (18.7)	71 (22.6)
Most employers will hire a person who has received mental health treatment if they are qualified for the job	155 (49.2)	77 (24.4)	83 (26.4)
Most employers will pass over the application of a person who has received mental health treatment in favor of another applicant	155 (49.2)	96 (30.5)	64 (20.3)
Most people in my community would treat a person who has received mental health treatment the same as they would anyone else	141 (44.7)	58 (18.4)	116 (36.9)
Most people would be reluctant to become involved in a relationship with a person who has received mental health treatment	182 (57.8)	78 (24.8)	55 (17.5)
Once they find out a person was in a mental hospital, most people will take their opinions less seriously	233 (74.0)	44 (14.0)	38 (12.0)
Personal stigma scale			
I would willingly accept a person who had received mental health treatment as a close friend	251 (79.7)	27 (8.6)	37 (11.7)
I believe that a person who has received mental health treatment is just as trustworthy as the average citizen.	212 (67.3)	61 (19.4)	42 (13.3)
I would think less of a person who had received mental health treatment	114 (36.2)	50 (15.9)	151 (47.9)
I would be reluctant to become involved in a relationship with a person who had received mental health treatment	126 (40.0)	100 (31.7)	89 (28.2)

Note: Agreement = sum of responses from agree to strongly agree; Disagreement = sum of responses from disagree to strongly disagree.

Table 3
Comparison of stigma scales score by demographic characteristics

Variable	Perceived public stigma scale			Personal stigma scale		
	Mean rank	Test statistic (H/U)	Effect size (r/ϵ^2)	Mean rank	Test statistic (H/U)	Effect size (r/ϵ^2)
Age		11260.50	-.076		11421.50	-.065
< 22 years	165.40			164.30		
> 22 years	151.53			152.49		
Gender		11593.50	-.012		9793.00*	-.145
Male	153.01			166.17		
Female	155.09			140.58		
Relationship status		6160.50**	-.163		7423.50	-.053
Single	165.46			155.58		
Married/in a relationship	128.76			167.51		
Degree course		1.129	.003		10.258**	.026
Medicine	155.01			117.57		
Pharmacy	162.82			162.04		
Allied health sciences	147.67			167.80		
Self-reported history of mental illness		7378.50	-.007		6160.00*	-.117
Yes	159.28			135.71		
No	157.71			163.03		
Previous treatment for mental illness		5090.50	-.066		5146.50	-.066
Yes	142.70			144.04		
No	160.35			160.15		
Do you know someone with a mental illness?		11388.50	-.067		11547.50	-.056
Yes	163.71			153.24		
No	151.47			163.45		

Note: * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 4
Pairwise comparisons of personal stigma scale score between degree course categories

Sample 1- Sample 2	Test statistic	SE	Std. test statistic	p	Adj. p*
Medicine- Pharmacy	-44.471	15.495	-2.870	.004	.012
Medicine-Allied health sciences	-50.232	16.214	-3.098	.002	.006
Pharmacy- Allied health sciences	-5.761	11.136	-.517	.605	1.000

Note: NB. Each row tests the null hypothesis that Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is .05.

* Dunn's proposed Bonferroni adjustment to control family-wise error rate (Type 1 error)

DISCUSSION AND CONCLUSION

The main findings of our study indicated that health sciences students believed the Pakistani public stigmatized mental health issues to a significant extent (perceived public stigma scale score: median = 35, and IQR 35 to 40.5). Moreover, the results of the personal stigma scale showed students also had unfavorable attitudes toward people with mental health issues, though medical students had better attitudes than pharmacy and allied health sciences students.

Low social acceptance of people with mental illnesses is reflected in students' responses to questions determining social stigma, and personal stigma toward these disorders. A significant proportion of students stated that most people would not socialize with a person who had received mental health treatment. Nearly half the students reported that the public would not consider a person with a history of mental health treatment to be as intelligent and/or trustworthy as an average person. In addition, study participants believed it would be hard for them to secure employment and become involved in a relationship even if they had fully recovered from the illness. These findings are consistent with the results of earlier studies reporting social stereotyping, prejudice, and discrimination against people with mental illness in Pakistan (Sultan, 2012; Daniel et al., 2021; Khan & Irfan, 2023; Mansoor & Warsi, 2023). A recent study revealed that patients with mental health disorders were stigmatized by society; they were called crazy, mocked, and even shunned by relatives (Khan & Irfan, 2023). Furthermore, people with mental disorders also have difficulty forming relationships (Khan & Irfan, 2023). Another study from Khyber Pakhtunkhwa, Pakistan, reported that 73% of patients reported being stigmatized due to their illness. Approximately 40% declared they were not accepted by others, and that this stigmatization was causing problems with their educational attainment, jobs, and relationships with family members (Daniel et al., 2021). These findings indicate that people with mental health issues experience negative judgments,

discrimination and prejudice, with devastating consequences (Alloh et al., 2018; Rössler, 2016).

Regarding the factors associated with PPS, those married or in a relationship reported lower scores for perceived public stigma than those who were single. This is consistent with the findings of an earlier study (Getnet et al., 2022) in which single individuals were more likely to report higher perceived stigma than those who were married (adjusted odds ratio = 1.84, 95% CI: 1.12–3.02).

In the present study, the findings of the personal stigma scale also showed that students had negative attitudes toward mental health disorders. These findings are in line with previous studies highlighting negative, discriminatory attitudes among the general public, university students, and healthcare professionals toward mental disorders (Husain et al., 2020; Waqas et al., 2014). Consistent with the findings of an earlier study (Lally et al., 2013), we observed that students with a history of psychiatric illness had less stigma than others. This may well be linked to their lived experience, resulting in greater compassion and empathy, improved mental health literacy and a reduction in stereotypical thinking (Ahad et al., 2023; Corrigan & Watson, 2002). Our findings regarding females having less stigma toward mental illness than males were also in line with previous studies (Abdullah et al., 2021; Husain et al., 2020; Eisenberg et al., 2009). Our regression analysis showed that education was the main predictor of personal stigma in our sample. As expected, medical students had more positive attitudes toward mental health disorders than other students. This could be attributed to their having better insights into mental health disorders and also because they will be directly involved in providing care to such patients in the future. These findings indicate the need to improve mental health literacy among students, particularly non-medical students, by launching educational campaigns. Mental health disorders are becoming increasingly prevalent among Pakistani youth (Khan et al., 2021; Salman et al., 2022b; Salman et al., 2023). Accordingly, educational institutions should have effective student psychological and counselling service centers capable of providing appropriate psychological care to all students, faculty, and staff members (Mallhi et al., 2022). Lastly, although legislative steps have been taken to protect the rights of people with mental illness in Pakistan, effective practical implementation remains a major concern (Khan & Khan, 2021). There is therefore an urgent need for organized efforts to promote awareness, allocate resources, and implement a robust mental health policy to safeguard those affected.

Our study findings should be discussed in light of a few limitations. Firstly, convenience sampling was used to recruit the study sample, which may be associated with sampling bias. Secondly, since this study was conducted among medical, pharmacy, and allied health sciences students at a higher education institution in Lahore, Pakistan, its findings

might not be generalizable to the entire student population. Thirdly, this was a cross-sectional study, meaning that causality could not be determined. Lastly, although there were multiple negatively worded items in the study instrument to address cognitive bias/the halo effect (Mustafa et al., 2020), the self-reported nature of data collection means there may have been some degree of cognitive bias. We recommend a nationwide survey to evaluate mental health stigma among university students. Moreover, interventional studies are required to highlight the impact of educational campaigns on reducing the stigma of mental health disorders among university students.

In conclusion, stigma surrounding mental health disorders is prevalent in Pakistani society, even among highly educated sectors. Our study calls for regular educational interventions to enhance university students' awareness and attitudes toward mental health disorders.

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Conflict of interest

None declared.

Authors' contribution

All authors contributed equally to this research study.

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