

Research Article

Suicidal Ideation, Psychological Distress and Depression in Medical Students of Pakistan: Surviving or Thriving

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Abstract

Background: In recent years, psychological stress has lead to increase in suicide cases readily among medical students of many countries. This study aims determine the prevalence of psychological stress, major depressive disorder, and suicidal ideation in Bachelor of Medicine and Bachelor of Surgery (MBBS) students of a government setup medical university in Pakistan. **Methods:** The data was gathered using a valid questionnaire containing 10 items Kessler psychological distress scale. The scale consists of the severity of the psychological distress from well, mild, moderate, and severe. Physical health questionnaire 2(PHQ2) was used for identifying the students with major depressive illness. Suicidal ideation was assessed using item no. 9 from PHQ9 questionnaire. **Results:** The overall prevalence of suicidal ideation, distress and major depression among 353 students of MBBS was 22.9%, 63.1%, 27.8% respectively. The students with major depression and moderate/severe distress are more probable to think about suicide. Moreover, Students who choose medicine under the family influence are more likely to have suicidal ideation. Besides this, we found that particularly females experience higher psychological distress as compared to males. **Conclusion:** In the overall study, it is identified that suicidal ideation is strongly correlated to depression and distress. However, controlling these factors at an early stage can prevent the suicidal thoughts, which inevitably can reduce the suicide attempts not only in medical students but could also be valuable for students of different fields.

Keywords

Mental Health of Medical Students, Major Depression, Psychological Distress, Suicidal Ideation

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1. Introduction

Medical schools and universities in Pakistan are providing quality education to the students and producing competent doctors who have proved their skills all around the world. Medicine, being a high demand, tough and hectic field makes its learners vulnerable to increased psychological stress. It has been known since the 20th century that medical students endure an increased degree of distress during their academic courses which can seriously affect their mental health and put them at a higher risk of depression, anxiety, and other mental health problems [1, 2]. In recent years, this readily has increased suicide cases among college students which itself is very upsetting. [3-5] the researchers are trying to study the prevalence of depression, stress, burnout, anxiety disorder, and suicides in various assemble of students. A Meta-Analysis shows that 27.2% of the medical students are suffering from depression and overall suicidal ideation was found to be 11%. [6] Prevalence of mental distress in medical students was found to be 63% in Saudi Arabia, 61.3% in Iranian medical students, and 60% in Canadian medical university, and only 1% students were found to be free of distress in Bangladesh. [7-10] Depressive people are more likely to experience suicidal thoughts. A study conducted in China showed a strong correlation between suicidal ideation and depression. 30% of medical students with depression reported suicidal ideation, 13.5% reported moderate to severe depression, and overall 7.5% are had suicidal ideation. [11] And, in an American study, 58% of students are reported positive for depression in which 9.3% were found with suicidal ideation. [12] In an Indian study, 21% of students were found to be suffering from moderate to severe depression. [13] There is a rise in suicide cases in medical students of Pakistan recently, and local data regarding the prevalence of depression, anxiety, distress, or suicidal ideation is not very much available. Results from a recent study conducted in Karachi suggest 35.6% of medical students have thought about suicide and 13.9% have actually planned to take their own life. [14] In fact, suicidal ideation is linked with several parameters such as distress, family issues, and living standards, etc., which are remarkable to measure. The objective of this study is to determine the prevalence of psychological distress, major depressive disorder, and suicidal ideation in MBBS students of a government set up medical university in Pakistan. Therefore, the results generated thereby, will not only reveal the undetected depression and distress but will also be helpful in making further strategies to combat the rising mental health issues in doctors and students.

2. Research Methodology

A cross-sectional study was conducted at Rawalpindi medical university Punjab Pakistan. Three hundred and fifty-three participants from 1st year to 5th -year students of Bachelor of Medicine and bachelor of Surgery (MBBS) were surveyed in this study after random sampling. We used the

Kessler psychological distress scale k10 for the assessment of psychological distress (Cronbach's alpha 0.89). [15] The scale consists of a 10 item questionnaire that accesses the severity of the psychological distress from well, mild, moderate, and severe distress with each question having five possible responses which go from "none of the time" to "all of the time". Physical health questionnaire 2(PHQ2) was used for identifying the students with major depressive illness. PHQ score of ≥ 3 is taken as our cut-off value which has a sensitivity of 83% and specificity of 92%. [16] Suicidal ideation was assessed using item no. 9 from PHQ9 questionnaire, all the options except "not at all" are taken as positive for suicidal ideation. [11, 17] Demographic data and further questions about the cause of distress were also asked in the questionnaire. Independent variables in our study are class year, gender, boarder (hostel scholar)/nonboarder (day scholar), reason to choose medicine, and dependent variables are psychological distress, depression and suicidal ideation. Mean-percentage is used for summarizing. Chi-square test, the odds ratio is used for observing the association between dependent and independent variables. Fischer's exact test is used when $n < 5$. Logistics regression analysis is used for multivariate analysis and identifying risk factors. Alpha is set to 0.05 and confidence interval (CI) to 95%. Correlation coefficient R is used to correlate depression, distress, and suicidal ideation. All the students were informed about the nature and importance of the study and questionnaires were made anonymous to remove the stigma attached to depression, distress, and suicidal ideation and to make students more comfortable in participating.

3. Results

The questionnaire was completed by 353 students in total. The demographic characteristics of students are given in Table 1. In total numbers of students, 255 (72.2%) participants were females and 98 (27.8%) were males. Further the total number of students classified into year of study (1st to 5th year), type of accommodation (day and hostel scholar), supply and reason of choose medicine (interested, family influence). The cause of distress is also clarified into four variables in which distress among students due to family issues is 10.2%, because of study is 31.4%, 26.1% mentioned both and 32.3% marked other reasons of distress. We chose these variables to distinguish the mental health of the medical students during their study. Table 1 only shows the participation of students in counts and percentages for our chosen study variables. The data for distress for several variables are given in Table 2. In data, 67.8% of female students are found in distress and this value is higher than male students 51.0%. Noticeably, a significant statistical association is found between distress and gender [$X^2=8.612$, $P=0.003$, $OR=2.03$]. Similarly, the distress associated with depression is found more in females 93.9% as

compared to males 51.4%. While, no significant difference is found between distress and year of study [$X^2=7.236$, $P=0.124$] or between having a supply previously [$X^2=1.286$, $P=0.257$]. Chi-square test found no association between the type of accommodation and distress ($X^2=0.918$, $P=0.338$). Furthermore, the level of distress we graphically demonstrated in Figure 1. The 26.9% ($n=95$) of students are found with severe distress and 15% ($n=53$) with moderate distress whereas 21.2% ($n=75$) of the students are noticed with mild distress and 36.7% ($n=130$) with no distress. The prevalence of distress of all levels is about 63.1% (severe + moderate + mild) for $n=223$ out of a total of 353 students. It is also identified that the distress has a strong association with suicidal ideation (see Table 3). Total 35.4% distressed student have suicidal ideation ($X^2=53.34$, $p=0.000$, $OR=35.11$).

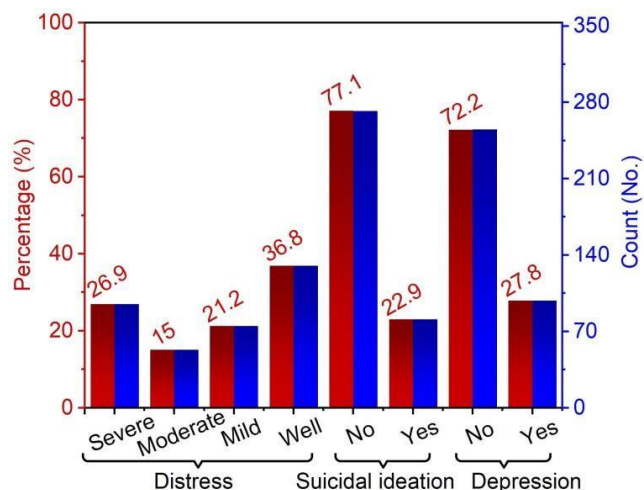


Figure 1. Prevalence of distress suicidal ideation and depression in terms of percentage and counts.

Table 1. Characteristics of study variables.

Study variable	Sub variable	Count	Percent %
Gender (n=353)	female	255	72.2
	male	98	27.8
Year of study (n=353)	1st year	78	22.1
	2nd year	66	18.7
	3rd year	49	13.9
	4th year	62	17.6
	5th year	98	27.8
Type of accommodation (n=353)	day scholar	236	66.9
	Hostel scholar	117	33.1
Supply (n=353)	no	308	87.3
	yes	45	12.7
	interested	125	35.4
Reason to choose medicine (n=353)	Family influence	56	15.9
	both	152	43.1
	none	20	5.7
	Family issues	36	10.2
Cause of distress	studies	111	31.4
	both	92	26.1
	other	114	32.3

Table 3 shows the data for suicidal ideation in which no statistically significant association is found in suicidal ideation between gender ($X^2=0.49$, $P=0.48$, $OR=1.23$), year of

study ($X^2=2.5$, $P=0.64$), and type of accommodation ($X^2=1.23$, $P=0.26$). Students who selected medicine under the family influence are more likely to experience suicidal idea-

tion ($X^2 = 4.95$, $P = 0.026$). Like distress, suicidal ideation is also strongly correlated with depression ($r = 0.43$, $P = 0.000$) and distress ($r = 0.389$, $P = 0.000$) as given in Table 4. 52.0% of the depressed students and 35.4% of distressed students reported suicidal ideation compared to suicidal ideation reported by 11.8% having no depression and 1.5% with no distress. Noticeably, the prevalence of suicidal ideation, distress, and depression were highest among 3rd -year students. The values are 30.6% for suicidal ideation (Table 3), 73.5%

for distress (Table 2), and 44.9% for depression (not given in Tables). Data for the depression is not shown but a similar trend is observed between depression and study variables (gender, type of accommodation, supply). Additionally, a significant association was only observed in the depression between different year of study ($X^2 = 15.8$, $p = 0.003$). In overall data, 27.8% of student reports depression (see Figure 1 and totally), 22.9% of students report suicidal ideation.

Table 2. Association between distress and study variables.

		Distress						
Study variables	Sub Variables	Present		Absent		X2	P-value	OR
		Coun t	%	Count	%			
Gender	female	173	67.8	82	32.2	8.612	0.003	2.03
	male	50	51.0	48	49.0			
Year of study	1 st year	50	64.1	28	35.9	7.236	0.124	1.5
	2 nd year	43	65.2	23	34.8			1.65
	3 rd year	36	73.5	13	26.5			2.4
	4 th year	42	67.7	20	32.3			1.86
	5 th year	52	53.1	46	46.9			1
Living	day scholar	145	61.4	91	38.6	0.918	0.338	1.255
	hostel scholar	78	66.7	39	33.3			
Supply	No	198	64.3	110	35.7	1.286	0.257	0.69
	yes	25	55.6	20	44.4			
Depressi on	No	131	51.4	124	48.6	54.976	0.000	14.514
	yes	92	93.9	6	6.1			

Table 3. Association between suicidal ideation and study variables.

Study variables	Sub Variables	Suicidal ideation				X2	P-value	OR
		Present		Absent				
		Count	%	Count	%			
Gender	female	61	23.9	194	76.1	0.494	0.482	1.23
	male	20	20.4	78	79.6			(0.74-2.3)
Year of study	1 st year	18	23.1	60	76.9	2.501	0.644	1.17
	2 nd year	16	24.2	50	75.8			1.25
	3 rd year	15	30.6	34	69.4			1.72
	4 th year	12	19.4	50	80.6			0.94

Suicidal ideation								
Study variables	Sub Variables	Present		Absent		X2	P-value	OR
		Count	%	Count	%			
Living	5 th year	20	20.4	78	79.6	1.25	0.26	1
	day scholar	50	21.2	186	78.8			1.34
	hostel scholar	31	26.5	86	73.5			
Supply	no	66	21.4	242	78.6	3.15	0.076	1.83
	yes	15	33.3	30	66.7			
Depressio n	no	30	11.8	225	88.2	64.95	0.000	8.14
	yes	51	52.0	47	48.0			
Distress	no	2	1.5	128	98.5	53.34	0.000	35.11
	yes	79	35.4	144	64.6			
Reason to choose med	interested	27	21.6	98	78.4	5.79	0.122	
	family influence	19	33.9	37	66.1			
	both	29	19.1	123	80.9			
	none	6	30.0	14	70.0			

Table 4. Correlation between suicidal ideation, depression and distress.

Variables		depression	Distress
Suicidal ideation	Pearson Correlation (r)	0.429	0.389
	Significance (P)	0.000	0.000

4. Discussion

Our objective was to determine the prevalence of distress, suicidal ideation, and depression among medical students and its association with different study variables. The results of the study revealed high levels of distress among medical students in Pakistan. The overall prevalence of distress was found to be 63.1% (severe + moderate + mild from Figure 1) which is similar to a study conducted in the Islamic republic of Iran⁸ and a study in Saudi Arabia⁷ and Canada. [9] We did not find any recent study on distress in medical students in Pakistan. This high level of distress may cause high cholesterol levels, sleep disturbances, negative mood, and hopelessness, which can further affect the decision-making skills. [18-21] In our study, we found 3rd -year students having more prevalence of distress, suicidal ideation, and major depression. The reason might be the change of environment to clinical, exposure to wards, critical patients, and noncritical patients,

and change in curriculum. The distress was higher among 3rd -year students (73.5%) as compared to 1st year (64.1%), 2nd year (65.2%), 4th year (67.7%), and final year (53.1%). Nevertheless, no statistically significant association was found in distress between different years of study. The finding concurs with study in Iran and Saudi Arabia but in Iranian study, 1st - year students are more likely to experience distress, and Saudi study found final year students more likely to be distressed. [7, 8] We also found no difference in distress levels between clinical and preclinical groups. Both phases might be equally stressful for the students in different ways. A pre-clinical group might be stressed about tough medical studies and repeated exams and a clinical group might have found interacting with patients and the environment of hospitals generally stressful. Our study found a significant difference in distress between male and females, which are consistent with other worldwide studies. [7, 22, 23, 27] Although the study in Malaysia [24] and Iran [8] found no association. Having a supply previously and type of accommodation does not significantly affect the levels of distress. The reason might

be that the study was conducted in no exam season to exclude the effect of annual and supplementary exams on results. Another major finding of the study is that 22.9%, students were found to have suicidal ideation and 27.8% in major depression recently. This frequency of suicidal ideation and major depression is quite high in contrast to the 2-week frequency of suicidal ideation in China¹¹ and 12-month frequency in the USA. [12] But in comparison to two Pakistani studies that were conducted in Karachi the prevalence is quite low (35.6, 31.4). [14, 25] Major depression prevalence was also found higher than other international studies. [13] This area needs further research and comparison to find out the protective and risk factors. Gender, year of study, type of accommodation, or having a supply previously did not significantly affect the prevalence of suicidal ideation. Other Pakistani and international studies also showed the similar results. [25, 11] An Indian study found a significant association of suicidal ideation with gender. [26] Strong relation was found between suicidal ideation, stress, and depression. The correlation coefficient between suicidal ideation and major depression was found to be 0.49 which is exactly the same as found in a study in China. [11] In Pakistan, families have a greater influence on their children in choosing the field. Our study found that students who choose medicine solely under the family influence are more likely to get depressed and have suicidal ideation. Lack of education and stigma attached to these terms and provided no proper importance to mental health can lead to many underground cases of suicidal ideation and depression, which may affect their excellence and can result in suicide, unfortunately. So the need of the hour is to provide proper education and support to the students through sessions by professional psychologists about its importance and to have a separate cell devoted to their mental health. Moreover, frequent cross-sectional surveys can also help in identifying those who need mental health sessions. Although the research data was collected in Pakistan but we believe, this research can be valuable for worldwide male and female medical students. Further researches are needed in this field to find the associated risk factors, any protective factors and to identify stigma attached to mental health issues in the world of medicine.

5. Limitations of the Study

The study is conducted only in the one medical university of Punjab (Rawalpindi medical university) within one year to exclude any stress of exams. Additionally, the survey was anonymous so the students who were found to have suicidal ideation and major depression could not be identified leading to non-delivery of professional psychiatrist help.

6. Conclusion

Medical students in Pakistan experience significant distress

and depression, often leading to suicidal thoughts. Those influenced by family to choose medicine report higher levels of distress. Females are particularly affected, and third-year students show a high prevalence of both distress and suicidal ideation. This highlights the urgent need for better mental health support. Regular screening and counseling should be standard in medical universities, with dedicated mental health services available to ensure students feel comfortable discussing their issues.

In conclusion, future research should focus on the long-term effects of mental health interventions, the effectiveness of peer support, and factors contributing to higher distress in female students. Identifying best practices to create a supportive environment for all medical students is essential.

Abbreviations

MBBS	Bachelor of Medicine and Bachelor of Surgery
PHQ	Patient Health Questionnaire
PHQ2	Patient Health Questionnaire-2
PHQ9	Patient Health Questionnaire-9
K10	Kessler Psychological Distress Scale
CI	Confidence Interval
OR	Odds Ratio
r	Correlation Coefficient
X ²	Chi-Square

Acknowledgments

A preprint has previously been published [28].

Ethical Approval

Ethical Approval Ethical approval for this study was obtained from the Institutional Review Board of the Center for Research and Development, Rawalpindi Medical University. Confidentiality was kept by using anonymous codes and de-identified study participants' identifiers. All respondents were assured that the data would not have any negative consequence on any aspect of their life.

Informed Consent

Informed written consent was obtained from all subjects before data collection.

Authors Contribution

Muhammad Hamza Umar: the concept and design of the study, data acquisition, statistical analysis, performed the DNA extraction and interpreted the results, analyzed the data and drafted the manuscript.

Hira Waris: the concept and design of the study, data ac-

quisition, statistical analysis, performed the DNA extraction and interpreted the results, analyzed the data and drafted the manuscript.

Hina Khan: the concept and design of the study, data acquisition, statistical analysis, performed the DNA extraction and interpreted the results, analyzed the data and drafted the manuscript.

Anum Sarwar: the concept and design of the study, data acquisition, analyzed the data and drafted the manuscript.

Vikash Kumar Karmani: statistical analysis, performed the DNA extraction and interpreted the results.

Muhammad Jasim All Mahmood: statistical analysis, performed the DNA extraction and interpreted the results.

Muhammad Amir Ashraf: contributed and approved the final manuscript.

Rimsha Khan: contributed and approved the final manuscript.

Leeda Ahmadi: contributed and approved the final manuscript.

Authors Declaration

The authors declared that this work is original and backed by scientific research and facts.

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Data Availability Statement

All data generated or analyzed during this study are included in the published article.

Conflicts of Interest

The authors declare no conflicts of interest.

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