

# Suicidal Ideation and its Associated Factors in Medical Students of Clinical Years at a Private Medical College of Karachi

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## ABSTRACT

**Background:** Suicide is defined as death caused by self-directed injurious behavior with any intent to die as a result of the behavior. Medical program admissions are emotionally challenging due to competition and limited spots. The demanding coursework and clinical rotations, long study hours, and sleep deprivation make medical students prone to mental health issues.

**Objective:** To assess suicidal ideation and its associated factors in medical students of clinical years at a private medical college in Karachi, Pakistan.

**Methods:** A cross-sectional study was conducted at Baqai Institute of Health Science, Karachi, from December 2022 to December 2023. The study population comprised clinical-year medical students of Baqai Medical College, Karachi. Suicidal ideation was assessed using the SENTIA suicidal behavior assessment scale. Inferential analysis was performed using the Mann-Whitney U test, Kruskal Wallis H test, and multiple linear regression.

**Results:** A total of 252 medical students were approached out of which 237 participated in the study. The mean and standard deviation of the age of the respondents was  $22.4 \pm 1.24$  years and 137 (58%) of them were females. Moreover, the total suicidal ideation score and that of subscale suicidal ideation were significantly different across categories of marital status ( $p=0.026$  and  $p=0.007$  respectively) whereas that of subscale suicidal act/planning was significantly different across categories of both marital status ( $p=0.30$ ) and family type ( $p=0.047$ ). None of the patient features was found to be associated with suicidal ideation in regression analysis.

**Conclusion:** Suicidal ideation scores were found to be significantly associated with the marital status and family type of the students on bivariate analysis. Students who are divorced, widowed, separated, or living in a joint family system should be monitored vigilantly and provided with appropriate counseling by a professional counselor if the need arises.

**Keywords:** Suicidal ideation, demographics, risk factors, students, medical.

## INTRODUCTION

Suicide is the act of taking one's own life on purpose. Suicidal behavior is any action that could cause a person to die, such as taking a drug overdose or crashing a car on purpose [1]. It is a serious public health issue that is frequently given a low priority by academics, policymakers, gatekeepers, and doctors, particularly in lower-income nations [2].

According to the World Health Organization World Health Statistics 2024, the global total of suicide deaths decreased from an estimated 762 000 (UI: 590 000-892 000) in 2000 to 717 000 (UI: 545 000-913 000) in 2021 [3]. Moreover, the World Health Organization also reports that the global suicide mortality rate in 2019 was 9.2/100,000 individuals whereas that of Pakistan was 8.9/100,000 individuals [4].

Traumatic life events and pre-existing psychiatric problems are the most likely causes of suicidal behavior. Since mood disorders, impulsive behavior, and violent behavior are learned behaviors rather than biological

in origin, it has been argued that genetics and family environment may be the main causes of suicidal thoughts in teenagers, [5], which may include their socio-demographic profile as well [6]. In addition, using drugs, exposure to sexual assault, having psychological discomfort, and being physically inactive may also contribute to the development of suicidal thoughts and tendencies [7].

Suicide attempts and fatal suicides among college and university students have been a startling contemporary reality [8]. For many young people who observe a deterioration of other structures, such as family, religion, or support networks, the university serves as a point of reference [9]. Medical degree programs particularly are emotionally challenging due to demanding course work, clinical rotations, long study hours, sleep deprivation, and fear of failure that may cause emotional exhaustion leading to stress and anxiety. A recent narrative review highlighted that structural systems in medical schools such as curricula, accommodation, social support, and academic pressures may play a part in developing suicidal behavior in medical students [10]. A systematic review reported the prevalence of suicidal ideation to range from 1.8% to 53.6% in medical students [11]. Locally in Pakistan, estimates of suicidal ideation rates

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among students vary greatly, from a low of 17.0% to a high of 39.3% [6, 12-14].; this is even though suicidal behavior is sensitive and often goes unreported in Pakistan [15].

To the best of the authors' knowledge, the recent local literature on this important health issue, especially among medical students, is limited at best [14, 16]. This study was therefore conducted to assess suicidal ideation and its associated factors in medical students of clinical years at a private medical college in Karachi, Pakistan. The study findings are intended to add to the limited local evidence base to present a clearer picture for policymakers to devise targeted interventions to tackle this serious public health concern in Pakistan.

## METHODS

A cross-sectional study was conducted at Baqai Institute of Health Science, Karachi from December 2022 to December 2023. The ethical approval from Baqai Institute of Health Sciences was also duly taken (Reference # FHM 90-2022). Clinical year students of MBBS at Baqai Medical College were included in this study. In contrast, students who were drug abusers or had a known history of using anti-depressant drugs or anxiolytics were excluded from the study as they were thought to be more prone to suicidal behavior.

Keeping the percentage frequency of the study outcome at 50% for the most liberal estimate, with a 95% confidence level and 7% precision, the required sample size was calculated to be 196 participants by using an online openepi sample size calculator [17]. Against the calculated sample size, a total of 237 students were included in the study by using the non-probability convenience sampling technique.

After taking verbal informed consent, the data were collected using a questionnaire that consisted of two sections. The first section contained six questions related to demographic information of the participants including their age, gender, study year, marital status, family type, and family history of suicide. The second section comprised of SENTIA suicidal behavior assessment scale consisting of 16 questions in which questions 1, 5, 6, 8, 12, and 13 explored suicidal act/planning, questions 7, 9, 10, and 11 covered suicidal communication and question 2, 3, 4, 15 and 16 explored suicidal ideation [18]. Each question had 2 options, yes and no and only one had to be marked by the participant. The total scale score was calculated by taking the sum of the items with a positive answer with a score range of 0 to 16. For the subscale Suicidal Act/Planning total of 7 questions were similarly scored with a range of 0 to 7; for the subscale Suicidal Communication, a total of 4 questions had a score range of 0 to 4 whereas for subscale Suicidal Ideation total of 5 questions had score range of 0 to 5. The suicidal behavior assessment scale was used after giving due permission. The questionnaires were filled in

by the participants themselves as all of them were well-educated.

Data were analyzed on Statistical Package for Social Sciences version 20. Descriptive analysis was performed by generating frequency and percentages for categorical variables and mean and standard deviation for continuous variables. After checking normality through Shapiro-Wilk's test, the suicidal behavior assessment scores were compared across categories of demographic characteristics by using the Mann-Whitney U test and the Kruskal Wallis H test. Moreover, multiple linear regression analysis was also performed to check the association between participant characteristics and the total suicidal score. The level of significance was kept at 0.05.

## RESULTS

A total of 252 medical students were approached out of which 237 participated in the study with a response rate of 94%. The mean age of the respondents was  $22.40 \pm 1.24$  years, 137 (58%) of them were females, 103 (43%) were in 3<sup>rd</sup> year MBBS, 226 (95%) were unmarried, 163 (69%) lived in a nuclear family whereas 226 (95%) had no family history of suicide.

Moreover, the assessment of suicidal behavior amongst the medical students showed that 93 (39%) respondents had planned to take their own life, 91 (38%) had been thinking about how they could take their own life, 112 (47%) had wished that they were dead, 110 (46%) had thought that it would be better for them to be dead, 76

**Table 1:** Suicidal ideation assessment.

Questions assessing suicidal ideation	Positive Response Count (%)
Have you planned to take your own life?	93 (39)
Have been thinking about how you could take your own life?	91 (38)
Have you ever wished you were dead?	112 (47)
Have you ever thought it would be better to be dead?	110 (46)
Have you been close to taking your life and finally something went wrong?	37 (13)
Have you tried to take your life and finally someone has stopped you?	32 (13)
Have you threatened your friends or family with taking your own life?	57 (24)
Have you thought of a plan to end your life?	71 (30)
Have you done anything to make others understand that you wanted to take your own life?	66 (28)
Have you told anyone that you want to take your own life?	62 (26)
Have you tried to ask for help when faced with these ideas of suicide?	46 (19)
Have you tried to take your own life?	54 (23)
Have you hurt yourself (self-harm, cuts, punctures etc.) without intending to die?	76 (32)
Have you ever tried to take your life and finally rejected the idea?	57 (24)
Have you thought that you cannot ask anyone for help?	101 (43)
Have you ever had ideas about taking your life?	107 (45)

**Table 2:** Comparison of total suicidal scores across demographic characteristics.

Participant Characteristics (n=237)	Total Score	p-value
	Mean Rank/Median (IQR)	
Gender		
Male	118.3	0.893
Female	119.51	
MBBS Year		
3 <sup>rd</sup> year	4.00 (7)	0.189
4 <sup>th</sup> year	4.00 (6)	
Final year	7.00 (10)	
Marital Status		
Married	5.00 (10)	0.026
Unmarried	4.00 (7)	
Widowed/Separated/Divorced	11.00 (3)	
Family Type		
Nuclear	113.98	0.092
Joint	130.06	
Family History of Suicide		
Yes	149.5	0.284
No	117.51	

**Table 3:** Multiple linear regression analysis of association between participant characteristics and total suicidal score.

Participant Characteristics (n=237)	Unstandardized Coefficients B	95% CI		p-value
		Lower	Upper	
Gender	-0.041	-1.231	1.150	0.946
Study Year	0.625	-0.140	1.390	0.109
Marital Status	1.543	-1.093	4.179	0.250
Family Type	0.807	-0.411	2.025	0.193
Family History of Suicide	-0.808	-3.522	1.906	0.558

(32%) had hurt themselves by cuts and punctures without intending to die, 101 (43%) had thought that they could not ask anyone for help whereas 107 (45%) had ideas about taking their life (**Table 1**).

The comparison of total suicidal scores across the categories of demographic characteristics showed that it was significantly different for marital status only ( $p=0.026$ ) where participants who were divorced/widowed/separated had the highest total suicidal scores (**Table 2**).

The comparison of suicidal subscale scores across the demographic characteristics showed that the suicidal act/planning score was significantly different across the categories of marital status ( $p=0.030$ ) and family type ( $p=0.047$ ); the suicidal communication score was not significantly different for any of the demographic characteristics whereas the suicidal ideation score was significantly different across categories of marital status only ( $p=0.007$ ).

Furthermore, multiple linear regression analysis of association between participant characteristics and total suicidal score was performed which showed that none of the participant characteristics was a significant predictor of their total suicidal score (**Table 3**).

## DISCUSSION

The study results showed that 39% of respondents in this study had planned to take their life. An earlier study though reported that 13% of medical students had made a plan in their lifetime to die by suicide [12]. Multiple factors may potentially contribute to this alarming finding such as stressful academic environment, presence of stress, anxiety or depression, family history of any mental disorder family violence, *etc.*

Furthermore, 46% of the respondents thought that it would be better for them to be dead and 30% had thoughts to end their life. Likewise, an earlier local study reported that 32% of students had experienced thoughts related to death [19]. Such a high percentage of students with suicidal thoughts points out an urgent need to explore the factors associated with such a trend. As the dynamics of student life are different in different cultures and societies, certain associated factors may be present that are unique to each setting. This study may thus prove beneficial in adding to the local evidence base in this regard.

Moreover, around a third of medical students were found to be engaged in self-harm activities. Feelings of loneliness and hopelessness can lead to self-harm as a way to escape from these intense emotions which the students might find difficult to share. It has been reported from Pakistan that the incidence of self-harm may have increased in recent years [20]. This highlights the need to address their negative emotions and make them realize that no matter what the circumstances are they should avoid harming themselves as they are needed by their family and friends.

Disturbingly, 47% of the students in this study wished that they would be dead. A study from India though reported only 6% of students to have a death wish [21]. The reasons behind such a high percentage of suicidal thoughts among medical students in our setting could be demanding coursework, long study hours, sleep deprivation, and fear of failure with embarrassing repercussions that could physically and mentally drain them. Finding the right study-life balance is the key to managing high levels of stress and anxiety in such students.

Unsettlingly, it was found that 30% of the respondents thought of a plan to end their life. This again indicates the high level of mental and physical exhaustion faced by these students. Mental tiredness and fear of failure could force these students to find ways to escape from reality, ultimately ending up planning to die by suicide. Arranging co-curricular activities at the medical schools, including recreation and sports opportunities, with mandatory participation may prove effective in encouraging these students to again take meaningful interest in their lives and control their negative thoughts.

Disturbingly, 24% of the students had threatened their friends and family that they wanted to take their life. This further displays the underlying mental stress among the respondents and their dissatisfaction with life. For a medical student to survive a tough academic routine and exhausting clinical rotations, the presence of emotional support mainly from family and friends is vital. It is therefore imperative to consider all these possible factors and provide a healthy environment at medical schools along with the provision of psychological counseling to students to improve their coping abilities and make them a useful and productive member of society.

Alarming, it was found that 23% of respondents had tried to die by suicide. Unlike the study results, two local studies conducted earlier reported that only 4% and 2% of students respectively tried to die by suicide at some point in their lives [12, 16]. Medical institutes can be extremely stressful places. The teaching and learning environments can be extremely stressful, and expectations for achievement are high for the students. This difference in findings possibly indicates ever-increasing mental pressure on the students over time in our local setting.

Interestingly, the study results did not show gender to be significantly associated with suicidal behavior in medical students. A recent local study reported that males had a stronger belief than females that suicide could be used to end suffering and would consider the possibility of doing it [22]. Both local and international literature though generally reports suicidal ideation to be higher in females as compared to males [6, 20, 23, 24]. A multitude of potential factors may be responsible for higher suicidal rates in female students as compared to male students, such as a continuous need to balance the demands of medical studies with those of personal life; this may be particularly true for married female students as they are expected to play both maternal and caregiving roles along with their educational responsibilities.

Unexpectedly, suicidal act/planning score was found to be significantly higher in students of this study who lived in a joint family system. An earlier study though reported a significant association between living in a nuclear family setup and suicidal ideation among college students [23]. It can be reasonably argued that because of the absence of a close social support system in a nuclear family set-up, living in such type of family may render an individual more susceptible to suicidal ideas. Due to the equivocal nature of the findings, further exploration of this interesting relationship is recommended by the authors.

## CONCLUSION

Based on the study results it was concluded that suicidal ideation scores were significantly associated with marital status and family type of the students on bivariate analysis. It is therefore recommended that those students, who are divorced, widowed, separated,

or living in a joint family system should be monitored vigilantly by both their family and institutes for any sign of emotional or psychological strain and provided with appropriate counseling by a professional counselor if the need arises. Students should also be advised that if they need any emotional or psychological support they should immediately confide in their family, close friends, and teachers who are their well-wishers and will do their utmost to help them out of their difficult situations. Strengthening the existing family bonds and friendships may prove to be an effective tool in dealing with these situations.

## ETHICS APPROVAL

The study procedures were in line with the institutional ethical standards for human experiments and the Helsinki Declaration, including obtaining verbal informed consent from all the participants. The ethical approval from Baqai Institute of Health Sciences was also duly taken (Reference # FHM 90-2022).

## CONSENT FOR PUBLICATION

Before data collection, verbal informed consent was taken from each participant of the study.

## AVAILABILITY OF DATA

Data cannot be shared publicly because it is the intellectual property of Baqai Institute of Health Sciences. Data are available from the Baqai Institute of Health Sciences (contact *via* manager.mph@baqai.edu.pk).

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None.

## CONFLICT OF INTEREST

The authors declare no conflict of interest.

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Declared none.

## AUTHORS' CONTRIBUTION

MJ: Study concept, designing, and manuscript drafting.

NJ: Study design, critical review, and revision of initial draft.

SMZHN: Result in analysis and interpretation, critical review, and revision of initial draft.

SJ: Critical review and revision of initial draft.

All authors have read and approved the manuscript.

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