ORIGINAL RESEARCH ARTICLE

NATIONAL JOURNAL NJMR MEDICAL RESEARCH

Suicidal Ideation and Associated Factors Among Medical Undergraduates in A Medical College of North Kerala

Roshni SS[1*], Remya Ramachandran[2], Swathi Chalil[3], KrishnaRaj JS[4]

[1]Department of Community Medicine, Government Medical College Manjeri, Malappuram, India
[2,3,4]Department of Community Medicine, Malabar Medical College Hospital and Research Centre, Kozhikode, India

DOI:
10.55489/njmr.150420251137

***Corresponding author**:
Roshni SS
Email: roshnijabir90@gmail.com

Date of Submission: 30/05/2025
Date of Acceptance: 11/07/2025
Date of Publication: 01/10/2025

Funding Support:
None Declared

Conflict of Interest:
The authors have declared that no conflict of interests exists.

How to cite this article:
Roshni SS, Remya R, Chalil S, KrishnaRaj JS. Suicidal Ideation and Associated Factors Among Medical Undergraduates in A Medical College of North Kerala. Natl J Med Res 2025;15(04):230-236.
DOI: 10.55489/njmr.150420251137

ABSTRACT

Background: Suicide is a major global concern, causing over 700,000 deaths annually and ranking as the fourth leading cause of death among 15-29-year-olds. Medical students are at heightened risk, with thoughts of suicide often emerging at the beginning of their medical education. Identifying and addressing this issue by finding out the prevalence of suicidal ideation and associated factors among medical undergraduates was the main aim of our study.

Methodology: A Cross-sectional study was conducted in medical colleges of Kozhikode district, North Kerala using World Mental Health survey initiative version of the World Health Organization Composite International Diagnostic Interview (WHO-CIDI). Students from all academic years who were willing to participate were included through consecutive sampling.

Results: The study found that 28.9% of medical students experienced suicidal ideation after enrolling in medical school. Substance abuse, h/o psychiatric illnesses in students, comorbidities, sleeping difficulties, psychiatric illnesses in family, suicides in family and experiencing stressful events during the course were factors significantly associated with suicidal ideation.

Conclusions: This study observed a high prevalence of suicidal ideation among medical students. And the factors associated were joining MBBS without self-interest, substance abuse, history of psychiatric illness, psychiatric illness in the family, stressful events, co-morbidities and sleeping difficulties.

Keywords: Suicide, Ideation, Medical, Students

INTRODUCTION

Suicide is a significant public health concern, with more than 700,000 deaths occurring worldwide each year. It is the fourth leading cause of death among individuals aged 15-29 years. For every suicide, there are many more attempts, and a prior suicide attempt is the single most critical risk factor for future suicide in the general population. Many suicides occur impulsively during moments of crisis, when individuals struggle to cope with life stresses. Experiences such as conflict, disaster, violence, abuse, loss, and social isolation are strongly associated with suicidal behaviour.[1] Medical professionals are at a heightened risk of suicide, with this vulnerability beginning from the time of entering medical school. The intense academic pressure, coupled with high parental expectations, contributes to significant psychological distress among medical students. One of the major risk factors for attempted suicides is suicidal ideation characterised by thoughts of or considering

Publisher: Medsci Publications [www.medscipublications.com] ISSN: 2249 4995 Official website: www.njmr.in

ending one's life, or formulating suicide plans. Reported rates of suicidal ideation among medical students vary significantly with prevalence ranging from 6& to 43%.[2] Although medical students may experience mental health issues at rates comparable to those of the general population of the same age group, the risk of mental health issues tends to increase as they progress through their medical education. Depression is a major concern among medical students, as it can lead to severe emotional distress and, in some cases, suicide.[3] Also notable is the association of maladaptive perfectionism and impostor syndrome with increased risk of suicidal ideation.[4] Other factors that are responsible for increasing suicidal behavior risks among medical students include sleeping difficulties, living away from home, substance abuse, fatigue, poor social support, anxiety, thoughts of dropping out, history of physical assault, history of sexual or physical abuse, parental neglect, academic difficulties, living alone, having demanding parents, family history of mental illness, family history of suicidal behaviors, financial burden, alcohol use, cigarette smoking, and internet addiction.[5,6] Even though medical students typically have better access to healthcare services, many refrain from seeking mental health support due to concerns including stigma, confidentiality, lack of time, and the fear that it may adversely affect their future careers[2] which can ultimately result in severe consequences, including the tragic decision to end ones' life. Post their graduation, concerns related to stigma, along with apprehensions about potential professional and financial repercussions, continue to act as major deterrents for doctors in seeking mental health support.[7]

Given the high prevalence of suicidal ideation among medical students, it is imperative to investigate its associated factors. Early identification of suicidal ideation can be life-saving, preventing students from making irreversible decisions. Furthermore, recognizing and addressing underlying mental health issues at an early stage can facilitate targeted interventions, offering essential support to students facing adversity. This study aims to assess the prevalence of suicidal ideation among medical students and identify the factors contributing to it, thereby providing valuable insights for preventive measures and mental health support programs.

MATERIALS AND METHODS

A cross-sectional study was conducted to assess the prevalence of suicidal ideation among medical students in Kozhikode district, North Kerala, for a period of 1 year from December 2022 to December 2023. The study population included all undergraduate medical students (MBBS) from first-year to final-year who were willing to participate. A consecutive sampling method was employed, ensuring that all eligible students who consented to participate were included in the study. Taking the prevalence of suicidal ideation among medical students as 58.3% based on an institution based cross sectional study[8] and an absolute precision of 6.5, sample size was calculated as 230.

A pre-tested semi-structured study questionnaire in the form of "Google form" was prepared. Questionnaire was categorized into three parts: Sociodemographic details, Questions to assess psychosocial characteristics and substance abuse, and Questions to assess psychological behaviour towards suicide including suicide ideation, suicide plans and suicide attempt. The questions to assess suicidal ideation and other suicidal behaviours were adapted from the World Mental Health survey initiative version of the World Health Organization Composite International Diagnostic Interview (WHO-CIDI). The WHO WMH-CIDI is a comprehensive, fully-structured interview designed to be used by trained lay interviewers for the assessment of mental disorders according to the definitions and criteria of ICD-10 and DSM-IV. It is intended for use in epidemiological and cross-cultural studies as well as for clinical and research purposes. The diagnostic section of the interview is based on the World Health Organization's Composite International Diagnostic Interview (WHO CIDI, 1990).

From the questionnaire 3 questions were taken that specify the psychological behaviour of the person towards suicide. Prevalence of suicidal ideation was assessed by the question: "During medical school, have you ever seriously thought about committing suicide?".[9,10] A 'Yes' answer to the question was considered as having suicidal ideation. Students who responded yes to suicidal thoughts were asked about suicide plans and attempts. Suicide plans were ascertained by the question "During medical school, have you ever made a plan for committing suicide?" Suicide attempts were measured using the question "During medical school, have you ever attempted suicide?" Participants who answered "yes" to the above questions were considered as having suicide plan and suicide attempt respectively. The questions were adapted with contextual phrasing but preserved the original structure to maintain consistency with the source instrument. Although a full psychometric validation was not conducted in this study population, expert review by psychiatrists and public health specialists confirmed the face and content validity of the items. Additionally, a pilot test among 20 medical students confirmed the clarity and acceptability of the adapted questionnaire.

For psychosocial characteristics , participants were asked about the presence of a history of any diagnosed psychiatric illness in them or in the family using the self-report question *"Have you ever been diagnosed with any psychiatric illness by a doctor (e.g., depression, anxiety, bipolar disorder, etc.)?"* and *"Have any of your close relatives (parents ,siblings, grandparents, uncle ,aunt etc) ever been diagnosed with any psychiatric illness by a doctor (e.g., depression, anxiety, bipolar disorder, etc.)?"*. The response options were "Yes," "No," and "Prefer not to say."

Stressful life events as a risk factor was assessed by asking students to identify any significant sources of

stress they had experienced after joining medical school. Events like examination stress, relationship issues, family-related problems, financial difficulties, social isolation, ragging or peer harassment, academic pressure, health-related problems and others if any were asked for Substance use was evaluated by asking students directly whether they are currently using or ever used alcohol, tobacco (smoking or chewing), or recreational/illicit drugs.

A message containing a brief description of the study's purpose, along with a link to the Google Form, was disseminated through official student communication channels, including institutional email groups, WhatsApp groups, and student notice boards. To enhance participation, faculty members and student representatives were requested to assist in sharing the form. The message also included clear instructions for completing the questionnaire. The study tool was customised in such a way that only one response per participant was possible.

Ethical Considerations: Participant information and consent was inserted at the beginning of the Google form. A message, briefly describing the purpose of the study, was also attached with the link of the Google form. Participants were clearly informed that their involvement in the study was voluntary and that all collected data would be kept strictly confidential, and support would be facilitated through the institutional Student Support and Guidance Program if required. The study was conducted in accordance with ethical guidelines, with prior approval obtained from the Institutional Ethics Committee (MMCH&RC/IEC/2022/062, dated-02/12/2022). Names, designations, and institutional affiliations of the investigators were added at the end of the message to establish credibility. Participants were also provided with investigator contact details in case they had any queries regarding the study. All students in the institution are enrolled in a Student Support and Guidance Program, where each student is assigned a faculty mentor. For students who reported suicidal ideation, plan or attempts, their assigned faculty mentor was notified discreetly and asked to engage with the student to provide support. Additionally, students were informed about the availability of mental health services through the in-house Departments of Psychiatry and Clinical Psychology. Identified students were subsequently followed up through their assigned faculty mentors to ensure they received adequate psychological support and were appropriately guided to avail mental health services This system ensured that students who disclosed any psychological distress or risk received timely and appropriate care.

Statistical Analysis:

Data analysis was done using SPSS version 20 software. Pearson Chi square test was done to find out the significance in the association of different factors with suicidal ideation and the level of significance was estimated with 95% confidence intervals and p value <0.05.

RESULTS

The questionnaire was administered via Google Forms to all 600 undergraduate medical students enrolled in the institution at the time of data collection. A total of 256 students completed the questionnaire in full, resulting in a response rate of 42.7%. Participation was voluntary, and responses were accepted only if all mandatory fields were filled, ensuring completeness of data for analysis.

Mean age of the participants was 21.9±1.2 years. 241 (94.1%) belonged to APL Category and 15 (5.9%) belonged to BPL Category. 231(90.2%) of the students had their parents married and living together. The rest have either divorced parents (7, 2.7%)), or separated (8, 3.1%)) or one or both parents deceased (10, 4%).

Among the 256 students studied, 181(70.7%) students were females and 75(29.3%) were males. Majority of those participated in the study was third year students 147 (57.4%), followed by fourth years 48 (18.8%), second years 43(16.8%) and first years 18(7%).

Among the 256 study participants, 68.3% (175) joined MBBS with self-interest,19.1% (49) with parental pressure. Less than 1% had chosen the course due to social pressure (20) and peer pressure (11). The psychosocial characteristics of study population is shown in Table 1.

Table 1: Psychosocial characteristics (N= 256)

Variable	Cases (%)
History of Psychiatric illness	25 (9.8)
Family history of psychiatric illness	42 (16.4)
History of suicide in family	54 (21.1)
Substance abuse	
Current user	51 (19.9)
Never used	189 (73.8)
Used before	16 (6.3)
Stressful events	210 (82
Sleeping difficulties in last one month	146 (57)

Among the 256 students, a small proportion (9.8%) had been diagnosed with a psychiatric illness, while 16.4% reported a family history of psychiatric illness. Notably, 21.1% reported a family history of suicide, indicating a risk factor.

Regarding substance use, approximately one-fifth of the students (19.9%) were current users though a large majority (73.8%) reported no history of substance use.

A large majority of the students, 210 (82%) have experienced stressful events after joining the course. Majority considered exams as the reason for their stress (154,59.9%) followed by relationship issues (64,24.9%) and family problems (62,24.1%). Other stress events were financial difficulties, social isolation, ragging, academic issues, work load and health problems.

13 (5.1%) of the study participants suffered from comorbidities like hypothyroidism, PCOD, Asthma, Hereditary spherocytosis, CSOM and chronic heart disease.

More than half of the students (57%) experienced difficulty in sleeping in the past 12 months.

Suicidal ideation and Suicidal behaviour: The prevalence of suicide ideation among the medical students after getting enrolled into medical school was 28.9% with a confidence interval of 23.4% to 34.9%. Burden of suicidal ideation, suicidal plans and suicidal attempts among medical students is depicted in Figure 1.

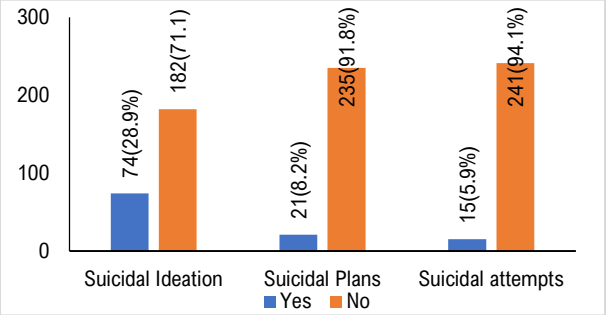

Figure 1: Suicidal ideation and other suicidal behaviours (N= 256)

Factors associated with suicidal ideation: Male students, those belonging to BPL family, students whose parents are either divorced or one or both parents deceased, those in their final years of the course showed increased risk for having suicidal ideation though the association was not statistically significant. Those students who joined MBBS out of self-interest was found to be protected against suicidal thoughts when compared to others who joined the course due to reasons like parental pressure, peer pressure and others, and the association was a significant one. Those students who reported substance abuse and those with history of any psychiatric illness had more than 3 times risk for suicidal ideation. Having family history of psychiatric illness and having suicides in family also turned out to be significant risk factors for suicidal ideation with an odds ratio of 2.39(1.21-4.72) and 1.31(0.68-2.48) respectively. Those who experienced any stressful event after joining MBBS, and those who experienced sleeping difficulties and had comorbidities also showed significant risk for suicidal thoughts. Factors associated with suicidal ideation are detailed in Table 2.

Table 2: Factors associated with suicidal ideation (N=256)

Variable	Suicidal ideation (n=74)	No suicidal ideation (n=182)	OR (95%CI)	χ^2 value	P value
Gender					
Female	48(26.5)	133(73.5)	0.68 (0.38-1.21)	1.71	0.19
Male	26(34.7)	49(65.3)			
Socio-economic status					
APL	69(28.6)	172(71.4)	0.80 (0.27-2.43)	0.152	0.7
BPL	5(33.3)	10(66.7)			
Marital status of parents					
Currently married	66(28.6)	165(71.4)	0.85 (0.35-2.06)	0.129	0.719
Divorced/ One or both parents deceased	8(32)	17(68)			
Year of study					
First year/ Second year	14(23)	47(77)	0.67 (0.34-1.31)	1.382	0.24
Third year/ Final year	60(30.8)	135(69.2)			
Reason for joining MBBS					
Self Interest	41 (23.4)	134(76.6)	0.45 (0.25-0.78)	8.08	**0.004**
Others	33(40.7)	48(59.3)			
Substance abuse					
Yes	26(51)	25(49)	3.40 (1.8-6.4)	15.1	**<0.001**
No	48(23.4)	157(76.6)			
H/O Psychiatric illness					
Yes	14(56)	11(44)	3.63 (1.56-8.42)	9.89	**0.002**
No	60(26)	171(74)			
Psychiatric illness in family					
Yes	19(45.2)	23(54.8)	2.39 (1.21-4.72)	6.52	**0.01**
No	55(25.7)	159(74.3)			
Suicides in family					
Yes	18(33.3)	36(66.7)	1.31(0.68-2.48)	0.65	0.42
No	56(27.7)	146(72.3)			
Stressful events					
Yes	72(33.6)	142(66.4)	10.14 (2.38-43.15)	14.24	**<0.001***
No	2(4.8)	40(95.2)			
Comorbidities					
Yes	7(53.8)	6(45.2)	3.06 (0.99-9.45)	4.14	**0.04**
No	67(27.6)	176(72.4)			
Sleeping difficulties					
Yes	51(34.9)	95(65.1)	2.03 (1.15-3.6)	6.002	**0.01**
No	23(20.9)	87(79.1)			

*p value calculated using Fisher's exact test

Table 3: Multivariate analysis (Adjusted Odd's and 95% CI of various risk factors for suicidal ideation)

Variable	Adjusted OR	95%	p-value
Joined MBBS out of self interest	0.644	0.35 - 1.19	0.159
Presence of Substance use	2.435	1.23 - 4.83	**0.011**
H/o Stressful life events	8.376	1.85 - 38.00	**0.006**
Reported sleep difficulty in past 12 months	0.634	0.34 - 1.19	0.154
Presence of Chronic illness	0.495	0.14 - 1.73	0.270
Self-reported diagnosed psychiatric illness	0.475	0.19 - 1.21	0.118
Family history of psychiatric illness	0.686	0.31 - 1.53	0.357

The variables which were significantly associated with suicidal ideation in univariate analysis were considered for multivariate analysis. The adjusted odds ratio and 95% CI are given in Table 3. Binary logistic regression revealed that after adjusting for all other factors, presence of substance use and h/o stressful life events were found to be independent predictors of suicidal ideation among medical students.

DISCUSSION

The present study was conducted among 256 Medical undergraduate students in Kozhikode district, North Kerala. The prevalence of suicidal ideation was observed to be 29% in the study subjects. Suicidal plans were reported by 21(8.2%) of the students. Fifteen (5.9%) have attempted suicide in the past 1 year. Significant associated factors included Joining MBBS without self-interest, substance abuse, history of psychiatric illness, family history of psychiatric illness, and stressful events after commencing course.

A study done among 506 medical students in Central Gujarat found two-week prevalence of suicidal ideation to be 9%. 13% said they didn't think life was worth living; 6% said they had a death wish; 4% said they had suicidal ideas; and suicide plan was reported by 1%.[11] Female gender, alcohol usage, past experiences with abuse of any kind, academic stress, family stress, and relationship stress were the study's important predictors of suicidal ideation. Academic stress was listed as an important life stressor by 50% of the students. In a recent study done using the Revised Suicidal Behaviour Questionnaire in North India, 37.2% had suicidal ideation, 10.9% of students reported having considered a plan for suicide, while 3.3% indicated they had attempted suicide at some point in their lives.[12] Compared to the present study, Goyal et al identified a notably elevated prevalence level of suicidal ideation (53.6%) in their study among 265 medical students in Central Delhi.[13] Another study done by Garg et al in North India found the 1 year prevalence of suicidal thoughts among the medical undergraduates to be 33%, which was slightly higher when compared to the current study.[14] A study done in Ethiopia using the WHO-CIDI scale found prevalence of suicide ideation and attempt of students during their medical education to be 14% and 7.4%, respectively.[15] As per study done by Asfaw et al, over the past one year, the percentage of participants who reported experiencing suicidal ideation or having attempted suicide was23.7% and 3.9%respectively,.[16] This was lower than what was reported in the current study.

No significant gender wise differences were observed in having suicidal ideation in the present study. This is in line with two distinct studies from North India by Garg et al[12,14], and studies done in Ethiopia[16] and China[17]. In contrast, a study done in Gujarat found that female students were nine times more likely to have suicidal ideation.[11] Similarly, Goyal et al found statistical difference in the gender wise distribution of prevalence of suicidal ideation.[13]

The current study found no statistical differences in prevalence of suicidal ideation according to socio economic status. Similar finding was found in a study done by Garg et al.[12] This contrasts with a study in Taiwan where students of lower socio-economic status were more likely to have experienced suicidal ideation.[18] Suicidal ideation was slightly higher in students with divorced/widowed parents but the difference was not statistically significant in the present study. Third year and final year students were found to have a higher prevalence of suicidal ideation when compared to first- and second-year students but the difference was not statistically significant in the current study. This was in contrast to a study done in Central Delhi, where suicidal ideation was found to be higher among first year medical students when compared to other academic years but the difference was not significant.[13]

Those who joined MBBS course of their own volition experienced lower suicidal ideation (23.4%) when compared to those who joined the course due to other reasons like parental pressure, social pressure or peer pressure (40.7%). The difference was statistically significant. A systematic review by Coentre et al found suicidal ideation to be associated with thoughts of abandoning the course.[2] In a study done by Desai et al, the odds of suicidal ideation were five times higher among the students facing family-related stress arising out of parental neglect or parental expectations.[11]

Notably, more than half of the study subjects with substance abuse experienced suicidal ideation when compared to those who did not use habit forming substances, and it was identified as an independent predictor for suicidal ideation. This finding was in line with a study done in Columbia where presence of suicidal ideation was found to have a significant association with illicit habit-forming substance use (OR 2.8, 95% CI; 1.6-4.8).[19] The present study found suicidal ideation to be higher among students who had history of psychiatric

illness. In a study done in Portugal, suicidal behavior was higher in medical students who had severe depression and high anxiety levels.[20] Similar findings were noted in studies done in Ethiopia and USA.[15,21] Similar to the present study, suicidal ideation was found to be higher among students with family history of psychiatric issues.[12,22,23] In the current study, suicidal ideation was significantly higher among those with co morbidities and sleep difficulties when compared to those who did not have any. This is in line with studies done in Bangladesh and China.[23,24]

LIMITATIONS

Data collection through a self-administered online survey using Google Forms and the use of a non-random, convenience sampling method restricts the representativeness of the sample and limits the generalizability of the findings to all medical students. Also, the use of self-administered questionnaire, may cause subjective variations in interpretation of questions and potential under- or over-reporting of experiences related to suicidal behaviour and other factors assessed. Additionally, self-reported history of clinically diagnosed psychiatric illness, may not capture undiagnosed conditions.

Despite these limitations, the study provides valuable preliminary insights into suicidal behaviour and related factors among medical students in a resource-limited setting and highlights the need for ongoing institutional mental health support.

CONCLUSION

The study identified a substantial burden of suicidal ideation among medical undergraduates. This study could demonstrate a statistically significant association between Suicidal ideation and factors like joining MBBS without self-interest, substance abuse, history of psychiatric illness, psychiatric illness in the family, stressful events, co-morbidities and sleeping difficulties.

RECOMMENDATIONS

The findings of the study points to the need for periodic assessment of stress, mental and physical well-being of medical students. Students with history of psychiatric illness, psychiatric illness in the family, stressful events, co-morbidities and sleeping difficulties needs special attention and more frequent assessment. Effective mentorship programmes and formation of student help group as well as institutional committee can help such students. Further multicentric research may be conducted to assess more factors associated with suicidal ideation. Qualitative research will be helpful in exploring other unidentified issues and developing interventions.

Acknowledgement: The authors acknowledge the support and cooperation of their colleagues in the Department of Community Medicine, Malabar Medical College Hospital and Government Medical College Manjeri, for their encouragement during data collection and manuscript preparation.

Author's Contribution: **RSS** contributed to the study conception, design, data collection, data analysis and interpretation, and manuscript preparation. **RR** contributed to data collection, data analysis and interpretation, and manuscript preparation. **SC** and **KJS** contributed to data analysis and interpretation, and manuscript preparation.

Availability of Data: The data that support the findings of this study are available from the corresponding author on reasonable request. Considering participant confidentiality and ethical concerns, the data are not publicly available.

Declaration of Non-use of generative AI Tools: The authors declare that no Artificial intelligence tools were used during the preparation of this manuscript including writing and analysis. All work is the original contribution of the authors.

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