ORIGINAL ARTICLE

Prevalence of Depression and its determinants among undergraduate Medical college students in Salem, Tamil Nadu

Suruthi Ramu[1], G Dhanasekar[2], Gautam Babu[3], Mohan Kumar[4], Jeevithan Shanmugam[5]

[1]Intern, Annapoorana Medical College & Hospital, Salem, Tamil Nadu;

[2,3]Department of Community Medicine, Annapoorana Medical College & Hospital, Salem, Tamil Nadu;

[4,5]Department of Community Medicine, Kovai Medical Center & Hospital (KMCH) Institute of Health Sciences and Research, Coimbatore, Tamil Nadu

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Corresponding Author

Dr G Dhanasekar, Professor, Department of Community Medicine, Annapoorana Medical College & Hospital, Salem, Tamil Nadu, India 636308
E Mail ID: dhansatsalem@gmail.com

Citation

Article Cycle

Abstract

Background: Stress is an essential determinant of depression, leading to a greater prevalence of depression among medical students than the general population; a vulnerable subgroup. The objective of the present study was to determine the prevalence of depression and its associated factors among undergraduate medical students. **Methods:** This was an analytical cross-sectional study conducted among medical college students in Salem, Tamil Nadu between October 2021, and December 2022. Beck's Depression Inventory (BDI) was used. **Results:** The prevalence of depression among undergraduate medial students was 27.0%; 10.2% had mild depression, 5.4% had borderline clinical depression, 8.5% had moderate depression, 2.4% had severe depression, and 0.5% had extreme depression. Multivariate logistic regression analysis showed that presence of separated or divorced or single parent, being in Phase II, without satisfactory academic performance, presence of active or chief complaints, conflicts in the family, and recent failures were independent predictors of depression among undergraduate medical students (p<0.05). **Conclusion:** It is crucial that medical schools prioritize the mental health of their students and provide appropriate resources and support.

Keywords

Medical Students; Undergraduates; Depression; Determinants; India

Introduction

Depression is a mental disorder characterized by loss of interest and pleasure (anhedonia), decreased energy (anergy), feelings of guilt or low self-worth, poor concentration, disturbed sleep, and appetite. Depressive disorders start at a young age and is often recurrent throughout life; single largest contributor to non-fatal health loss (5.7% of YLDs).(1)

Depression among medical students represents a neglected public health problem in India. Globally, it has been demonstrated that 25-90% of medical students are stressed (vulnerable subgroup).(2) Stress, depression, and troubled relationships may have synergistic inflammatory effects including loneliness, subclinical, and significant depression. Depression can significantly decrease student's performance, productivity, negatively affect interpersonal relationships, increased absenteeism, and reduced quality of patient care. Literature evidence highlights that stress stems from three main areas – academic, social, and financial strains – essentially the interactions between individuals and their environments that are perceived as straining or exceeding their adaptive capacities or threatening their well-being. Medical schools do play a role in causing significant psychological distress for training medical students. Early onset of depression in them may interfere with psychological, social, and academic functioning.

Aims & Objectives

1. To determine the prevalence of depression among undergraduate medical students.
2. To assess the demographic, academic, medical, and psychosocial factors which may contribute to various degrees of depression in medical students belonging to different academic years.

Material & Methods

This was an analytical cross-sectional study conducted among medical college students in Salem, Tamil Nadu between October 2021, and December 2022. After obtaining due approval from the Institute Ethics Committee, the content of Participant Information Sheet (PIS) in local language was provided to the study participants. They were enrolled in the study after obtaining digital informed consent. All (complete enumeration) the undergraduate medical students consenting to participate in the study were included.

A recently published meta-analysis reported the pooled prevalence of depression among undergraduate medical students in India to be 50.0% (95%CI 31.0% to 70.0%).(3) Taking the prevalence to be 50.0% and applying 5% absolute error, the minimum required sample size was 384, rounded off to 400 with 95% confidence (CI). A purpose designed, pretested, semi structured, self-administered questionnaire that included demographic characteristics, academic factors, medical and psychosocial factors that may predispose to depression among medical students was used in the present study. It was circulated to the students using Google forms through Acadpro – Student Support Service Portal. Participation was voluntary, and participants were informed prior to the start of the survey. Daily reminders were sent to the participants during the study period to increase the response rate.

The primary outcome of the study was presence or absence of depression among undergraduate medical students. We used Beck's Depression Inventory (BDI) – a screening tool for depression, not a diagnostic tool; validated for use in non-psychiatric patients, including students.(4) The cut-off score of 10 or higher has a sensitivity of around 85% and a specificity of around 80%.(5)

The completed questionnaires were extracted from Google forms and exported to a Microsoft Excel 2013 sheet for data cleaning and coding. The cleaned data was then exported to SPSS v23 for further analyses. Descriptive analysis was presented using numbers and percentages. Chi square test of significance (two-sided) was applied to test for association between depression and independent variables. Univariate odds ratio was estimated along with 95%CI for these variables. All predictor variables significant at $p<0.05$ in univariate analysis were included in multiple logistic regression analysis. Significance was taken at $p<0.05$.

Results

The study included a total of 411 participants (nonresponse rate was 2.8%). The mean (SD) age of the study participants was 20.62 years (2.38). Nearly two thirds were females (62.3%). Nuclear type of family was the most common (86.6%). Majority of the parents were literate; notably, 16.8% parents had health related profession. In the study sample, students were evenly distributed across Phases I (38.7%), II (31.9%) and III (29.4%). Only 16.1% students had scholarship to pursue education. Nearly one in ten (8.0%) students did not prefer joining medical education. Regarding academic performance, 66.9% had satisfactory performance and the performance of 33.1% students were not satisfactory. It was found in the present study that 52.6% students had active or chief complaints including stomach pain, back pain, tiredness, menstrual cramps and/or dizziness, shortness of breath, dyspepsia, fainting, headache, and sleeplessness). The proportion of students reporting substance use including tobacco and/or alcohol was 2.9%. In the present study, 9.0% students reported conflicts in the family, 19.0% reported misunderstanding with friends, and 26.0% reported recent failures.

Prevalence of depression*:* The present study found the prevalence of depression among undergraduate medial students to be 27.0% – one in ten (10.2%) had mild depression, 5.4% had borderline clinical depression, 8.5% had moderate depression, 2.4% had severe depression, and 0.5% had extreme depression.

Factors associated with depression*:* The present study explored the association of demographic, academic, medical, and psychosocial factors and presence or absence of depression among undergraduate medical students. The results of univariate analysis showed that undergraduate medical students more than or equal to 20 years of age, with separated or divorced or single parent, in Phases II and III, without preference for medical education, without satisfactory academic performance, and perception of medical curriculum to be a burden had significantly ($p<0.05$) higher risk of being depressed. Among medical and psychosocial factors, presence of active or chief complaints, substance use, conflicts in the family, misunderstanding with friends and recent failures among undergraduate medical students were significantly associated with presence of depression in them ($p<0.05$). The results of multivariate logistic regression analysis showed that presence of separated or divorced or single parent (AOR 87.86, 95%CI 9.82 to 786.04), in Phase II (AOR 2.81, 95%CI 1.32 to 5.96), without satisfactory academic performance (AOR 3.62, 95%CI 1.97 to 6.65), presence of active or chief complaints (AOR 3.72, 95%CI 1.99 to 6.97), conflicts in the family (AOR 3.07, 95%CI 1.14 to 8.25), and recent failures (AOR 2.60, 95%CI 1.34 to 5.04) among undergraduate medical students were independent predictors of depression in them ($p<0.05$).

Discussion

The findings of the present study highlight that one in four undergraduate medical students are depressed. The independent predictors of depression among undergraduate medical students identified in the present study were presence of separated or divorced or single parent, being in Phase II, lack of satisfactory academic performance, presence of active or chief complaints, conflicts in the family, and recent failures.

The finding that the prevalence of depression among undergraduate medical students is 27.0% is concerning. The high prevalence of depression among medical students has been documented in similar other studies;(6, 7) possibly due to a combination of factors, including the stress of medical training, academic pressure, and the nature of the medical profession itself. The breakdown of the prevalence of depression into different levels of severity is also noteworthy. A substantial proportion of students (16.8%) had moderate to extreme levels of depression, indicating significant levels of distress and potential functional impairment. This suggests that a significant number of medical students may be struggling to cope with the demands of their training and may require additional support. It is important to note that the high prevalence of depression among medical students is not only a concern for the students themselves but also has implications for patient care. Medical professionals who are experiencing high levels of distress may be at risk of making errors or providing suboptimal care to their patients.(8)

The results of this study suggest that several factors are associated with depression among undergraduate medical students. Students from separated or divorced or single parent families were at a significantly higher risk of depression compared to those from intact families. This finding is consistent with previous research indicating that family structure can have a significant impact on mental health outcomes. Students from disrupted families may experience greater stress, which can lead to depression. The finding that students from Phase II were at higher risk of depression was similar to that reported by Alvi T et al. (43%).(9) Furthermore, students with unsatisfactory academic performance were found to be at a higher risk of depression. Academic stress is a well-known risk factor for depression in students. Medical school is particularly demanding, and students who struggle academically may experience a sense of failure and overwhelm, which can contribute to depression. The study also found that the presence of active or chief complaints, conflicts in the family, and recent failures were independent predictors of depression in undergraduate medical students. These findings suggest that stressors in both the academic and personal domains are associated with depression among medical students. Conflict in the family, in particular, may contribute to a sense of isolation and lack of social

support, which can increase the risk of depression.(10) These findings highlight the need for medical schools to pay attention to the mental health of their students and to implement strategies to prevent and treat depression in this population. By providing targeted support including interventions that aid academic success, support students from disrupted families, and resources for students at higher risk of depression, medical schools can help ensure that their students are able to thrive both personally and professionally.

Conclusion

To conclude, it is crucial that medical schools prioritize the mental health of their students and provide appropriate resources and support. This could include access to mental health services including counselling, training in stress management and coping strategies, assigning personal tutors and initiatives to reduce the stigma associated with mental health issues. By addressing the mental health needs of medical students, we can help to ensure that they are able to thrive both personally and professionally and provide the highest quality of care to their patients.

Recommendation

The results of the present study highlights the need for,
1. Mental health awareness and education: Implement mental health awareness and education programs specifically tailored for medical students. These programs can help students recognize the signs of depression, reduce stigma, and promote seeking help when needed.
2. Mechanisms for early screening and intervention
3. Offer accessible and confidential counselling and psychological support
4. Provision of academic support and mentorship programs
5. Promoting formation of supportive peer networks
6. Develop conflict resolution and mediation strategies to address interpersonal issues within the family and among friends
7. Resilience and coping skills training
8. Evaluate and potentially revise institutional policies related to academic workload, assessment methods, and support services to better align with the mental health needs of medical students.

These recommendations aim to create a supportive and mentally healthy environment for undergraduate medical students, addressing the specific risk factors and challenges they face during their education.

Limitation of the study

The present study has a few limitations. Firstly, the study used a self-administered questionnaire resulting in individual variability in understanding questions and social desirability bias. However, we ensured validity of the questionnaire through pilot testing and anonymity of the

responses were conveyed to the participants before the start of survey. Secondly, being a cross-sectional study the temporal association between independent predictors and depression could not be established (inherent limitation of study design).

Relevance of the study

The study's relevance extends to medical education, healthcare systems, mental health advocacy, and public policy. It serves as a valuable resource for understanding and addressing the mental health challenges faced by undergraduate medical students and can inform strategies to promote their well-being throughout their educational journey and future careers as healthcare professionals.

Authors Contribution

All authors have contributed equally.

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Tables

TABLE 1 FACTORS ASSOCIATED WITH DEPRESSION AMONG UNDERGRADUATE MEDICAL STUDENTS

	Depression present N = 111 n (%)	Depression absent N = 300 n (%)	Total	OR (95%CI)	AOR (95%CI)
Sociodemographic factors					
Age (in years)					
>20	62 (55.9)	132 (44.0)	194 (47.2)	1.61 (1.04 to 2.50)*	0.61 (0.27 to 1.37)
<20	49 (44.1)	168 (56.0)	217 (52.8)		
Gender					
Male	71 (64.0)	185 (61.7)	256 (62.3)	1.10 (0.70 to 1.73)	_
Female	40 (36.0)	115 (38.3)	155 (37.7)		
Type of family					
Nuclear	93 (83.8)	264 (88.0)	357 (86.9)	0.71 (0.38 to 1.30)	_
Joint	18 (16.2)	36 (12.0)	54 (13.1)		
Parents					
Separated or divorced or single parent	19 (17.1)	1 (0.3)	20 (4.9)	61.75 (8.16 to 467.55)*	87.86 (9.82 to 786.04)*
Together	92 (82.9)	299 (99.7)	391 (95.1)		
Fathers' education					
Illiterate	2 (1.8)	4 (1.3)	6 (1.5)	1.36 (0.25 to 7.52)	_
Literate	109 (98.2)	296 (98.7)	405 (98.5)		
Mothers' education					
Illiterate	5 (4.5)	6 (2.0)	11 (2.7)	2.31 (0.69 to 7.73)	_
Literate	106 (95.5)	294 (98.0)	400 (97.3)		
Fathers' employment					
Unemployed	1 (0.9)	1 (0.3)	2 (0.5)	2.72 (0.17 to 43.83)	_
Employed	110 (99.1)	299 (99.7)	409 (99.5)		
Mothers' employment					
Unemployed	5 (4.5)	6 (2.0)	11 (2.7)	2.31 (0.69 to 7.73)	_
Employed	106 (95.5)	294 (98.0)	400 (97.3)		
Siblings					
Absent	19 (17.1)	39 (13.0)	58 (14.1)	1.38 (0.76 to 2.51)	_
Present	92 (82.9)	261 (87.0)	353 (85.9)		
Birth order					
One or two	73 (65.8)	180 (60.0)	253 (61.6)	1.28 (0.81 to 2.02)	_

	Depression present N = 111 n (%)	Depression absent N = 300 n (%)	Total	OR (95%CI)	AOR (95%CI)
More than two	38 (34.2)	120 (40.0)	158 (38.4)		
Parents in health-related profession					
Yes	16 (14.4)	53 (17.7)	69 (16.8)	0.79 (0.43 to 1.44)	_
No	95 (85.6)	247 (82.3)	342 (83.2)		
Academic factors					
Residence					
Outside campus	42 (37.8)	95 (31.7)	137 (33.3)	1.31 (0.83 to 2.07)	_
Within campus	69 (62.2)	205 (68.3)	274 (66.7)		
Year					
Phase I	27 (24.3)	132 (44.0)	159 (38.7)	1	1
Phase II	42 (37.8)	89 (29.7)	131 (31.9)	2.31 (1.33 to 4.01)*	2.81 (1.32 to 5.96)*
Phase III (Part 1 and 2)	42 (37.8)	79 (26.3)	121 (29.4)	2.60 (1.49 to 4.54)*	1.90 (0.69 to 5.29)
Scholarship					
No	96 (86.5)	249 (83.0)	345 (83.9)	1.31 (0.70 to 2.44)	_
Yes	15 (13.5)	51 (17.0)	66 (16.1)		
Students preferred to study medicine					
No	17 (15.3)	16 (5.3)	33 (8.0)	3.21 (1.56 to 6.60)*	2.32 (0.84 to 6.40)
Yes	94 (84.7)	284 (94.7)	378 (92.0)		
Academic performance					
Not satisfactory	68 (61.3)	68 (22.7)	136 (33.1)	5.39 (3.38 to 8.61)*	3.62 (1.97 to 6.65)*
Satisfactory	43 (38.7)	232 (77.3)	275 (66.9)		
Curriculum					
Burden	23 (20.7)	13 (4.3)	36 (8.8)	5.77 (2.81 to 11.86)*	1.68 (0.65 to 4.36)
Not a burden	88 (79.3)	287 (95.7)	375 (91.2)		
Medical and psychosocial factors					
Chief complaints					
Present	90 (81.1)	126 (42.0)	216 (52.6)	5.92 (3.49 to 10.03)*	3.72 (1.99 to 6.97)*
Absent	21 (18.9)	174 (58.0)	195 (47.4)		
Substance use					
Present	7 (6.3)	5 (1.7)	12 (2.9)	3.97 (1.23 to 12.79)*	0.95 (0.19 to 4.85)
Absent	104 (93.7)	295 (98.3)	399 (97.1)		
Conflicts in the family					
Present	25 (22.5)	12 (4.0)	37 (9.0)	6.98 (3.37 to 14.47)*	3.07 (1.14 to 8.25)*
Absent	86 (77.5)	288 (96.0)	374 (91.0)		
Misunderstanding with friends					
Present	43 (38.7)	35 (11.7)	78 (19.0)	4.79 (2.85 to 8.05)*	1.39 (0.65 to 2.98)
Absent	68 (61.3)	265 (88.3)	333 (81.0)		
Recent failures					
Present	58 (52.3)	49 (16.3)	107 (26.0)	5.61 (3.46 to 9.08)*	2.60 (1.34 to 5.04)*
Absent	53 (47.7)	251 (83.7)	304 (74.0)		
Statistically significant at p<0.05					

Figures

FIGURE 1 PREVALENCE OF DEPRESSION AMONG UNDERGRADUATE MEDICAL STUDENTS

2.4   0.5
8.5
5.4
10.2
73

- Normal
- Mild depression
- Borderline clinical depression
- Moderate depression
- Severe depression
- Extreme depression