FREQUENCY OF DEPRESSIVE SYMPTOMS AND ITS CAUSES AMONG THE STUDENTS OF A MEDICAL SCHOOL IN PESHAWAR, PAKISTAN

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Abstract:

Background: Medical colleges are recognized as stressful environments that exert negative effects on the mental health of students. Mental illnesses decrease the performance of students in their profession. Depression among medical students is an area of increasing concern worldwide. This study aims to assess the prevalence of depressive symptoms and their causes among medical students.

Method: A cross-sectional study was conducted on students of medical school in Peshawar, using a non-probability convenient sampling technique. A questionnaire consisting of socio-demographic variables and causes of depressive symptoms was used for data collection. The Hamilton Scale for Depression was used to assess the level of depression in students. Data obtained were collected and statistically analysed using SPSS Version 20 for Windows.

Results: A total of 220 students participated in the study, with equal representation from each class. The overall prevalence of depressive symptoms was found to be 60.5%. Among these, 26.8% had mild depressive symptoms, 11.4% had moderate depressive symptoms, and 22.3% had severe depressive symptoms. The prevalence of depressive symptoms was relatively higher among 4th-year medical students. The study showed that depressive symptoms were more prevalent in males (61.8%) than in females (58.1%). Childhood trauma, drug abuse, broken relationships, financial problems, and academic stress were identified as major causes of depressive symptoms.

Conclusion: A large number of medical students are suffering from depressive symptoms associated with avoidable and manageable causes. Hence, there is a need for early screening and proper counselling of the subjects.

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INTRODUCTION:

Depression is a serious illness caused by changes in brain chemistry. The factors that contribute to the onset of depression include genetics, changes in hormone levels, certain medical conditions (e.g., epilepsy), stress, grief, and difficult life circumstances [1].

Stress is a state of mental or emotional strain or tension resulting from adverse or demanding circumstances.

Grief is an intense sorrow, especially caused by someone's death. It also refers to someone's misery, anguish, distress, agony, torment, affliction, suffering, heartbreak, desolation, and despair. It is conventionally an emotional response to loss.

Loss of interest refers to a person who simply loses their interest in daily life activities, including friendships, hobbies, reading, or even watching TV, that they enjoyed doing in the past.

The causes of depression may include changes in brain chemistry, hormones, inherited traits, early childhood trauma, and learned patterns of negative thinking [1].

In a normal human body, normal hormone levels are required for normal homeostasis; disturbed levels can trigger depression. Depression is more commonly found in patients whose family members, such as parents and grandparents, have also suffered from depression. Negative experiences in childhood, such as physical or emotional abuse, can create circumstances that make a child susceptible to developing depression later in life. Depression can be more likely to occur in individuals who feel that life is hopeless and believe they will be unable to cope with life's challenges.

The development of depression in teenagers can result from low self-esteem or being overly dependent on others, having problems with life such as obesity, facing academic problems, experiencing violence, having mental health problems like anxiety or personality disorders, suffering from attention deficit hyperkinetic disorder, dealing with a chronic physical illness like cancer, or being involved in drug abuse, such as alcohol or nicotine. Family history, with close relatives experiencing depressive illness, death by suicide, and exposure to stressful events like parental divorce or the death of a loved one, can also lead to depression. The development of depression in teenagers is also associated with low socioeconomic status, which can push them towards drug abuse like cigarettes, alcohol, marijuana, and cocaine [1].

Depressed adolescents are at an increased risk for the development and persistence of obesity during adolescence, especially in females. A higher body mass index (BMI) can contribute to the development of obesity, and depressive symptoms can lead to overeating and obesity itself [3]. In university students, factors like age older than 20 years, low socioeconomic status, studying in the 3rd and 4th academic years, being overweight and obese, having urban residency, being married, and practicing exercise less than three times a week are associated with increased levels of depression [2].

Factors that positively contribute to the development of depressive disorders include being female, having a low level of education, financial difficulties, being a housewife, and experiencing relationship problems. Arguments with a husband and relationship problems with in-laws have been positively associated in 3 out of 11 studies. Those who have close confiding relationships are less likely to have anxiety and depressive disorders [3]. Childhood abuse in the form of emotional abuse, child physical abuse, and sexual abuse all result in the development of depression and anxiety disorders in adulthood, with child emotional abuse being more strongly related to later development of depression [4].

Suicidal ideation and a history of suicidal and self-injurious acts are remarkably common in college students. Moreover, there is a prominent association between depressive symptoms and suicidal ideation in university undergraduates. Students with the most severe symptoms of depression are more likely to experience current suicidal ideation, and conversely, students with suicidal ideation have worse symptoms of depression. The feeling of desperation is strongly associated with suicidal ideation, as students seek an urgent need for relief from intense distress [5].

We conducted a cross sectional study involving 220 students with equal contribution from each class. Overall prevalence of depressive symptoms was found to be 60.5%.

OBJECTIVES:

1. To assess the prevalence of depression in medical school.

2. To study the causes of depression among medical students.

MATERIAL AND METHODS
Study Design:

A cross-sectional descriptive study was conducted to investigate the prevalence of depression and anxiety among students at a prominent medical school in Peshawar Pakistan.

Setting/Place of Study:

The study took place at one of the largest medical schools in Peshawar, Pakistan.

Duration of Study:

The study extended over a period of three months, from January 2019 to March 2019.

Sample Size:

The sample size was determined using the standard formula commonly applied in previous prevalence studies:

$n = (z^2 * p * q) / d^2$

Variables for the formula include:

n = sample size z = 2 standard deviations (approximately 1.96 for a 95% confidence level) p = prevalence from a previous study = 17.5% [Reference 15] q = 1 - p d = margin of error (set at 5%)

By plugging in these values, the calculated sample size was approximately 220.

Sampling Technique:

A non-probability convenient sampling technique was employed to determine the prevalence of depression among medical school students in Peshawar.

Sample Selection:

Inclusion criteria encompassed undergraduate students at the medical school in Peshawar. Exclusion criteria involved omitting old final year students, graduate students, and trainees.

Data Collection Procedure:

The study was executed after securing approval from the ethical board of the medical school and obtaining permission to conduct the survey for collecting samples to assess depression prevalence from the college's head. This cross-sectional university-based study focused on ascertaining the prevalence of depression among medical school students in Peshawar. All students from the first year to the final year were invited to participate during the initial half of their academic year. The academic schedule for each class was obtained from the Student Affairs Section. Groups of 4 students were scheduled for visits, and questionnaires were distributed to them. In every academic year, 22 male and 22 female students were provided with questionnaires to complete, totaling 220 undergraduate participants across the medical school.

Data Analysis Procedure:

After collecting and reviewing the questionnaire responses, any discrepancies were addressed. Subsequently, depression prevalence was determined based on the scale provided in the prepared questionnaire. Data analysis was carried out using SPSS version 20 for Windows. The results were presented in tabular and graphical formats. Quantitative variables such as age were expressed as Mean+/- SD, while qualitative variables like depression and gender were presented in terms of frequency and percentage.

RESULTS:

A: Total Distribution:

In this study, a sample of 220 students was selected using a non-probability convenient sampling technique. Forty-four students were chosen from each class, ensuring an equal distribution of 50% male and 50% female students. Data collection was accomplished through a questionnaire based on the Hamilton Scale of Depression.

The study revealed an overall prevalence of depressive symptoms among medical school students in Peshawar to be 60.5%, as demonstrated in Table 1 and Figure 1.

Table:1	Depressive Symptoms in the Students	
	Frequency	**Percent**
No Symptoms	87	39.5%
Symptoms Present	133	60.5%
Total	220	100.0%

Figure 1 Symptoms 60.5 vs No Symptoms 39.5
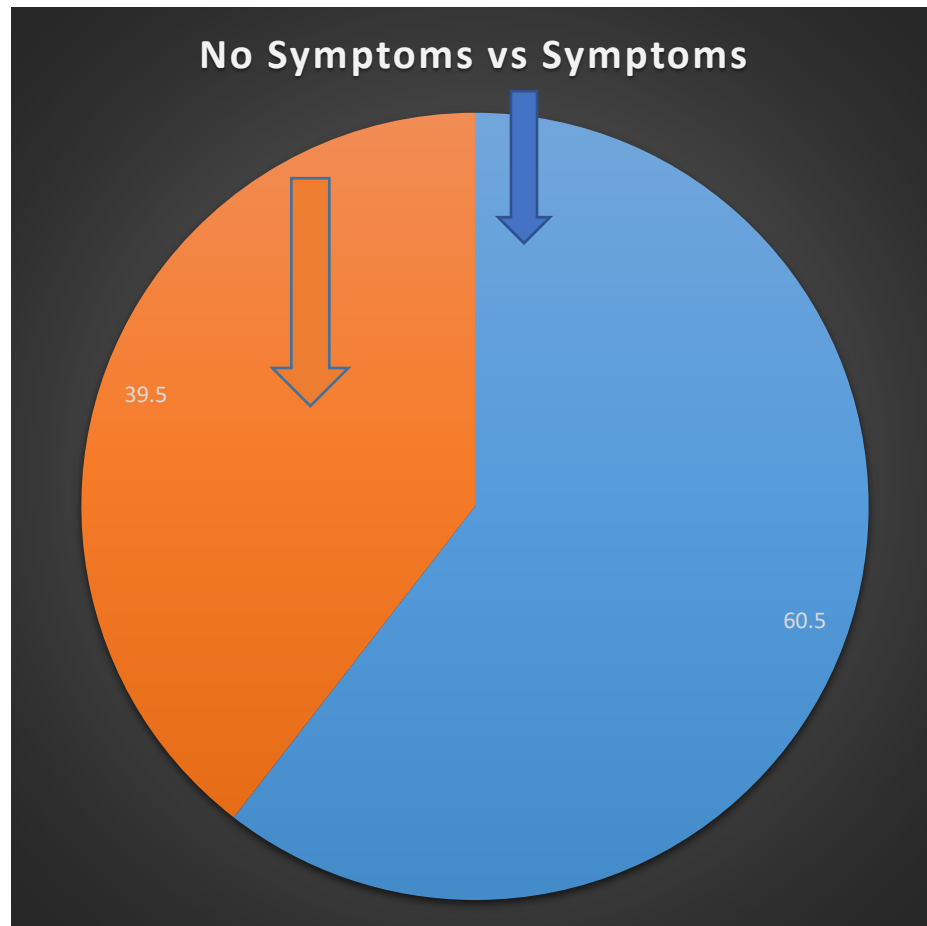
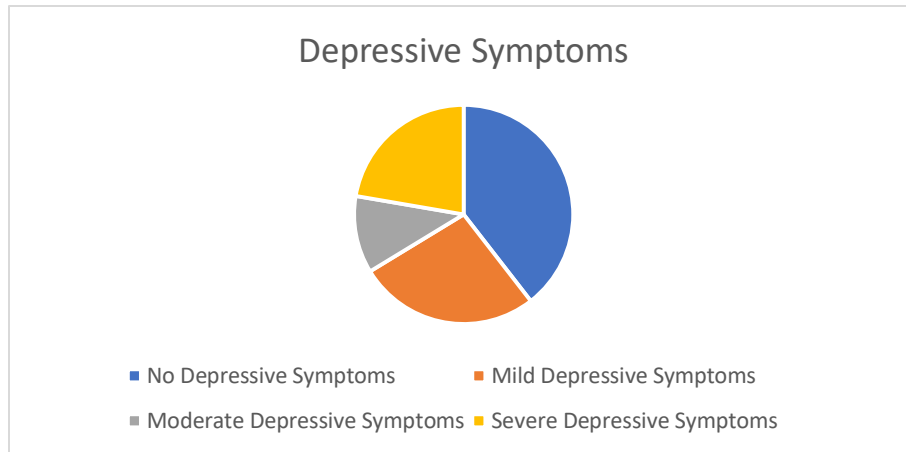**B: Symptoms Severity wise distribution:**

Among these students, 26.8% (59 students) experienced mild depressive symptoms, 11.4% (25 students) had moderate depressive symptoms, and 22.3% (49 students) exhibited severe depressive symptoms, as illustrated in Table 2 and Figure 2.

Table:2

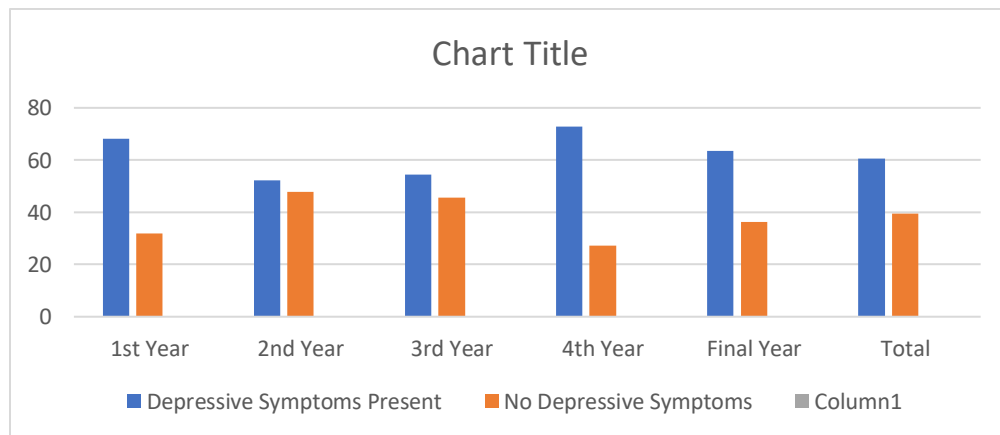|	Severity Wise Symptoms Distribution	
	Frequency	**Percentage**
No Depressive Symptoms	87	39.5
Mild Depressive Symptoms	59	26.8
Moderate Depressive Symptoms	25	11.4
Severe Depressive Symptoms	49	22.3
Total	220	100

FIGURE: 2

C: Year Wise Distribution:

From each class 44 students were sampled and prevalence of depressive symptoms is as follows: 68.2% in students of the 1st year MBBS, 52.3% in students of the 2nd year MBBS, 45.5% in students of the 3rd year MBBS, 72.7% in students of the 4th year MBBS, and 63.6% in students of the final year MBBS, as depicted in Table 3 and Figure 3.

Table:3

Year Wise Symptoms Distribution		
Year of Study in Medical School	**No Depressive Symptoms**	**Depressive Symptoms**
1st year medical students	14 31.8%	30 68.2%
2nd Year Medical Students	21 47.7%	23 52.3%
3rd Year Medical Students	24 54.5%	20 45.5%
4th Year Medical Students	12 27.3%	32 72.7%
Final Year Medical Students	16 36.4%	28 63.6%
Total	87 39.5%	133 60.5%

**Figure:3**

D: Gender Wise Distribution:
The prevalence of depressive symptoms is 61.8% among male students and 59.1% among female students at the Medical School in Peshawar, as indicated in Table 4 and Figure 4.

Table:4

| Gender Wise Symptoms Distribution			
Gender of the Student	**No Depressive Symptoms**	**Depressive Symptoms**	**Total**
Male	42 38.2%	68 61.8%	110 100%
Female	45 40.9%	65 59.1%	110 100%
Total	87 39.5%	133 60.5%	220 100%

Figure:4
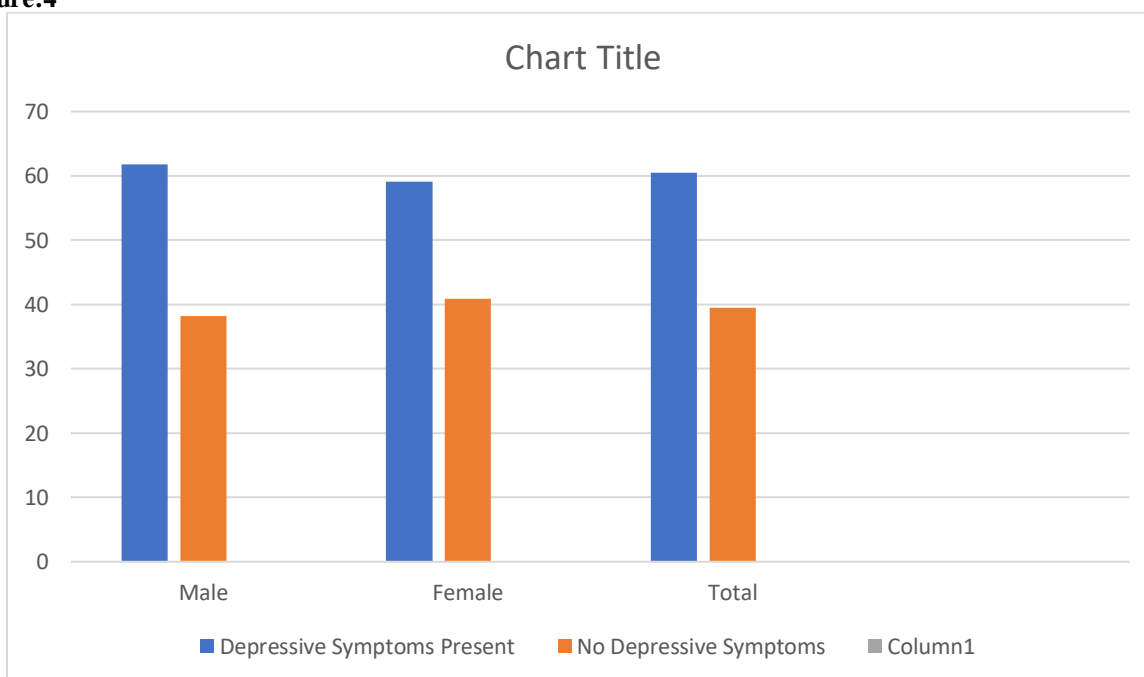
E: Causes Wise Distribution of Symptoms: Among the students with depressive symptoms, 18.9% were experiencing relationship problems, 8.3% were affected by childhood trauma, 3.9% were dealing with drug addiction, 15.6% were facing financial problems, and 53.3% were experiencing academic stress, as shown in Table 5 and Figure 5

Table:5

Causes	Frequency	Percentage %
Broken Relationship	34	18.9%
Childhood Trauma	15	8.3%
Drug Addiction	07	3.9%
Financial Problems	28	15.6%
Study Stress	96	53.3%
Total	180	100.0%

Figure:5
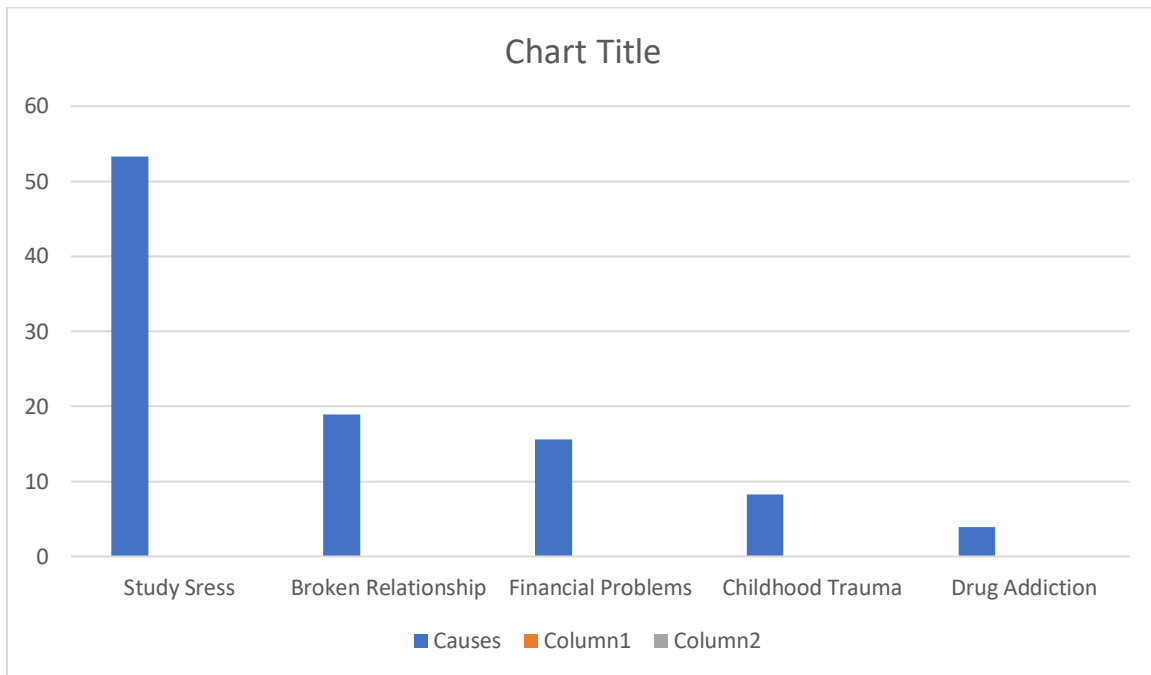
DISCUSSION:

The medical profession is one of the most challenging and demanding fields, requiring not only physical but also mental and emotional involvement from doctors. Due to increased workloads, job demands, unfavourable working environments, and other workplace stressors, doctors may find it challenging to provide the level of attention expected of them.

Our study aimed to determine the prevalence of depressive symptoms and identify the causes of depression among students at Khyber Medical College in Peshawar, Pakistan. Data was collected from 220 students, comprising 44 students from each academic year, with an equal distribution of male and female students.

Depression causes feelings of sadness and a loss of interest in activities once enjoyed. Symptoms of depression can vary in intensity, ranging from mild to severe, and may include feeling persistently sad, losing interest or pleasure in activities that were once enjoyable, changes in appetite resulting in significant weight loss or gain unrelated to diet, sleep disturbances, such as trouble sleeping or sleeping excessively, low energy levels or increased fatigue, engaging in purposeless physical activity like hand-wringing or pacing, or conversely, slowed movements and speech that are observable by others, feeling a sense of worthlessness or guilt, struggling with concentration, decision-making, or clear thinking, and having thoughts of death or suicide. For a diagnosis of depression, these symptoms must persist for at least two weeks [6]. In our study were reported to have symptoms for more than two weeks.

The prevalence of major depressive episodes is higher in urban regions of Canada. Major depressive episodes are approximately 18% more prevalent in urban areas compared to rural regions in Canada. The prevalence of major depressive disorder was found to be 3.9%. It was higher in younger age groups and among women. Among respondents with a part-year major depressive disorder (MDD), 63.1% reported experiencing rough treatment, and 33.1% were taking antidepressant medications. Additionally, 4.8% had a history of alcohol abuse in the past year, and 45% exhibited alcohol dependence. For respondents with a past-year MDD, the prevalence of cannabis abuse was 2.5%, and dependence on cannabis was 2.9%. Abuse of other drugs, aside from cannabis, had a prevalence of 2.3%, and drug dependence, excluding cannabis, was 2.9%. Moreover, 6.6% of respondents with past-year MDD reported having attempted suicide. Among those who accessed treatment, 37.5% perceived those other held negative opinions about them or treated them unfairly because of their disorder **[7].** In our study, 18.9% were experiencing relationship problems, 8.3% were affected by childhood trauma, 3.9% were dealing with

drug addiction, 15.6% were facing financial problems, and 53.3% were experiencing academic stress.

In a study conducted in the UK, 725 core science students and 364 clinical students participated. The mean HADS-D scores ranged between 3.34 and 3.49 among all core science students and between 2.16 and 2.91 among all clinical students. There was no difference between men and women in the median HADS-D score. Among all core students, the prevalence of depression ranged between 5.7% and 10.6%, while it ranged between 2.7% and 8.2% among all clinical students. Among clinical students, men displayed a small increase (time coefficient 0.33, 95% CI 0.11-0.55), but core science students displayed no increase in mean HADS-D score [8]. In our study, the prevalence of depressive symptoms was reported 61.8% among male students and 59.1% among female students.

A study was conducted at the Karolinska Institute Medical University in Sweden, involving all registered students in years 1, 3, and 6, with a total of 342 participants. The response rate was 90.4%. Year 1 students reported high levels of stress related to workload and a lack of feedback. Year 3 students expressed concerns about future competence and identified "pedagogical shortcomings" as a stressor. In Year 6, both of these factors remained prominent, but students in this group also highlighted a "non-supportive climate" as a significant stressor. Across all three cohorts, students consistently complained about the lack of feedback.

Female students tended to rate four out of seven factors higher than their male counterparts. The prevalence of depressive symptoms among these students exceeded that of the general population, with rates at 12.9%. Notably, female students experienced a higher prevalence of depressive symptoms at 16% compared to 8.1% among male students. Additionally, 2.7% of students had reported suicide attempts, although none had done so in the previous year **[15].** In our study, from each class 44 students were sampled and prevalence of depressive symptoms is as follows: 68.2% in students of the 1st year MBBS, 52.3% in students of the 2nd year MBBS, 45.5% in students of the 3rd year MBBS, 72.7% in students of the 4th year MBBS, and 63.6% in students of the final year MBBS.

Study Limitations:
This study has several limitations that should be acknowledged.
• Firstly, the generalizability of the results is restricted to the sampled college populations.

• Secondly, there may be response bias among students.
• Thirdly, the use of convenience sampling, rather than probability sampling, limits the external validity of the study. However, efforts were made to include respondents from all years of the medical college to enhance overall representation.
• Fourthly, certain potential confounding variables were not assessed. For instance, recent stressful events such as a death in the immediate family, upcoming exams, or the presence of any comorbid conditions could contribute to depression.
• Fifthly, the survey was conducted during the winter and did not inquire about seasonal effects on depression. Therefore, surveying students at a different time of the year could yield different depression rates.

CONCLUSIONS:
1. This study highlights that depression is an underdiagnosed mental condition among medical students.
2. It is highly prevalent in medical colleges, with more students experiencing mild depressive symptoms than severe ones.
3. Males are more affected than females, and the prevalence of depressive symptoms increases as students progress from non-clinical to clinical courses.
4. Furthermore, this study reveals that depressive symptoms are associated with social factors such as relationship problems, childhood physical or mental abuse, drug use, financial difficulties, and academic stress.
   These findings emphasize the importance of implementing proper screening and counselling measures for affected individuals and addressing the underlying causes of such conditions.

RECOMMENDATIONS:
Based on the results of this study, we offer several recommendations aimed at improving the mental health of students at a medical school.

1. Counselling and Mentorship Programs: Implement comprehensive counselling services and mentorship programs. These programs can provide students with a support system to address their academic and non-academic concerns.
2. Enhance Teacher-Student Interaction: Foster a friendly and approachable environment between teaching staff and students. Encourage open communication so that students feel comfortable discussing both academic and personal issues with their instructors.

3. Optimize Testing Schedules: Revise testing and evaluation schedules to allow for adequate preparation time between exams. Minimizing stress related to exam pressure can positively impact students' mental well-being.

4. Promote Extracurricular Activities: Regularly organize healthy extracurricular activities to alleviate study-related stress and enhance students' physical and mental health.

5. Combat Bullying: Implement strict anti-bullying policies and establish channels for students to report bullying incidents safely and confidentially.

6. Financial Support: Introduce scholarship and financial assistance programs to alleviate financial burdens on students.

7. Improved Living Conditions: Ensure that student hostels provide good living conditions, maintain a hygienic environment, and offer a nutritious food menu. Avoid overcrowding in hostels to enhance students' comfort.

8. Monitor Drug Trafficking: Implement rigorous monitoring measures to curb drug trafficking within hostels and on campus.

9. Drug Awareness Campaigns: Organize seminars and symposiums to raise awareness among students about the detrimental effects of drug abuse.

10. Parental Education: Conduct awareness programs for parents to educate them about the potential causes of childhood trauma. Encourage a nurturing and communicative home environment to facilitate children in sharing their concerns with their parents.

By implementing these recommendations, educational institutions can create a more supportive and conducive environment for the mental well-being of their students**.**

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