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Prevalence of depression and suicidal ideation in trauma patients in western Rajasthan

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ABSTRACT

Background: Depression is a common psychiatric disorder in trauma patients. Early detection of depression in a traumatized patients can help alleviate long-term symptoms and adverse effects associated with depression. This study aimed to determine the prevalence of depression and suicidal ideation in trauma patients after one month of injury.

Materials and Methods: Hospital-based cross-sectional study was carried out among 120 individuals with a history of trauma from March 2020 to May 2020. Purposive sampling was used to recruit participants over a specified period. The Beck's Depression Inventory-II (BDI-II) was used to measure depression intensity and suicidal ideation. The statistical analysis was carried out using SPSS version 20.

Results: The study included a total of 120 participants. The prevalence of depression was 30% in study participants. In our study, 8 (44.44%) of 18 participants over the age of 60, 30 (36.59%) of 82 male participants, 9 (64.29%) of 14 separated or divorced participants, 17 (45.95%) of 37 illiterate participants, 25 (43.86%) of 57 participants from low socioeconomic backgrounds, and 23 (42.59%) of 54 participants from rural backgrounds had more depression. Twenty (46.51%) out of 43 polytrauma participants, 5 (45.45%) out of 11 participants injured due to violence, 31 (33.70%) out of 92 participants who had a history of more than 48 hrs hospitalization, and 17 (48.57%) out of 35 participants had a history of ICU admission had more depression. Twenty-one participants (58.33%) of the 36 who suffered from depression had suicidal thoughts or intentions.

Conclusion: Suicidal ideation and depression were more common in traumatic patients. Physicians' treatment should not be limited to early physical rehabilitation. They must also prioritise early mental rehabilitation in order to avoid long-term issues with mental and physical disabilities.

1. Introduction

Traumatic injuries account for 11% of worldwide deaths.[1] They cause significant psychological and physical morbidity across all ages. Traumatic injury patients report a marked decrease in quality of life, as well as long-term mental and physical disabilities. Traumatic injuries can have a psychological effect on patients. This can lead to long-term mental health problems such as depression or post-traumatic stress.[2]

The survival rate for multiple trauma patients has increased to 85-88% in the past decade due to pre-hospital treatment has improved, with shorter rescue times and more intensive care. Special trauma centres are also available, providing better surgical care.[3] The long-term effects of multiple trauma injuries are important for quality control as

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well as economic interests. Full-time employment can result in large amounts of productivity loss. The average age of poly traumatized victims is between 20-60.[4] Male to female ratios averages around 3.5:1. Also more serious injuries are often sustained by men.[5]

Apart from the treatment costs for patients, economic burdens are caused by loss of work, working disability, and subsequent rehabilitation or disability costs.[6] An increased return to work rate is linked to a good functional status after discharge. This is not just a term for physical impairment, but it can also refer to psychological impairment.[7] After severe trauma, depression is the most common psychiatric complication. A permanent disability can lead to severe depression in patients who have suffered trauma.[8] This condition can lead to suicidal ideas or intent in patients who are more likely than the general population.[9]

While this information gives a clear picture of mental impairment in trauma victims, there are still many things to be learned about the impact of time. That is why this study was conducted to determine the incidence of depression and suicide ideation in adults after major trauma.

2. Material and Methods

2.1. Study setting

This was a descriptive quantitative study. Data were taken from patients who had been injured and came to follow up after one month at the department of orthopaedic from March 2020 to June 2020 at government medical college Barmer. All patients 18 years or older admitted to the study site and meeting trauma admission criteria and came after one month for follow-up treatment were evaluated for inclusion, regardless of injury mechanism severity or background. Trauma admission criteria are determined by injury mechanism, physiologic and injury criteria. For example, motor vehicle collisions, assaults, or falls from heights above 3 meters. Patients who had pre-existing cognitive impairments such as dementia, traumatic brain injury resulting from cognitive impairment were excluded. All patients who participated in the study signed a written consent before any data were collected. To confirm that neither of the participants was intellectually disabled, the Montreal Cognitive Assessment (MOCA) was used.[10] To ensure that patients did not have any severe psychotic disorders or substance abuse issues, the Mini International Neuropsychiatric Interview (MINI) based on the Diagnostic and Statistical Manual of Mental Disorders 4th edition (DSM-IV) was administered.[11]

2.2. Instruments and methods for collecting data

Face-to-face interviews were used to collect data using a semi-structured questionnaire. It included clinical and sociodemographic variables. Beck's Depression Inventory-II (BDI-II] was used for evaluating depression.[12] The BDI-II, a self-report tool for depression, is frequently used. It measures depression across multiple cultural groups. It has been validated in both psychiatric and non-psychiatric populations. The BDI-II is used to screen traumatic individuals for depressive symptoms within the last two weeks. The tool contains 21 items. Each item is a description of a particular symptom. Each statement has a rating from 0 to 3, and the total score can then be calculated by adding all of the scores. According to the BDI-II, depression has a cut-off level of 10. A score of zero to nine is normal. A score from 10 to 18 indicates mild depression. Scores between 19 and 29 indicate moderate depression. Scores of 30 and higher signify severe depression. Cronbach's indices of alpha 0.856 were used to measure the internal consistency. Question 9 of BDI-II was used to assess suicidal thoughts.

2.3. Data processing and analysis

All questionnaire data were pre-coded to simplify the analysis, ensure accuracy, and avoid any translation errors. After entering the data into Microsoft Excel 365, they were exported to SPSS V.20 Windows. SPSS V.20 is statistical software for social science. Continuous data were described using descriptive statistics such as mean and standard deviation, while categorical variables were described using percentages or numbers. An independent student t-test or chi-square test was used to distinguish between variations among variables.

2.4. Ethical approval

The institution's ethics committee approved the research. All ethical issues related to the research were addressed. Participants were required to sign an informed consent form before they could begin the interview. Participants signed this form to indicate their willingness to participate in the study. Participants signed consent forms, which gave them the right to withdraw and disclose personal information. Participants were assured that any data collected would be kept confidential.

3. Results

In total, 120 participants were enrolled in the study. The age range of the respondents was 18–70 years, with a mean (SD) of 38.43 (10.24) years. Forty-two participants (35.0%) were between the ages of 46 and 60 years, while 32 participants (26.67%) were between the ages of 31 and 45 years. Eighty-two (68.33%) participants were male, while 38 (31.67%) were female. Eighty-eight participants (73.33%) were married, while 18 participants (15.00%) were unmarried. In terms of education, 37 participants (30.83%) were illiterate, while 36 participants (30.00%) had completed secondary school. Lower socioeconomic status was represented by 57 individuals (47.50%), followed by

middle socioeconomic status (30.83%). Regarding location, 54 participants (47.50%) came from rural areas, whereas 41 participants (34.17%) came from semiurban areas. (Table 1)

The depression was found in 36 traumatic participants (30.00%) using the BDI-II. Of the 36 participants, 21 participants (58.33%) were mildly depressed, 12 participants (33.33%) were moderately depressed, and 3 participants (8.33%) were severely depressed. (Figure 1)

In our study, 8 (44.44%) of 18 participants over the age of 60, 30 (36.59%) of 82 male participants, 9 (64.29%) of 14 participants who were divorced or separated, 17 (45.95%) of 37 illiterate participants, 25 (43.86%) of 57 participants from low socioeconomic backgrounds, and 23 (42.59%) of 54 participants from rural backgrounds had more depression as compared to their counterparts. A statistically significant difference was found between gender, marital status, education, socioeconomic status, and locality (p-value <0.05). (Table 2)

Regarding clinical characteristics of participants, 43 participants (35.83%) had a history of polytrauma, 78 (65.00%) had been injured due to road traffic accidents, followed by 23 (19.17%) fall from height. Ninety-two participants (76.67%) required hospitalization more than 48 hours, while 35 (29.17%) had a history of ICU admission. (Table 3)

Twenty (46.51%) out of 43 polytrauma participants, 5 (45.45%) out of 11 participants injured due to violence, 31 (33.70%) out of 92 participants of more than 48 hrs hospitalization, and 17 (48.57%) out of 35 participants had a history of ICU admission had more depression than their counterparts. A statistically significant difference was found between polytrauma patients, more than 48 hours of hospitalization and ICU admission (p-value <0.05). (Table 4)

Figure 2 depicted the suicidal thoughts of the BDI-II rating scale in traumatic patients with depression. Twenty-one participants (58.33%) of the 36 who suffered from depression had suicidal thoughts or intentions. Two participants (5.56%) had thoughts of killing themselves if they had the chance. Seven participants (19.44%) wished to kill themselves, while 12 participants (33.33%) merely considered killing themselves but did not carry out their plans.

Table 1: Sociodemographic characteristic of trauma patients.

Variable	Number (n=120)	Percentage
Age Mean (SD)	38.43	10.24
Age Group		
18 to 30	28	23.33
31 to 45	32	26.67
46 to 60	42	35.00
More than 60	18	15.00
Gender		
Male	82	68.33
Female	38	31.67
Marital Status		
Married	88	73.33
Unmarried	18	15.00
Separated/divorced	14	11.67
Education		
Illiterate	37	30.83
Up to Primary	35	29.17
Up to secondary	36	30.00
Up to Graduation	12	10.00
Socioeconomic Status		
Low	57	47.50
Middle	37	30.83
High	26	21.67
Locality		
Rural	54	45.00
Semiurban	41	34.17
Urban	25	20.83

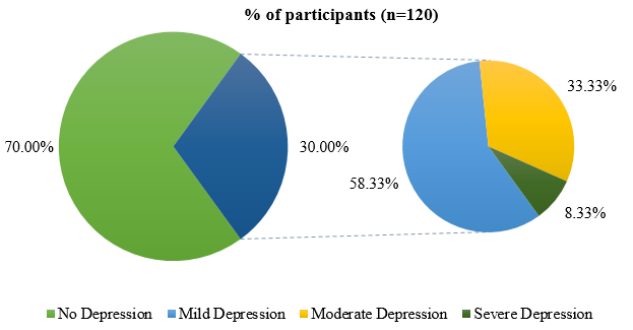

Fig. 1: Severity of depression among trauma patients.

4. Discussion

This study aimed to determine the prevalence and severity of depression and suicidal ideation among trauma patients in western Rajasthan.

In this study, the prevalence of depression among patients with trauma was 30%. It was significantly correlated with males, divorced or separated, low education, poor socioeconomic status, and rural background.

Psychiatric sequelae can be a burden for both the individual and their family after an injury.[13] Our findings indicate that there was no statistically significant difference in age between our two groups. A study by Maes M in 2000 corroborated our conclusion that age is irrelevant. Similar findings have been reported in studies of flood and burn victims.[14] In contrast to our findings, Zhang and Ho found that depression among earthquake survivors was more common in the elderly after two months.[15] Additionally, an epidemiological study conducted in Germany revealed a higher prevalence of depression in older age groups, which is presumed to be due to participants being homeless and residing in shelter homes.[16] Because results vary according

Table 2: Showing the presence of depression according tosociodemographic characteristics.

Variable	Presence of depression N (%)		Chi-square, p-value
	Yes (n=36)	No (n=84)	
Age Group			
18 to 30	5 (17.86)	23 (82.14)	4.788
31 to 45	8 (25.00)	24 (75.00)	
46 to 60	15 (35.71)	27 (64.29)	0.187
More than 60	8 (44.44)	10 (55.56)	
Gender			
Male	30 (36.59)	52 (63.41)	5.348
Female	6 (15.79)	32 (84.21)	**0.020***
Marital Status			
Married	23 (26.14)	65 (73.86)	8.981
Unmarried	4 (22.22)	14 (77.78)	**0.011***
Separated/ divorced	9 (64.29)	5 (35.71)	
Education			
Illiterate	17 (45.95)	20 (54.05)	10.252
Up to Primary	12 (34.29)	23 (65.71)	
Up to secondary	5 (13.89)	31 (86.11)	**0.016***
Up to Graduation	2 (16.67)	10 (83.33)	
Socioeconomic Status			
Low	25 (43.86)	32 (56.14)	10.67
Middle	8 (21.62)	29 (78.38)	**0.004***
High	3 (11.54)	23 (88.46)	
Locality			
Rural	23 (42.59)	31 (57.41)	7.676
Semiurban	9 (21.95)	32 (78.05)	**0.021***
Urban	4 (16.00)	21 (84.00)	

*Significant <0.05

Table 3: Clinical characteristics of trauma patients.

Variable	Number (n=120)	Percentage
Poly Trauma		
Yes	43	35.83
No	77	64.17
Mechanism of Injury		
Road traffic Accident	78	65.00
Fall from Height	23	19.17
Violence	11	9.17
Sports and Other Injury	8	6.67
Hospitalization (More than 48 Hrs.)		
Yes	92	76.67
No	28	23.33
ICU Admission		
Yes	35	29.17
No	85	70.83

Table 4: Showing the presence of depression according to clinical characteristics.

Variable	Presence of depression N (%)		Chi-square, p-value
	Yes (n=36)	No (n=84)	
Poly Trauma			
Yes	20 (46.51)	23 (53.49)	8.7
No	16 (20.78)	61 (79.22)	**0.003***
Mechanism of Injury			
Road traffic Accident	22 (28.21)	56 (71.79)	2.788
Fall from Height	8 (34.78)	15 (65.22)	
Violence	5 (45.45)	6 (54.55)	0.425
Sports and Other Injury	1 (12.50)	7 (87.50)	
Hospitalization			
(More than 48 Hrs.)	31 (33.70)	61 (66.30)	2.564
Yes	5 (17.86)	23 (82.14)	0.109
No			
ICU Admission			
Yes	17 (48.57)	18 (51.43)	8.115
No	19 (22.35)	66 (77.65)	**0.004***

*Significant <0.05

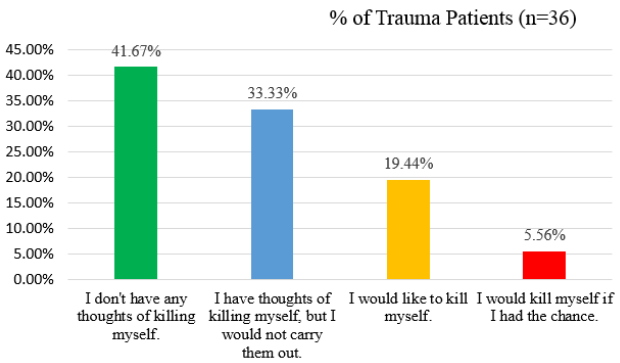

Fig. 2: Suicidal thoughts in BDI-II rating scale (Question 9) in trauma patients.

to the type of trauma and study population, it is difficult to compare studies.

In our study, men were more likely than women to experience depression. Several studies found similar results.[1,17] Men are more susceptible to developing mental illness following trauma in the Indian scenario because they are the family's primary earner. Our research demonstrates that participants were involved in both traffic accidents and non-aggressive activities.[18] This could explain why our findings differ from those of other research. Researchers concluded from a review of the available literature that women are not at a greater risk of developing depression

following a motor vehicle accident (MVA) than men.[19] Individual coping strategies and psychological resources may have a role in either maintaining or recovering from depression.[20]

Our study discovered a significant link between marital status and depression in traumatic patients, suggesting that divorced or separated trauma patients are more likely to develop depression than married patients.[17] This could be because a divorced or separated individual already feels lonely, and any trauma stresses exacerbate mental illness. They also lack the support of a life partner, making it harder for them to cope with physical disability assistance.

The study found that participants from lower social backgrounds had a higher risk of depression than those from higher socioeconomic backgrounds. The findings were consistent with those of research conducted in Kumar S.[21] Additionally, individuals with low socioeconomic status, a limited educational experience, or a rural background have a limited source of income and limited knowledge, which impedes the timely management of trauma patients, increasing the risk of morbidity and mortality. This also increases the likelihood of depression. Additionally, the patient's poor socioeconomic status resulted in financial, social, and emotional costs, worsening the patient's illness, and a measure of depression.[22] Additionally, recent research indicates that the longer an illness goes untreated, the greater the likelihood of depression.[23] However, another study found no significant link between education, socioeconomic status, and depression.[24] The disparity may be explained by the use of disparate diagnostic criteria for depression, sample sizes, and selection of traumatic patients, as well as by the use of disparate study locales and participant cultures.

In our study, depression was significantly associated with polytrauma patients, hospitalization for more than 48 hours, and ICU admission.

In contrast to violence or sports-related injuries, men are more susceptible to road traffic accidents because they must go outside to work. According to Soberg et al., individuals who have experienced multiple severe traumas are more likely to develop depression.[25] Multiple traumas raise the possibility of physical incapacity, which increases the likelihood of becoming reliant on others and causing further agony.[26] Feeling helpless can intensify the impact of a lack of hope, and helplessness can lead to sentiments of hopelessness and pessimism.[6,27] So, it is crucial to think about the observation time and the type of trauma and the demographic.

Many studies have shown a positive correlation between injury severity, such as length of hospitalization and need for ICU admission, and depression.[3,25,28] According to Min et al., head trauma requiring ICU admission was a robust predictor of the onset of post-injury depression in trauma victims.[29] Patients on ventilator support had twice the rate of depressive symptoms as patients with mild injuries. According to Davydow et al., following a motor vehicle accident, the rate of developing psychiatric illness was similar between patients who required ICU admission and those who did not.[30] Different methodologies could explain the disparities in study results. There are numerous methods for evaluating diagnoses, recruiting subjects, and implementing management strategies. This implies that more long-term longitudinal research on the topic is required.

We found a significant difference in suicidal ideation scores on the Beck Depression Inventory's suicidal ideation questionnaire (In question 9: "suicide thoughts and wishes"). Some studies have revealed that those who have experienced multiple traumas are more likely to commit suicide.[31] Studies by Mackelprang et al. identified that patients with physical disabilities want to commit suicide because their lives were rendered meaningless due to multiple traumas and a lack of earning potential.[32] People with diagnosed physical disability due to trauma with mental disorders experience financial and relationship problems at a greater frequency.[16]

There are numerous ways to interpret the relationship between an accidental or traumatic outcome and potentially suicidal behaviour. Unsatisfactory rehabilitation is believed to increase the risk of developing a mental illness.[25] This is due to the fact that patients are constantly reminded of the trauma that resulted in their dysfunction or disability. These reminders can have a detrimental effect on an individual's emotional state, resulting in immobility. A mental illness can also impair physical functioning, resulting in psychosomatic diseases and impaired functional outcomes.[28] Psychological and physical health are inextricably linked. Occasionally, frustrated patients commit suicide in order to alleviate their disability-related pain.[33]

It is critical to pay closer attention to potentially self-harming behaviours such as refusing to participate in any activity, failing to return for routine follow-up, and engaging in activities that may pose a risk to people with multiple deformities. Both functional rehabilitation and psychosocial support are critical during the recovery process following severe trauma.

5. Limitation and strength of the study

The study was a cross-sectional study carried out in an outpatient setting. As a result, causal links between depression and trauma are difficult to establish. This study was done after one month of the traumatic event so, this study was susceptible to recall bias. Small sample size is a serious constraint on prevalence studies. Due to the study's limitation to a single centre, it is possible that these findings do not apply to all patient groups. The study excluded other psychiatric disorders such as anxiety disorders and

psychotic disorders. This would be an interesting study to conduct a longitudinal analysis of the outcome using a multicentre design.

The main strength of our study was its use of structured diagnostic tools to assess depressive symptoms. It is possible that the prevalence estimated for this condition was more accurate.

6. Conclusions

Depression was found to be 30% prevalent in this study. It was associated significantly with male gender, divorced or separated status, low education and socioeconomic status, rural origin, polytrauma patients, hospitalisation for more than 48 hours, and ICU admission. This study emphasises the critical importance of identifying and treating comorbid depression in trauma patients. Suicidal ideation was increased in patients who had experienced major trauma and were depressed. Thus, it is critical that patients who have experienced multiple traumas receive early psychosocial counselling. Clinicians must therefore assess and treat depression and suicidal ideation thoughts in trauma patients in order to improve the treatment outcomes of their patients.

7. Conflict of Interest

The authors declare that they have no conflict of interest.

8. Source of Funding

None.

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