

Psychological Distress in Lower Limb Long Bone Fractures

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ABSTRACT

Introduction: Long bone fractures are known to have a detrimental impact on a person's quality of life causing physical restriction due to fracture which can hinder an individual from engaging in a variety of activities. They are frequently associated with significant morbidity and prolonged hospitalization. For patients with lower limb injuries, anything that requires prolonged standing or walking, stooping, crouching, moving heavy objects, or work that demands weight bearing and twisting via the lower limbs may be challenging. Being incapacitated as a result of a fracture can have social and financial consequences. People who have fractures may endure psychological discomfort, as a result of which their mental health could deteriorate. This can have a negative impact on one's health and social well-being. Acute pain can worsen psychological suffering following a fracture. Depression is a precursor to a poorer quality of life. Suicidal ideation is also prevalent in depressed people.

Objective: To assess the psychological distress in adult patients with lower limb long bone fracture presenting to the tertiary care centre using the Impact of Event Scale-Revised (IES-R) scale.

Methods: This Cross-sectional study was conducted to assess the psychological distress in lower limb long bone fractures on the patients who presented to the Emergency Department of a Government Medical College Patiala. Permission was sought from the institutional ethics committee and written informed consent was taken from each participant before enrolling him/her for the study. The study was conducted from January 2021 to September 2021. Patients who presented to us in this time period were involved in the study as per the inclusion and exclusion criteria. IES-R scale was used to assess the psychological distress among the patients.

Results: In our study we included 100 patients in our study with 60% male and 40% female. In this we assessed long bone fractures i.e Femur, Tibia, Fibula patients and assess their IES-r scores. We found that most of the patients 51%

were in 24-32 scores and only 4% were in >37% scores. We also analysed different age group with IES-R scores and found 54-65yrs were the most affected followed by 18-30yrs. We found females were having poor IES-R score compared to males. We also try to explore the impact of different bone fracture on patients' psychological distress and we found femur bone fracture patients were most affected followed by Tibia and fibula.

Conclusion: Patients who have a limb fracture experience a great deal of psychological distress. As a result, routine assessments for these patients should include a full assessment of psychological distress. Female patients were found to be in greater psychological distress than male patients, necessitating the development of a more women-centered service to meet their requirements. Male patients should be encouraged to address their grievances and challenges. They must be persuaded that feelings of fear, worry, or annoyance are not indications of weakness. Furthermore, studies are required to justify these all findings.

Keywords: Long Bone Fractures, IES-R, Psychological Distress.

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INTRODUCTION

Long bone fractures are known to have a detrimental impact on a person's quality of life causing physical restriction due to fracture which can hinder an individual from engaging in a variety of activities. They are frequently associated with significant morbidity and prolonged hospitalization. For patients with lower limb injuries,

anything that requires prolonged standing or walking, stooping, crouching, moving heavy objects, or work that demands weight bearing and twisting via the lower limbs may be challenging.¹ Being incapacitated as a result of a fracture can have social and financial consequences.

People who have fractures may endure psychological discomfort, as a result of which their mental health could deteriorate. This can have a negative impact on one's health and social well-being.² Acute pain can worsen psychological suffering following a fracture.³ Depression is a precursor to a poorer quality of life.⁴ Suicidal ideation is also prevalent in depressed people.⁵

Despite the fact that effective surgical treatment and post-injury physical activity are crucial to their rehabilitation, patients, psychological discomfort induced by orthopaedic trauma have been proven to be more difficult to address than their physical health concerns. Psychological distress is an uncomfortable emotional state experienced by a person in response to a specific stressor or demand that is harmful to that person. Patients with higher degrees of psychological distress have a more complicated clinical picture and appear to be more resistant to treatment. As a result, assessing psychological distress and intervention as needed is crucial. Long-term depression, anxiety, and functional impairment affect many patients.⁶⁻⁸ Depression, PTSD, and anxiety have all been linked to a lower long-term quality of life (QOL) and a greater need on pain medication. This has a significant impact on the patients' physical rehabilitation and their capacity to return to work. After an orthopaedic trauma injury, a patient's psychological state can reliably predict recovery and the likelihood of long-term physical disability⁸⁻¹¹, chronic pain¹¹, and poor quality of life.⁸ People with prolonged musculoskeletal pain often experience anxiety and depression, which can make rehabilitation programmes less successful.¹² As a result, doctors working in musculoskeletal rehabilitation programmes should evaluate patients for signs of anxiety and depression. It's vital to understand the link between long bone fractures and mental health in order to provide effective treatment and allocate resources for mental health care. Studies on polytrauma patients with injury to more than one body system or studies with limited sample size, may misrepresent the true impact of the long bone fracture on psychological health.

The aim of the study was to assess the psychological distress in adult patients with lower limb long bone fracture presenting to the tertiary care centre using the Impact of Event Scale–Revised (IES-R) scale which is having Cronbach Alpha of 0.94, which makes it a reliable instrument.^{13,14}

MATERIAL AND METHODS

Study Design

Cross-sectional study was conducted to assess the psychological distress in lower limb long bone fractures on the patients who presented to the Emergency Department of a tertiary care centre. Permission was sought from the institutional ethics committee and written informed consent was taken from each participant before enrolling him/her for the study. The study was conducted from January 2021 to September 2021. Patients who presented to us in this time period were involved in the study as per the inclusion and exclusion criteria.

Inclusion and Exclusion Criteria

Patients in the age group ranging from 18 to 65 years with lower limb long bone fracture (Femur, Tibia, Fibula) were included in the study. Patients who had cognitive impairment and patients with multiple fractures or polytrauma were excluded from the study. Sample size was calculated at confidence interval of 95% and keeping margin of error as 10% sample size came out to be minimum 96. Subjects were selected in chronological order of admission in the tertiary care institute. Study continued for 9 months and the subjects who were qualified as per the inclusion criteria were selected for the study. Few subjects also refused for the study. Finally, 100 subjects were recruited for the study. Data was collected by face to face interview after obtaining written consent from the subjects. Patients were given impact of event scale–revised questionnaire and score was calculated based on that questionnaire. On this test, scores that exceeded 24 were meaningful and High scores(score>24) have the following associations.

Score (IES-r)	Consequence
24 or more	PTSD is a clinical concern. ⁶ Those with scores this high who do not have full PTSD will have partial PTSD or at least some of the symptoms.
33 and above	This represents the best cutoff for a probable diagnosis of PTSD. ⁷
37 or more	This is high enough to suppress your immune system's functioning (even 10 years after an impact event)

Data Analysis

Data was entered in MS Excel spreadsheet and Statistical Package for the Social Sciences Program (SPSS), version 18.0 (SPSS Inc., Chicago, IL, USA) was used to analyse the data. Ordinal or nominal data were described using frequencies and percentages. Continuous data was described using Means, standard deviations, actual ranges and possible ranges. Statistical comparison between the patients with femur or tibia or fibula fracture group could not be done as the number of patients were unequal between these groups.

RESULTS

In our study there were 60% male and 40% female, we found most of the patients in the 18-30 yrs of age group i.e 38%, other clinical and demographic characteristics are shown in table 1. We found Femur is the most prominent bone fractured followed by

Tibia and Fibula. Most of the patients who came to the hospital were of Road traffic Accident (61%) followed by Fall (29%). In the management we operated around 72% Of the patients whereas 28% were treated conservatively

We used Impact of Event Scale- Revised (IES-R) for assessing PTSD in the patients we found 23% of the patients in <24, 51% in 24-32, 22% in 33-36 and 4% in >37% scores were given in Table 2.

We also compared the IES-R scores in different age group, and we found that age group 54-65 were having the highest IES-R scores. Other scores were given in Table 3. We also found that females were more affected than males.

When we combed the IES-R scores I different bone fractures we found that fracture demure patients having highest IES-R scores followed by Tibia and fibula results are shown in Table 4.

Table 1: Demographic and Clinical Characteristics of the Subjects

	n (%)	Mean±SD
Gender		
Male	60(60%)	
Female	40(40%)	
Age group (years)		
18-30	38(38%)	25.08±3.57 years
31-42	23(23%)	37.04±3.53 years
43-54	17(17%)	49.06±2.98 years
55-65	22(22%)	59.86±2.95 years
Fractured bone		
Femur	49(49%)	
Tibia	36(36%)	
Fibula	15(15%)	
Mechanism Of Injury		
Road traffic accident	61(61%)	
Fall	29(29%)	
Others	10(10%)	
Past experience of fracture		
Yes	10(10%)	
No	90(90%)	
Method of treatment		
Conservative Treatment	28(28%)	
Operative Treatment	72(72%)	

Table 2: IES-R Score with Number of Patients

Overall Scores	n (%)
<24	23(23%)
24-32	51(51%)
33-36	22(22%)
>37	4(4%)

Table 3: Level of Psychological Distress in Different Age and Gender Groups

Age Group	n	Age- years (Mean±SD)	IES-R Score (Mean±SD)
18-30	38	25.08±3.57	27.97±7.13
31-42	23	37.04±3.53	27.30±5.44
43-54	17	48.76±2.80	26.94±5.64
54-65	22	59.64±3.06	30.5±6.68
Gender			
Males	60	39.53±13.5	26.82±6.49
Females	40	39.35±14.97	30.28±5.93

Table 4: Level of Psychological Distress in Subjects with Different Bone Fracture

Fractured bone	n	IES-R Score (Mean±SD)
Femur	49	31.06±4.78
Tibia	36	28.11±5.38
Fibula	15	19.07±5.20

DISCUSSION

The goal of this study was to evaluate the level of psychological stress experienced by patients with lower limb long bone fractures, and to see if there was a link between psychological distress and lower limb fracture. According to the findings, in half (51%) of the subjects PTSD was a clinical concern and had mild psychological discomfort and around 22 % of the subjects were representative for probable diagnosis of PTSD.

When the results of this study were compared to those of Richmond et al¹⁵, which also applied the IES scale to quantify psychological distress, it was observed that nearly half of the subjects (47%) in the latter study had a greater degree of psychological distress. The outcomes could be influenced by a number of things.

In the study by Richmond et al¹⁵ they sought individuals from an intensive care unit who had serious injuries that required surgery. Meanwhile, in our study patients with multiple injury or polytrauma were excluded and subjects had fewer serious injuries and were less distressed psychologically.

The level of psychological distress stated by the patients may influence the IES score, and a small number of patients may somatise to reflect more psychological suffering. Somatisation refers to the presentation of medically unexplained physical symptoms related to psychological distress (Asian and Pacific Islander American 2003). However, the participants in our study were not checked for somatisation.

Around one fifth of the subjects in our study group were older individual who may have already had some physical mobility issues prior to the fracture. As a result, it's possible that they had higher psychological distress. Mean score among elderly patient in our study was 59.64±3.06, highest amongst all the age groups. Findings in our study were in contrast with the study conducted by Lam et al¹⁶ who found low level of psychological distress in their older patients.

In our study around 50% of the subjects had femur fracture and the level of psychological distress was highest as compared with subjects with tibia or fibula fracture this may be due to prolong immobilization of the subjects with femur fracture in contrast to tibia or fibula fracture.

In present study 60 percent of the subjects were male and they showed low level of psychological distress as compared to female subjects.

Research by McCarthy et al.¹⁷ also had similar results. It was proposed that the disparity could be due to the two genders' distinct perceptions and reactions to damage (Stein et al.¹⁸, Holbrook¹⁹). According to Chan et al.²⁰, In various populations, males are socialised to suppress their psychological distress. Men may perceive acknowledging stress as a sign of weakness, and as a result, they refuse to realise that they are stressed.

Around 61% of the subjects in our study group were injured as a result of a traffic accident, which was comparable to a previous study by Koren et al²¹, which found that the majority of their participants (80%) were injured as a result of traffic accidents. We found no significant difference in psychological distress amongst the subjects who had injury due to fall or due to road traffic accident. Despite the disparities in mechanism of injury, the evidence from both prior research (Koren et al.²¹, Starr et al.²²) and this one strongly suggests that psychological distress is not linked to the mechanism of injury.

CONCLUSION

Patients who have a limb fracture experience a great deal of psychological distress. As a result, routine assessments for these patients should include a full assessment of psychological distress. Female patients were found to be in greater psychological distress than male patients, necessitating the development of a more women-centered service to meet their requirements. Male patients should be encouraged to address their grievances and challenges. They must be persuaded that feelings of fear, worry, or annoyance are not indications of weakness.²³ Future research could track patients psychological distress from the time they leave the hospital until they recover and return to their pre-injury level of functioning. The extent of psychological distress prior to the injury could be assessed. Thus, a qualitative technique might be utilized to acquire a more in-depth knowledge of the causes of psychological suffering.

LIMITATIONS

Larger sample size is required to derive the relation between psychological distress and the lower limb long bone fracture. Further assessment could not be done because of time constraints and inability of follow up after discharge of the subjects.

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