

Assessment of Depression and its Risk Factors among Patients with Long Bone Fracture in Karimnagar District of Telangana

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ABSTRACT

Background: Depression is likely to affect the outcome of the patients with long bone fractures. It also affects the duration of stay post operatively and seeks more medical attention than in normal patients. **Objective:** To assess depression and its risk factors among patients with long bone fracture in Karimnagar district of Telangana **Methods:** Nature of the study was descriptive and design of the study is prospective and cross sectional in orthopedic Department of the teaching hospital. Population for the study was patient including inpatients and out patients of orthopedic department in follow up. Sample size 50 was selected for the further statistical analysis in the present study. Data was collected from patients and informants from orthopedic Department. **Results:** 60% patients had fractures in the lower limb. 53% patients had fractures of the right limb. 90% patients were with closed fractures. 89% patients underwent surgical management. Age, Type of Family, Type of Fracture and Type of Treatment were found to be significantly associated factors with Depression. ($p < 0.05$) **Conclusion:** Depression was common among patients undergoing orthopedic surgery for fracture of long bones. Depression was significantly associated with age, type of family, type of fracture and type of treatment.

Keywords: Depression, risk factors, outcome

The overall depression prevalence globally was estimated at 3.2% among females and 1.9% among males. Thus it is slightly more among females as compared to males. The prevalence of depression among elderly was estimated at 15%. The unipolar depressive disorder was also found to be more among females (3.2%) as compared to males (1.9%). Even the one year prevalence was also more in females (9.5%) as compared to males (5.8%). It was 15% for the old age people. In India, the depression prevalence was found to be 0.79 to 0.89%. It was

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more than double in urban than rural dwellers. This may be due to more number of nuclear families, less security and more work burden among urban dwellers. The people having hip fracture showed the prevalence of depression ranging from 9 to 47%. Among women after menopause, the risk of having fracture of hip is more than double i.e. 14% compared to only 6% for males. Not only fractures affect the psychological well being but also the depression affects the occurrence of fractures. It was found that depressed women suffered more fractures than psychological normal women.

Studies have been carried out to study relation between old age and depression among females. Those who have depression show more levels of cortisol. If the levels are high in elderly, it leads to reduced strength of grip and affects the performance of walking and standing. Elderly patients with fracture of hip show higher ratio of DHEAS: Cortisol compared to their healthy counterparts and also compared to younger individuals. This pathogenesis has been proposed as an important factor in the fracture of hip. The condition gets aggravated when depression is also present in elderly. Density of bone mineral is also affected by presence of depression. For this to occur, many pathways have been demonstrated. This reduced density leads to osteoporosis which in turn can be a fatal factor for occurrence of fractures. Thus we can anticipate the role of depression in the fractures of long bones. Basing on the above stated pathogenesis, if the above ration can be corrected, then this will be beneficial of the people. Cytokine interleukin 6 levels are increased in elderly patients who also have depression. Presence of increased levels of cytokine interleukin 6 levels indicates that the activity of inflammation has increased. This may be due to high resorption of bone. Patients having depression tend to be sedentary. This also leads to enhanced resorption. 5-HTTLPR genotype may be associated with depression following fracture of hip among the elderly people.

In absolute numbers around 340 million globally have major depression. By 2020, this is going to be a major reason of increased disability in the developing countries. This will have high implications on the health care expenses. Individuals with depression seek more medical attention than those without depression. There is a deadly combination between depression and illness of physical nature. This is an important cause of disability. In general health care facilities, most commonly sought help are around the musculoskeletal problems and pain of any body part which is of chronic nature. Depressive individuals are more likely to present with such complaints to the health care facility than their non depressive counterparts.

Patients with general trauma also report high rates of depressive symptoms in developed countries. The studies have shown that the prevalence of depression is 45% among people with orthopedic problems in USA. Depression is likely to affect the outcome of the patients with long bone fractures. It also affects the duration of stay post operatively and seeks more medical attention than in normal patients.

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Hence present study was carried out to assess depression among patients with long bone fracture in Karimnagar district of Telangana

METHODOLOGY

Research design

Nature of the study is descriptive and design of the study is prospective and cross sectional.

Study setting

The study was conducted in orthopedic Department of the teaching hospital attached to Prathima Medical College, Karimnagar, Bhanu Ortho Care Hospital, Karimnagar.

Target population

Population for the study was patient including inpatients and out patients of orthopedic department in follow up.

Inclusion criterion

1. Age above 16 years and below 75 years
2. Patient with Long bone Fractures

Exclusion criterion

1. No past history of Psychiatric illness.

Data was collected from 56 patients initially. 3 patients were excluded because of not meeting the age criterion and 3 for inadequate information regarding past psychiatric history. So sample size 50 was selected for the further statistical analysis in the present study. Data was collected from patients and informants from orthopedic Department of the teaching hospital attached to Prathima Medical College, Karimnagar, Bhanu Ortho Care Hospital, Karimnagar after getting informed consent from the patient and/or informants.

Development and description of tool

1. Intake Performa consisted of 5 categories including the following:

1. Socio demographic data.
2. Present health status
3. Type of fracture
4. Treatment details
5. Informant details

2. Hamilton depression rating scale (HAM-D): Development in 1960 by Dr. Max Hamilton of the University of Leeds, England, the scale has been widely used in clinical practice and become a standard in pharmaceutical trials. The Hamilton Depression Rating Scale (HAM-D) has proven useful for many years as a way of determining a patient's level of depression before, during, and after treatment. It should be administered by a clinician experienced in working with psychiatric patients. Although

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the HAM-D form lists 21 items, the scoring is based on the first 17. It generally takes 15-20 minutes to complete the interview and score the results. Eight items are scored on a 5-point scale, ranging from 0 = not present to 4 = severe. Nine are scored from 0-2.

Data collection procedure

Formal prior permission was obtained from the concern Authority to conduct the study, and approved by ethical committee. Data was collected from patients after written informed consent. Detailed history of prior psychiatric illness: if any was collected from informants because it was the main exclusion criterion.

Statistical analysis

Frequencies and percentages were used for analysis of demographic data. Application of Chi square test to find the association of demographic variables.

RESULTS

Table 1: Distribution of study subjects as per the hospitalization details

Variable		Number	Percentage
Duration of hospitalization	1-2 weeks	30	38
	2-4 weeks	22	27
	> one month	12	14
	None	16	21
Site of fracture	Upper limb	31	39
	Lower limb	48	60
	Both	01	01
Side of fracture	Right	42	53
	Left	37	46
	Both	01	01
Type of fracture	Closed	72	90
	Open	08	10
Type of treatment	Surgical	71	89
	Non surgical	04	05
	Both	05	06

The study sample contained 80% patients who were admitted as in-patients and only 20% patients were out-patients. 38% patients were admitted in the hospital for 1-2 weeks, 27% patients were admitted for 2-4 weeks and 20% were not admitted. 60% patients had fractures in the lower limb, 39% patients in the upper limb and 1 patient with fracture of upper and lower limb. 53% patients had fractures of the right limb, 46% patients were with fractures of the left limb and one patient was with bilateral fracture. 90% patients were with closed fractures and 10% patients were with open fractures. 89% patients underwent surgical management, 5% patients were managed with non-surgical (conservative) management and 6% were managed with both surgical and non-surgical management.

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Table 2: Association of various factors with depression

Variable	Chi square	P value
Age	13.825	0.032**
Sex	1.836	0.399
Location	2.217	0.330
Marital status	5.677	0.223
Religion	0.717	0.699
Type of family	7.484	0.024**
Socio economic status	3.110	0.540
Education	5.330	0.868
Occupation	4.750	0.907
Living situation	9.542	0.145
Monthly family income	4.570	0.600
Social support	5.492	0.240
Substance use	4.856	0.562
Family history of mental illness	0.55	0.973
Hospitalization	3.065	0.216
Duration of hospitalization	6.544	0.305
Site of fracture	4.712	0.318
Side of fracture	3.204	0.524
Type of fracture	9.932	0.042*
Treatment	19.584	0.001***

The study sample shows Age in relation to HAM-D as a significant factor in the outcome of Depression. ($p = 0.032$). Type of Family was also found to be a significant factor in the outcome of Depression in patients with long bone Fracture ($p = 0.024$). The study sample also shows Type of Fracture to be a significant factor in the outcome of Depression in patients with long bone Fracture, with p value= 0.042 in HAMD. Type of Treatment was also found to be a very significant factor in the outcome of Depression with p value = 0.001 .

DISCUSSION

60% patients had fractures in the lower limb. 53% patients had fractures of the right limb. 90% patients were with closed fractures. 89% patients underwent surgical management. Age, Type of Family, Type of Fracture and Type of Treatment were found to be significantly associated factors with Depression. ($p < 0.05$)

Manmeet Singh et al in their study of depression among patients with fracture of long bones of lower limb found that 34.21% were suffering from some form of psychiatric morbidity. Major depressive disorder was found in 31.5% of cases and it was the commonest. It was followed by disorders of anxiety and it formed the second most common diagnosis. Patients who had fracture of long bones of lower limb due to road traffic accidents; among them the occurrence of psychiatric morbidity was more common. The authors noted that women were more commonly affected than men. Patients who had fracture of long bones of lower limb who had compound type of fracture were found to be more suffering from psychiatric

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morbidity. Thus the authors concluded that road traffic accidents, being female and compound type of fracture were the major risk factors for psychiatric morbidity.

Fiske A et al carried out a study on prevalence and risk factors of depression among elderly. They observed that the occurrence of depression was less among elderly as compared to their younger counterpart. But they also made a statement that the elderly are more likely to have bad outcome or adverse consequences. The suicide rates are more among the old aged people than their younger counterparts. And this is associated significantly with depression. The depressive symptoms are less likely to be seen in the old aged population. But in turn they show cognitive impairment, somatization, interest loss in life and other things. The risk factors are genetic, neurological ageing of the body and family stress, insomnia, reduction in the daily life activities. The authors stated that apart from risk factors, there are factors which are protective in nature like good literacy status, good social class, making oneself engaged in the society useful activities, involvement in the spiritual activities. The treatment options are various types of psychotherapies. Prevention options include various types of support of psychological nature.

Richards JE et al studied association between impairment of cognitive function and orthopedic procedure of reamed intra medullary nailing. They found that among the patients undergoing the orthopedic procedure of reamed intra medullary nailing, 78% developed impairment of cognitive function which was observed on follow up visits. The authors on performing logistic regression found that orthopedic procedure of reamed intra medullary nailing was a risk factor for impairment of the cognitive function among the patients studied. They suggested that research to be focused on further associations between these variables and measures to prevent the impairment of the cognitive function.

Gale CR et al carried out a study to see how the anxious and depressed older people are at risk of developing fractures. They noted that HADS score of more than 11 was associated with high risk of developing fractures among elderly than those who had HADS score of less than 7. This risk was four times more among more anxious individuals. Those with score of 8-10 had no more further risk of developing fracture. But this same was not found to be true for female elderly patients. Those men with depression score of 8-10 were found to have 3.5 times more risk of developing fractures than those men with depression score of less than 8. But again this same was not found to be true for female elderly patients.

Williams LJ et al carried out a study to see whether depression can lead to fractures among females. There were 914 control compared with 179 cases. The cases had 1.5 times more risk of fracture than controls. Patients with depression had 68% times more risk of occurrence of fractures. They concluded that depression was a risk factor for occurrence of fractures.

Mossey JM et al studied fracture of hip cases among women. They followed them for 12 months. They used the Center for Epidemiological Studies Depression (CES-D) scale. They

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carried out interviews of women after surgery and also at the end of two months, six months and at the end of one year. They observed that recovery after the fracture of hip was associated with age, cognitive status and physical function before fracture. They controlled these factors in analysis and found that those females with lower scores of CES-D were three times more likely to have early walking than those with lower scores with CES-D. Those with lower scores of depression were nine times better in achieving usual normal functions. They suggested that fracture of hip patients should be screened for depression. If found to have depression then they should be evaluated. After evaluation, they should be properly treated to have good results after surgery of fracture of hip.

Lenze EJ et al studied depression among patients after they underwent surgery for fracture of hip. The authors intervened by giving psychological rehabilitation to these patients. They divided the patients into two groups. They observed that the group which received the psychological rehabilitation showed best outcome in terms of functional property compared to those in other group.

Cristancho P et al studied trajectories of depressive symptoms among patients after fracture of hip. The trajectory terms were described by author as resilient, distressed and depressed. They divided the patients of fracture of hip accordingly into three groups. They found that in the last group i.e. patients of fracture of hip in the trajectory of depressed had increased levels of symptoms of depression. The risk factors associated were lack of social support, smoking addiction, stressful life, use of drugs for depression, type of implant used for surgery of fracture of hip and past history of depression.

CONCLUSION

Depression was common among patients undergoing orthopedic surgery for fracture of long bones. Depression was significantly associated with age, type of family, type of fracture and type of treatment.

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Conflict of Interest: The author declared no conflict of interest.

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