



A STUDY ON ANXIETY AND DEPRESSION AMONG POST-OPERATIVE ORTHOPAEDIC PATIENTS AT SELECT MULTISPECIALTY TEACHING HOSPITAL IN AHMEDNAGAR DISTRICT, MAHARASHTRA

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Abstract

Scientific reports show that anxiety and depression are present among orthopedic surgical patients, and these factors affect postoperative outcomes and recovery. **Objective:** The primary objective of this study was to assess the anxiety and depression among the post-operative orthopaedic patients. **Methods:** A cross sectional survey was conducted from June 2021- May 2022 at select multispecialty teaching hospital in Ahmednagar district, Maharashtra. This survey included 90 post-operative orthopaedic patients selected by adapting systematic random sampling technique. Data was collected by interviewing the patients on one to one basis with the help of Hospital Anxiety and Depression Scale. Data analysis was done by using SPSS 24.0 and Graph Pad Prism 7.0 version software. **Results:** Findings of the study shows that, each 18.9% participants were belonging to the age group between 25-30 years and above 55 years; 75.6% participants were male; 61.1% participants had sustained fractures of lower limbs; 67.8% participants sustained fractures due to road traffic accidents, 27.8% participants had sustained transverse fracture, 60% participants had undergone open reduction internal fixation surgery for management of fracture. Findings in relation to anxiety and depression showed that 28.89% participants had anxiety, whereas 35.56% participants had depression. The mean scores for anxiety and depression were 8.28 ± 3.46 and 8.73 ± 4.64 respectively. There was a strong positive correlation between anxiety and depression ($r= 0.91$). **Conclusion:** Findings of this study suggest that prevalence of anxiety and depression are quite high among post-operative orthopaedic patients. Routine screening programmes for anxiety and depression may be undertaken among post-operative orthopaedic patients aimed at identifying these problems.

Key Words: Anxiety, Depression, Post-operative orthopaedic patients

Introduction

Globally, more than 1.5 million persons sustain traumatic physical injuries each year. [1] A huge number of traumatic injuries are orthopaedic in nature. Orthopaedic trauma is any severe injury to the bones, joints, and/or soft tissue that is caused by an external source. These injuries are often the result of a sudden incident, such as a car accident or fall. [2]

These injuries occur in the musculoskeletal system, including bones, cartilage, joints, ligaments, muscles, and tendons of the body. [3] Traumatic injuries pose a significant and increasing challenge to healthcare systems. Musculoskeletal injury can affect mental and social health depending on the severity of symptoms. [4] A significant proportion of traumatic injury survivors develop serious mental health problems. [1]

After fracture; survivors commonly experience depression, anxiety, and post-traumatic stress syndrome which interfere with functional gains and quality of life. [5,6] The American Academy of Orthopedic Surgeons reported that psychiatric problems such as anxiety, depression, and posttraumatic stress disorder (PTSD), can affect clinical outcomes and should be evaluated after trauma.[4]

Major depressive disorder is a common complication after orthopedics surgery, which leads to further physical morbidity and mortality risks. [7] Postoperative depression is one of the devastating problems and important health concerns in adult orthopedics surgical patients. It is often under-diagnosed and appropriate perioperative management of patients is recommended. [8]

Need of the study

Orthopedic trauma typically refers to an injury caused by some external force, such as a severe fall, a serious accident, or even a violent attack. [3] Orthopedic trauma is an unforeseen life-changing event. [5] Common injuries include fractures, ligament tears, tendon tears, and joint dislocations. [3] Serious injuries include multiple fractures and amputation. [4]

More than 60 percent of injuries involve the musculoskeletal system, and more than half of hospitalized trauma patients have at least one musculoskeletal injury that could be life threatening, limb threatening, or result in significant functional impairment. [9]

A retrospective survey conducted on 6574 injured patients in central India revealed that the most common injury was bony injury (65.38%) and soft-tissue injury (34.62%).[10] The definitive management of musculoskeletal trauma is a surgical approach. As the cases of musculoskeletal injuries are on the rise, so the orthopedic surgeries.

Scientific literature shows that anxiety and depression are commonly present in the post-surgical orthopaedic patients. The reports of different studies show that 28–60% of hospitalized orthopedic patients experience psychiatric problems. [11-13]. Husain et al, reported that 45.6% men and 76.1% women patients with general trauma had depression [14]. Few Indian studies report very wide prevalence of anxiety and depression between 15.5% - 87.6% among orthopaedic patients. [15-16]

Various studies suggest that understanding an individual's mental health is an important factor for achieving the best outcome after surgery [8,17]. When associated psychiatric disease is diagnosed and controlled before orthopaedic treatment commences, the patient is more likely to comply with the treatment regimen, which may lead to better results [18]. Early identification of patients with distress can help care teams provide the resources and support to offset the distress. [19]

Although few studies have been conducted in India to assess the magnitude of anxiety and depression among post-operative orthopaedic patients, there is scarcity of similar studies in Maharashtra. Therefore to explore more about this; present study was conducted with the objectives (1) to assess the anxiety and depression among the post-operative orthopaedic patients and (2) to identify the correlation between anxiety and depression.

Aim of the study

The primary aim of this study was to assess the anxiety and depression among the post-operative orthopaedic patients.

Materials and Methods

A cross sectional survey was conducted from June 2021- May 2022 to assess anxiety and depression among post-operative orthopaedic patients admitted at orthopaedic wards of select multispecialty teaching hospital located in Ahmednagar district, Maharashtra state, India. The sample size for the study was determined to be 90 by using Openepi software. Systematic random sampling was adapted for recruitment of participants in the study. Every 6th post-operative orthopaedic patient who was eligible was consented to participate in the study. The eligibility criteria was set up as post-operative orthopaedic patient who is/has (1) above 18 years of age (2) undergone any major surgeries such as internal or external fixation, k wire fixation, joint replacement, bone grafting, implant removal etc. (3) available during data collection period and (4) willing to participate in the study. Patients who were critically ill, unable to respond to the tool, having comorbid neurological and psychiatric illness, having defective vision or hearing & amputee patients were excluded from the study.

The data collection instrument consisted of demographic data questionnaires, questionnaires related to clinical characteristics of the participants and Hospital anxiety and depression scale. The demographic data questionnaires included 8 variables such as age, gender, marital status, education, religion, occupation, monthly family income and residence. Clinical characteristics questions included variables like site of fracture, cause of fracture, type of fracture, type of surgical procedure, type of anesthesia and associated injury. To assess anxiety and depression among participants, Hospital Anxiety and Depression Scale developed by Zigmond and Snaith (1983) was used. The HADS is a fourteen item scale that generates ordinal data. Seven of the items relate to anxiety and seven relate to depression. Each item on the questionnaire is scored from 0-3 and this means that a person can score between 0 and 21 for either anxiety or depression. Score between 0 & 7 is considered as normal, score from 8-10 is borderline abnormal score and score from 11-21 points to an abnormal i.e. case of anxiety and or depression. The data collection instrument was validated by 13 experts from different fields such as psychiatry, psychology, orthopaedics and psychiatric nursing. The reliability of the questionnaires was ascertained by implementing tool on 10 post-operative orthopaedic patients. The reliability (r) was found to be 0.87.

Data was collected from participants with the help of designated tools on the day of discharge from the hospital. Interview technique was used for data collection. It took 10-15 minutes for data collection of each participant. The collected data was entered into Microsoft Excel and analysed by using descriptive statistics such as frequency, percentage, mean and standard deviation (SD). The software used in the analysis were SPSS 24.0 and Graph Pad Prism 7.0 version.

Findings

Demographic characteristics of the participants**Table 1: Distribution of post-operative orthopedic patients according to their demographic characteristics.**

n= 90					
Sr. No.	Variable	n (%)	Sr. No.	Variable	n (%)
1.	Age (in years)		6.	Occupation	
	a. 18-24 yrs	11 (12.2)		a. Homemaker	20 (22.2)
	b. 25-30 yrs	17 (18.9)		b. Farmer	16 (17.8)
	c. 31-36 yrs	13 (14.4)		c. Daily Wages	17 (18.9)
	d. 37-42 yrs	15 (16.7)		d. Service	11 (12.2)
	e. 43-48 yrs	6 (6.7)		e. Business	20 (22.2)
	f. 49-54 yrs	11 (12.2)		f. Retired	2 (2.2)
g. ≥ 55 yrs	17 (18.9)	g. Student	4 (4.4)		
2.	Gender		7.	Monthly family income (Rs.)	
	a. Male	68 (75.6)		a. ≤1865	0 (00)
b. Female	22 (24.4)	b. 1866-5546		15 (16.7)	
3.	Marital Status			c. 5547-9248	34 (37.8)
	a. Single	15 (16.7)		d. 9249-13873	16 (17.8)
	b. Married	72 (80)		e. 13874-18497	20 (22.2)
c. Divorced/ Separated	3 (3.3)	f. 18498-36996	5 (5.6)		
4.	Education		8.	Residence	
	a. No formal education	2 (2.2)		a. Urban	27 (30)
	b. Primary	9 (10)		b. Rural	52 (57.8)
	c. Secondary/Higher Secondary	52 (57.8)	c. Semi Urban	11 (12.2)	
d. Graduation and above	27 (30)				
5.	Religion				
	a. Hindu	71 (78.9)			
	b. Muslim	7 (7.8)			
	c. Christian	11 (12.2)			
d. Other	1 (1.1)				

Table 1 shows that each 18.9% participants were belonging to the age group of 25-30 years and above 55 years; majority i.e. 75.6% participants were male; maximum i.e. 80% were married; 57.8% participants were educated upto secondary or higher secondary standards; maximum i.e. 78.9% were hindu; each 22.2% participants were homemakers or were running some business; 37.8% participants had monthly family income between Rs. 5547-9248 and 57.8% participants were residing from rural areas.

Clinical characteristics of the participants

Table 2: Distribution of post-operative orthopedic patients according to their clinical characteristics.

n= 90

Sr. No.	Clinical characteristic	n (%)	Sr. No.	Clinical characteristic	n (%)
1.	Site of fracture		4.	Type of surgical procedure	
	a. Upper Limb	28 (31.1)		a. ORIF with nailing / plating	54 (60)
	b. Lower Limb	55 (61.1)		b. Open reduction external fixation	8 (8.9)
	c. Both upper and lower limbs	1 (1.1)		c. Implant removal	10 (11.1)
	d. Any other	6 (6.7)		d. DHS fixation	1 (1.1)
2.	Cause of fracture			e. Bone Grafting	2 (2.2)
		61 (67.8)		f. Joint replacement surgery	8 (8.9)
	a. Traumatic		g. Arthroscopy	7 (7.8)	
	b. Pathological	2 (2.2)	5.	Type of anesthesia	
c. Fall	27 (30)	a. General		32 (35.6)	
3.	Type of fracture			b. Spinal	50 (55.6)
	a. Communited	12 (13.3)		c. Block	8 (8.9)
	c. Compound	20 (22.2)		6.	Associated injury
	21 Spiral	12 (13.3)	a. Chest Injury		6 (6.7)
	22 Transverse	25 (27.8)	b. Abdominal Injury		3 (3.3)
		10 (11.1)	c. Head Injury		13 (14.4)
	23 Oblique		d. Nil	68 (75.6)	
	11 (12.2)				
24 Other					

Table 2 reveals that 61.1% participants had sustained fracture of lower limbs and 31.1% participants had sustained fracture of upper limbs; in 67.8% participants the cause of fracture was trauma i.e. road traffic accident, whereas 30% participants had fracture due to fall; in relation to type of fracture, 27.8% participants had transverse fracture, whereas 22.2% participants had sustained compound fracture; 60% participants had undergone open reduction internal fixation either with nailing or plating surgery; 55.6% participants had received spinal anesthesia before surgery and 14.4% participants also sustained head injury along with fracture.

Anxiety among the post-operative orthopedic patients

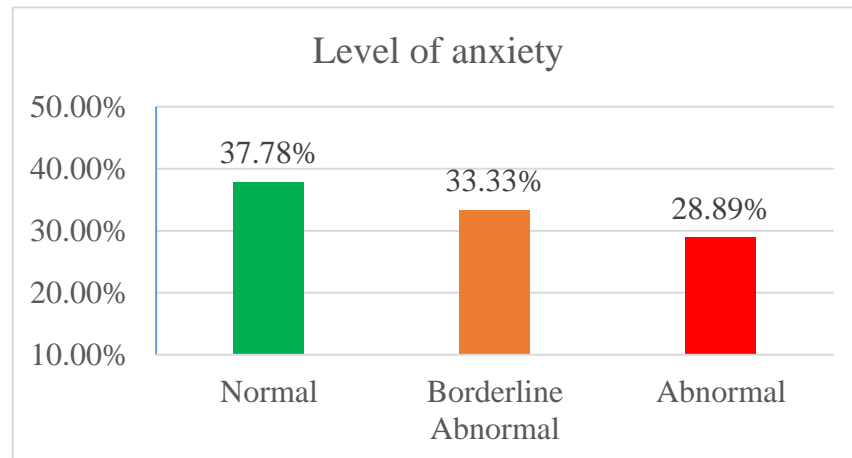


Figure 1: Level of anxiety among post-operative orthopaedic patients

Fig. 1 depicts the level of anxiety among post-operative orthopaedic patients. It shows that 33.33% participants had borderline abnormal scores for anxiety, whereas 28.89% participants had abnormal scores for anxiety that means the prevalence of anxiety among post-operative orthopaedic patients was 28.89%.

The mean anxiety scores obtained by participants was 8.28 ± 3.46 , which was borderline abnormal.

Depression among the post-operative orthopedic patients

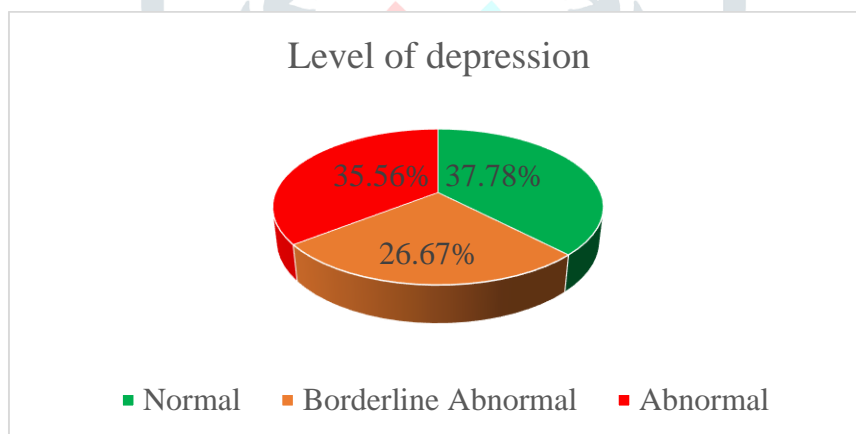


Figure 2: Level of depression among post-operative orthopaedic patients

Fig. 2 depicts the level of depression among post-operative orthopaedic patients. It reveals that 26.67% participants had borderline abnormal scores for depression, while 35.56% participants had abnormal scores for depression, i.e. the prevalence of depression among post-operative orthopaedic patients was found to be 35.56%.

The mean depression score was 8.73 ± 4.64 , which was borderline abnormal.

Correlation between anxiety and depression

Correlation coefficient (r) was computed to identify the relationship between anxiety and depression which was found to be 0.91. Therefore it is inferred that there was a strong positive correlation between anxiety and depression, that is more severe the anxiety, more severe the depression and vice versa.

Discussion

The present study was conducted to assess anxiety and depression among post-operative orthopaedic patients. This study revealed that each 18.9% participants were belonging to the age group of 25-30 years and above 55 years. These findings are in line with the findings reported by Shukla Rajeev et al, where researchers found that 21–30 year age group suffered the maximum injuries (26.53%). [20] It may be inferred that young and late adults sustains more orthopaedic injuries than others, the probable reason being, these age group population are more involved in frequent commutes. The present study also depicts that traumatic orthopaedic injuries are common in male than females as majority (75.6%) participants were male. Similar findings were reported by other Indian and African studies. [20, 21] In the present study maximum (78.9%) participants were hindu. This finding is in line as hindu population is predominant in India and within study setting. The present study also showed that 37.8% participants had monthly family income between Rs. 5547-9248 and 57% participants were residing from rural areas. These findings were expected as data collection setting i.e. select multispecialty teaching hospital is located in the rural area and it serves to the underserved and rural population of the area.

Findings of the present study revealed that lower limb fractures are much common than upper limb fracture as 61.1% and 31.1% participants had sustained fracture of lower limbs and upper limbs respectively. Evidence from other Indian studies also suggest dominance of lower limb fractures.[10, 22] The commonest causes of fractures being revealed by present study were road traffic accidents (67.8%) and falls (30%). Shukla Rajeev et al. also reported RTA as the commonest cause of injury (46.85%). [20]

Findings in relation to type of fracture revealed that transverse (27.8%) and compound fractures (22.2% participants) were common among the participants. These findings are supported by the study conducted in central India, wherein 32% participants had sustained compound fractures.[10] In the present study 60% participants had undergone open reduction internal fixation surgery either with nailing or plating for fixation of fracture. Therefore it is seen that open reduction internal fixation surgical approach is commonly and widely used approach for management of fractures. The probable reasons being internal fixation allows shorter hospital stays, enables patients to return to function earlier, and reduces the incidence of non-union (improper healing) and mal-union (healing in improper position) of broken bones.

In the present study majority (55.6%) participants had received spinal anesthesia before surgery. As lower limb fractures were common among the study participants; spinal anesthesia was the preferred choice before surgery. Findings of the present study shows that 14.4% participants had sustained head injury along with fracture. Previous scientific reports also confirms that head injuries are often associated with fractures than other injuries. [10,22]

The present study found that 28.89% participants had abnormal scores for anxiety, which means prevalence of anxiety was 28.89%. This finding is supported by previous studies. Richard et al.[23] and T Duivenvoorden, et al.[24] reported anxiety in 30.35% and 20.3% post-operative orthopedic patients respectively.

Findings on depression revealed that 35.56% participants had abnormal scores for depression. It means depression was present among 35.56% of post-operative orthopaedic patients. This finding is in line with the previous evidences. T Duivenvoorden, et al. reported depression among 33.6% orthopaedic surgical patients,[24] whereas Richard et al. reported depression in as much as 50% participants.[23] A chinese study found depression in 23.3% patients.[25] Another Indian study reported prevalence of depression as 38% among post traumatic orthopedic patients.[14] Renn J Crichlow et al. reported depression in 26% orthopaedic trauma patients.[26]

The present study found a strong positive correlation between anxiety and depression ($r = 0.91$). A study conducted in Shanghai also found a significant positive correlation between anxiety scores and depression scores ($r = 0.87, p < 0.001$).[25]

Conclusions

Based on the findings of the present study it is concluded that anxiety and depression are common among post-operative orthopaedic patients. The magnitude of the problem is such that the healthcare delivery system cannot afford to ignore it, as it may heavily impact the physical and mental health of orthopedic surgical patients. Anxiety and depression can hinder recovery and pose significant obstacles to the rehabilitation process. Therefore, it is crucial to identify these issues at an early stage to enable the implementation of

preventive and proactive measures. Routine screening of post-operative orthopaedic patients may be conducted aiming at identifying anxiety and depression with the help of easy to administer tools such as Hospital Anxiety & Depression Scale. This screening may be incorporated with routine orthopaedic services.

Ethical aspects: The study was approved by the Institutional Ethics Committee of the Pravara Institute of Medical Sciences (Deemed to be University), Loni. M.S. India. [PMT/PIMS/IEC/2016/39]. Before commencement of the data collection, permission was obtained from the Medical Superintendent of the select multispecialty teaching hospital. [PIMS/CON/2019/246]. The participants were informed of the aim of the study and data collection process. They were informed of the voluntary nature of participation in the study and their right of withdrawal from the research at any stage. The participants were assured of the confidentiality of the data by mentioning only code number on the questionnaire and not name of the participants. Written informed consent was obtained from the participants.

Conflict of Interest: Nil

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