

Pre-and Post-Operative Anxiety and Depression Levels in Orthopedic Surgery

Raza Askari^{1,*}, Asad Ali Kerawala², Muhammad Hassaan Khan³, Nusrat Rasheed¹, Malik Amna Khatoon³

¹Department of Orthopaedics, Dow International Medical College, Dow University of Health Sciences.

²Department of Surgical Oncology, Cancer Foundation Hospital.

³Department of Orthopaedic Surgery, Dow University Hospital, Dow University of Health Sciences.

Authors' Contributions

1 Conception & Study design, Data Collection & Processing, Data Analysis and/or Interpretation, Drafting of Manuscript, Critical Review.

2 Conception & Study design, Data Collection & Processing, Drafting of Manuscript, Critical Review.

3 Data Collection & Processing, Data Analysis and/or Interpretation, Drafting of Manuscript, Critical Review.

4 Data Analysis and/or Interpretation, Drafting of Manuscript, Critical Review.

5 Data Collection & Processing, Drafting of Manuscript, Critical Review.

Article info.

Received: October 29, 2020

Accepted: October 30, 2021

Funding Source: Nil

Conflict of Interest: Nil

Cite this article: Askari R, Kerawala AA, Khan MH, Rasheed N, K MA. Pre-and Post-Operative Anxiety and Depression Levels in Orthopedic Surgery. RADS J Pharm Pharm Sci. 2021; 9(2):169-174.

*Address of Correspondence Author:
dr_razaaskari@hotmail.com

ABSTRACT

Background: Anxiety and depression are the undesired psychological problems, directly associated with patients suffering from orthopedic trauma and underwent for orthopedic surgery.

Objectives: The objective of study was to determine the pre-and post-operative anxiety and depression levels in patients of orthopedic trauma.

Methodology: A descriptive observational study was conducted on 55 patients suffering from orthopedic trauma, selected by consecutive sampling technique from orthopedic department during October 2018 to December 2018. Patients were evaluated for anxiety and depression by using hospital anxiety and depression scale (HADS).

Results: Out of 55 patients suffering from orthopedic trauma, 63.6% were male and 36.4% were female with mean age of 44.93 ± 18.74 . 44.5% were suffering from orthopedic trauma due to road accidents, and 43.6% due to ground fall. HADS level of anxiety and depression was 3.56, and 5.16 before surgery in orthopedic patients that increased significantly to 4.31, and 5.75 after surgery. Prevalence of anxiety and depression was 12.7%, and 18.2% in orthopedic patients before surgery that increased to 16.4%, and 23.6% after surgery respectively.

Conclusion: It was concluded that level of anxiety and depression was low in orthopedic trauma patients before surgery that increased after surgery, whereas gender, age, and poverty are directly associated with anxiety and depression.

Keywords: Anxiety, depression, psychological, orthopedic trauma.

INTRODUCTION

Orthopedic trauma is a broad term, used to define the severe injury of musculoskeletal systems of human body including the bones, joints, muscles, tendons, or ligaments. Orthopedic trauma injuries range from minor to complex injuries involving single to multiple organ systems [1, 2]. According to World Health Organization (WHO), road traffic accidents such as motor or car accidents are the most common cause

behind the orthopedic trauma, severely affecting the health care systems and development of developing as well as developed countries. Fall from ground or height, slips, gunshot, wounds, sports accidents, and industrial accidents are the other common causes of orthopedic trauma [3, 4]. WHO reports that road traffic accidents are increasing the global burden of orthopedic trauma and in 2020 it will be second leading cause of mortality [4, 5]. Although most of the people recover from orthopedic trauma but results in

various disabilities along with psychiatric problems [6, 7].

Orthopedic trauma has direct effects on physical as well as mental health of survivors such as development of different pre-and postoperative psychological reactions including anxiety, depression, fear, anger, insomnia, nightmares, uneasiness, loss of appetite, etc. Orthopedic trauma not only influence the psychological health status of survivors but also affect their job status, careers, and families. Prevalence of psychiatric problems are three to five times higher in patients suffering from orthopedic trauma, affecting the quality of life (QOL), and increases the duration of hospital [8-10].

Anxiety and depression are the most prevalent psychological problems not only affecting the general population of the world but also patients suffering from different chronic diseases such as orthopedic trauma, increasing the health care expenditure, decreasing the QOL and indirectly increasing the morbidity and mortality [11, 12]. Different studies report that anxiety symptoms are more common during psychological reactions and positively associated with depression [12, 13].

In our hospitals, due to poor health care facilities, and improper management of orthopedic trauma, some orthopedic patients develop anxiety and depression before orthopedic surgery that increases after surgery due to failure of surgery or prolong stay in hospital. Anxiety and depression have several worsening effects on patients such as, increases the perception of pain before and after surgery, increases the use of analgesia during surgery, decreases the patient's satisfaction with hospital care, decreases the surgical outcome, increases hospital stay, decreases QOL and disrupt the life [14, 15]. Before surgery patients are worried about their illness, surgical operation, hospital expenditures, and surgical outcomes resulting in development of symptoms of anxiety and depression. Anxiety increases the patient's different fears such as separation from family, increases uncertainty, decreases the self-esteem, etc. After surgery anxiety and depression either decreased or finished due to success of surgery or increases either due to failure of surgery or due to development of any complication that increases the hospital stay of patients [16, 17].

The objective of study was to determine the pre-and post-operative anxiety and depression levels in patients of orthopedic trauma.

METHODOLOGY

A descriptive observational study was conducted on 55 patients suffering from orthopedic trauma, selected by consecutive sampling technique admitted at orthopedic department of Dow University of Health Sciences Karachi (DUHS Karachi). The research was conducted from October 2018 to December 2018.

Patients of any age and gender suffering from orthopedic trauma, and willing to participate in study was included and orthopedic patients unable to communicate and suffering from other comorbidities were excluded from the study.

Patients demographic, and socioeconomic data, previous medical history and current medical status was obtained by using structured questionnaire. For evaluation of anxiety and depression hospital anxiety and depression scale (HADS) was used. The scale comprised of two subscales i.e., one for anxiety (HADS-A) and second one for depression (HADS-D). Each subscale has seven different questions with four different options having 0-3 scores. At the end of interview from patients total score was calculated and HADS score ≥ 8 was used for diagnosis of anxiety and depression separately. Each orthopedic trauma patient was interviewed twice, first before surgery and then second before discharge from hospital. All collected data was statistically analyzed by using SPSS version 22.

RESULTS

In current study, 55 patients of orthopedic trauma were selected for evaluation of anxiety and depression before and after surgery, out of which 63.6% were male with mean age of 36.63 ± 17.14 (15-80) years whereas female were 36.4% with mean age of 59.45 ± 11.13 (31-75) years. Patients of all age groups were suffering from orthopedic trauma. Most of them were married 65.5%, working 43.6%, illicit drug use 2.6%, tobacco 27.3%, alcohol 1.8%, psychiatric history 1.8%, and health insurance in only 9.1% (Table 1).

Majority of the orthopedic patients suffer from orthopedic trauma due to ground fall 43.6%, followed by motorcycle crash 30.9%, and motor vehicle crash 14.5%. Most of them were suffering from single fracture, followed by double and triple fracture, and operated in same manner (Table 2).

Anxiety and depression score before surgery was 3.56 ± 3.62 , and 5.16 ± 4.81 that increased to 4.31 ± 3.83 , and 5.75 ± 4.62 respectively. Anxiety and depression were present in 12.7%, and 18.2% orthopedic patients before surgery that increased to 16.4%, and 23.6% after surgery respectively. Before surgery, patients were in orthopedic ward, where from out of 55 patients 7 suffer from anxiety, whereas after

surgery 9 patient suffer from anxiety. Out of 9 patients 5 (55.6%) were same that suffering from anxiety before surgery and 4 (44.4%) were new patients. In case of depression out of 55 patients 10 were depressed before surgery that increased to 13 after surgery. Out of 13 depressed patients 8 (61.5%) were same that suffering from depression before surgery and 5 (38.5%) were new patients (Table 3 and 4) .

Table 1. Demographic Data of Orthopedic Patients.

Variable	Frequency	Percentage
Gender		
Male	35	63.6
Female	20	36.4
Age		
15-30	16	29.1
31-45	13	23.6
46-60	11	20.0
> 60	15	27.3
Marital status		
Single	17	30.9
Married	36	65.5
Divorced	2	3.6
Working	24	43.6
Illicit drug use	2	3.6
Tobacco use	15	27.3
Alcohol use	1	1.8
Psychiatric History	1	1.8
Health Insurance	5	9.1

Table 2. Clinical Features of Orthopedic Patients.

Variable	Frequency	Percentage
Injury Mechanism		
Fall from height	2	3.6
Ground level fall	24	43.6
Motorcycle crash	17	30.9
Motor vehicle crash	8	14.5
Pedestrian vs Auto	4	7.3
No: of Fractured Bones		
One	46	83.6
Two	8	14.5
Three	1	1.8
No: of Operated Bones		
Zero	3	5.5
One	49	89.1
Two	3	5.5
GS/Specialty Operation	3	5.5
ICU admission	2	3.6
Open Fracture (Gustillo Anderson Type)	1	1.8

Table 3. Anxiety and Depression Before and After Surgery.

Variable	Before Surgery		After Surgery		P-value
	Present	Absent	Present	Absent	
Anxiety	7 (12.7)	48 (87.3)	9 (16.4)	46 (83.6)	0.001
Depression	10 (18.2)	45 (81.8)	13 (23.6)	42 (76.4)	0.001

Table 4. Anxiety and Depression Before and After Surgery with Different Factors.

Variable	Before Surgery		After Surgery	
	Anxiety	Depression	Anxiety	Depression
Gender				
Male	5	6	5	7
Female	2	4	4	6
Age				
15-30	0	0	2	1
31-45	1	3	1	2
46-60	3	3	2	3
> 60	3	4	4	7
Marital Status				
Single	1	2	3	1
Married	6	8	6	11
Divorced	0	0	0	1
No of Fractured Bones				
One	7	8	6	12
Two	0	2	2	1
Three	0	0	1	0
Smoking				
Yes	3	2	4	2
No	4	8	5	11

DISCUSSION

Surgical procedures especially orthopedic surgeries are very complex, intense, and stressful, directly correlated with psychological problems such as anxiety, and depression. Generally, patients underwent surgery developed the anxiety and depression before surgery as well as after surgery. In case of orthopedic surgery hospitalization for prolong time is a major factor before surgery whereas failure or complications during surgery is a major factor of anxiety and depression after surgery [18, 19].

In this study, 55 patients suffering from orthopedic trauma were evaluated for anxiety, and depression evaluation before and after surgery. Out of which 63.6% were male with mean age of 36.63 ± 17.14 (15-80) years whereas females were 36.4% with mean age of 59.45 ± 11.13 (31-75) years, showing

that female patients were suffering from Orthopedic trauma in greater age as compared to male patients. Study also shows that more females developed anxiety and depression after surgery as compared to male. A study by Gangadharan P, *et al.* reported that majority of the females were suffering from orthopedic trauma, and depression [14]. Another study by Robleda G, *et al.* also reported that 62.0% females were suffering from orthopedic trauma and with high mean age and depression as compared to males [20]. Study by Srahbzu M, *et al.* shows the similar to our study in which 60.0% male were suffering from orthopedic trauma, and females were more suffering from anxiety and depression [21]. Our study shows similar results in terms of increased age of females and depression in females but difference in suffering of orthopedic trauma in females. Pakistan is among the top ranked countries in which road accidents are

the main reason behind the orthopedic trauma, and in Pakistani culture males are predominantly involved in bike riding and car driving as compared to females. Therefore, more younger males are suffering from orthopedic trauma than females.

In this study, majority of the orthopedic patients were suffering from orthopedic trauma due to road accidents 44.5%, whereas 43.6% due to ground fall. A study by Srahbzu M, *et al.* shows similar causes of orthopedic trauma, 42.8% road accidents, and 27.0% ground fall [21]. It was interesting to know that more younger males are involved in accidents as compared to older age. It may be because younger peoples are more excited, aggressive and enjoy their life by driving fast without taking appropriate safety measures and following the road safety laws, whereas older age peoples especially in female's bones and joints becomes weak, stiff, fragile, and painful due to arthritis or osteoarthritis or osteoporosis.

In this study, anxiety and depression level (3.56, and 5.16) was low before surgery in orthopedic patients that increased significantly after surgery (4.31, and 5.75). Similarly, anxiety, and depression in orthopedic patients before surgery was 12.7%, and 18.2% that increased to 16.4%, and 23.6% after surgery respectively. Kaur T, *et al.* reported the high prevalence of anxiety 43.8%, and depression 19.0% before surgery [22]. Nickinson RS, *et al.* reported the 34.0% patients with anxiety, and 50.0% with depression after surgery [19]. Another study by Akinsulore A, *et al.* reported the 51.0% anxiety before surgery and 15.7% after surgery. Most of the studies were focusing on anxiety and depression prior to discharge after surgery [23]. The difference in studies in anxiety and depression was reported due to several reasons such as economic status, health care facilities, level of satisfaction, and quality of life.

Pakistan is among the developing countries which trying to provide the best health care facilities to their peoples but still a lot of work has to be done. In Pakistan majority of peoples are living below the line of poverty, and don't have enough resources to bear the expenditures of diagnostic tests, mediations, and hospital stay. In Pakistan treatment of orthopedic surgery is very expensive, and also requires a lot of medications and hospital stay before and after surgery that increases the chances of anxiety and depression.

This study provides the current prevalence of anxiety and depression before and after surgery in orthopedic trauma patients, but it has several limitations, such as single centre study, small sample size, and illiteracy that limit the patients to participate in the study. Therefore, future studies must be conducted on institutional and large-scale level with large sample size.

CONCLUSION

It was concluded that level of anxiety and depression was low in orthopedic trauma patients before surgery that increased after surgery, whereas gender, age, and poverty are directly associated with anxiety and depression.

REFERENCES

1. Dehghan N, McKee MD. What's new in orthopaedictrauma. *J Bone Joint Surg Am.* 2018 Jul 5;100(13):1158-64.
2. Wilson JM, Staley CA, Boden AL, Boissonneault AR, Schwartz AM, Schenker ML. The effect of season and weather on orthopaedic trauma: consult volume is significantly correlated with daily weather. *AdvOrthop.* 2018 Sep 2;2018:6057357.
3. Hoy D, Geere JA, Davatchi F, Meggitt B, Barrero LH. A time for action: opportunities for preventing the growing burden and disability from musculoskeletal conditions in low-and middle-income countries. *Best Pract Res ClinRheumatol.* 2014 Jun 1;28(3):377-93.
4. World Health Organization. Global status report on road safety 2015. World Health Organization; 2015 Dec 17.
5. Mitra S, Sarkar AP, Saren AB, Haldar D, Saha I, Sarkar GN. Road traffic injuries: a study on severity and outcome among inpatients of a tertiary care level hospital of West Bengal, India. *J Emerg Trauma Shock.* 2018 Oct-Dec;11(4):247-52.
6. Gane EM, Brakenridge CL, Smits EJ, Johnston V. The impact of musculoskeletal injuries sustained in road traffic crashes on work-related outcomes: a protocol for a systematic review. *Syst Rev.* 2018;7(1):202.
7. Zdziarski-Horodyski L, Horodyski M, Sadasivan KK, Hagen J, Vasilopoulos T, Patrick M, *et al.* An integrated-delivery-of-care approach to improve patient reported physical function and mental wellbeing after orthopedic trauma: study protocol

- for a randomized controlled trial. *Trials*. 2018;19(1):32.
8. Hung M, Bounsanga J, Tang P, Chen W, Cheng C. The factor structure of the hospital anxiety and depression scale in orthopedic trauma patients. *J Clin Med Res*. 2015 Jun;7(6):453-9.
 9. Haupt E, Vincent HK, Harris A, Vasilopoulos T, Guenther R, Shariffar S, *et al*. Preinjury depression and anxiety in patients with orthopedic trauma and their treatment. *Injury*. 2018 Jun;49(6):1079-84.
 10. Gross T, Morell S, Amsler F. Longer-term quality of life following major trauma: age only significantly affects outcome after the age of 80 years. *ClinInterv Aging*. 2018;13:773-85.
 11. Vincent HK, Horodyski M, Vincent KR, Brisbane ST, Sadasivan KK. Psychological distress after orthopedic trauma: prevalence in patients and implications for rehabilitation. *PM R*. 2015 Sep;7(9):978-89.
 12. Sharma A, Kudesia P, Shi Q, Gandhi R. Anxiety and depression in patients with osteoarthritis: impact and management challenges. *Open Access Rheumatol*. 2016 Oct 31;8:103-13.
 13. Wu H, Zhang F, Cheng W, Lin Y, Wang Q. Factors related to acute anxiety and depression in inpatients with accidental orthopedic injuries. *Shanghai Arch Psychiatry*. 2017 Apr 5;29(2):77-84.
 14. Gangadharan P, Assiri AM, Assiri AA. Evaluating the level of anxiety among preoperative patients before elective surgery at selected hospitals in kingdom of Saudi Arabia. *Int J Cur Res Rev*. 2014;6(22):37-41.
 15. Scarano KA, Philp FH, Westrick ER, Altman GT, Altman DT. Evaluating postoperative complications and outcomes of orthopedic fracture repair in nonagenarian patients. *GeriatrOrthopSurgRehabil*. 2018;9:2151459318758106.
 16. Evans CCD, De Wit Y, Seitz D, Mason S, Nathens A, Hall S. Mental health outcomes after major trauma in Ontario: a population-based analysis. *CMAJ*. 2018;190(45):E1319-27.
 17. Braimah RO, Ukpong DI, Ndukwe KC, Akinyoola AL. Comparative study of anxiety and depression following maxillofacial and orthopedic injuries: study from a Nigerian university teaching hospital. *ClinExp Dent Res*. 2017 Dec;3(6):215-9.
 18. Koorevaar RC, van'tRiet E, Gerritsen MJ, Madden K, Bulstra SK. The influence of preoperative and postoperative psychological symptoms on clinical outcome after shoulder surgery: a prospective longitudinal cohort study. *PLoS One*. 2016 Nov 15;11(11):e0166555.
 19. Nickinson RS, Board TN, Kay PR. Post-operative anxiety and depression levels in orthopaedic surgery: a study of 56 patients undergoing hip or knee arthroplasty. *J EvalClinPract*. 2009 Apr;15(2):307-10.
 20. Robleda G, Sillero-Sillero A, Puig T, Gich I, Baños JE. Influence of preoperative emotional state on postoperative pain following orthopedic and trauma surgery. *Rev Latino-Am Enfermagem*. 2014 Sep-Oct;22(5):785-91.
 21. Srahbzu M, Yigizaw N, Fanta T, Assefa D, Tirfeneh E. Prevalence of depression and anxiety and associated factors among patients visiting orthopedic outpatient clinic at TikurAnbessa specialized hospital, Addis Ababa, Ethiopia, 2017. *J Psychiatry*. 2018;21:450.
 22. Kaur T, Koul M, Shilpa, Palekar TJ. Incidence of anxiety and depression in preoperative patients. *World J Pharm Res*. 2018;7(10):894-903.
 23. Akinsulore AD, Owojuyigbe AM, Faponle AF, Fatoye FO. Assessment of preoperative and postoperative anxiety among elective major surgery patients in a tertiary hospital in Nigeria. *Middle East J Anaesthesiol*. 2015 Jun;23(2):235-40.



This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.