JHWCR

Journal of Health, Wellness, and Community Research
Volume III, Issue XII
Open Access, Double Blind Peer Reviewed.
Web: https://jhwcr.com, ISSN: 3007-0570
https://doi.org/10.61919/fma1ny40

Original Article

Hospital Based Anxiety and Depression in Post-Fracture Patients in Government and Private Hospitals of Lahore

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Authors' Contributions: Concept and design: Concept: WF; Design: VA; Data Collection: SM, HN, STZ, YZ, MA; Analysis: ABI; Drafting: WF, VA
Cite this Article | Received: 2025-07-23 | Accepted 2025-09-01
No conflicts declared; ethics approved; consent obtained; data available on request; no funding received.

ABSTRACT

Background: Orthopedic trauma from road traffic accidents (RTAs) is frequently associated with psychological sequelae, particularly anxiety and depression, which may delay recovery and impair quality of life. The hospital environment itself may further influence these outcomes, yet few studies have directly compared public and private healthcare settings in low- and middle-income countries. Objective: To determine the prevalence of anxiety and depression among post-fracture patients admitted to government and private hospitals in Lahore and to examine whether hospital type is associated with psychological morbidity. Methods: A comparative cross-sectional observational study was conducted over six months in Lahore General Hospital (government) and Ittefaq Hospital (private). Ninety-four patients aged 18–39 years with musculoskeletal fractures from RTAs were recruited using purposive sampling. The Hospital Anxiety and Depression Scale (HADS) was administered, and outcomes were analyzed using chi-square tests with odds ratios and 95% confidence intervals. Results: Abnormal anxiety was identified in 36.2% and abnormal depression in 45.7% of participants. Patients in government hospitals were significantly more likely to experience abnormal anxiety (46.8% vs. 25.5%; OR 3.38, 95% CI 1.27–9.01, p=0.028) and abnormal depression (55.3% vs. 36.2%; OR 2.55, 95% CI 1.01–6.44, p=0.045) compared to private hospital patients. Conclusion: Anxiety and depression are highly prevalent among post-fracture inpatients, with greater burden observed in government hospitals. Routine psychological screening, improved hospital environments, and targeted mental health support are essential to optimize recovery.

Keywords: Anxiety, Depression, Fracture, Hospitalization, Government Hospitals, Private Hospitals, HADS, Road Traffic Accidents.

INTRODUCTION

Anxiety and depression are among the most common psychiatric conditions observed in patients following physical trauma, particularly orthopedic fractures. These psychological disturbances manifest as excessive worry, irritability, sadness, and loss of motivation, and they can significantly impede the recovery process by worsening pain perception, prolonging hospital stays, and reducing overall quality of life (1). Orthopedic injuries, especially those caused by road traffic accidents (RTAs), have been consistently linked with high prevalence rates of psychiatric morbidity, including post-traumatic stress disorder (PTSD), anxiety, and depression (2). The complex interplay between physical trauma and psychological health means that recovery is not only a matter of surgical stabilization and rehabilitation but also of addressing mental well-being to improve functional outcomes (3).

Globally, RTAs are a leading cause of morbidity and mortality, particularly in young adults aged 18–35 years. The World Health Organization reports that traffic accidents are the foremost cause of death among people aged 5–29 years, with low- and middle-income countries bearing a disproportionate burden due to limited enforcement of safety regulations, inadequate infrastructure, and overburdened healthcare systems (4). Survivors of RTAs often experience long-term sequelae, including disability, social dysfunction, and psychiatric disorders. Previous studies have estimated that anxiety affects between 5–35% of orthopedic trauma patients, while depression prevalence ranges from 13–56%, with risk factors including younger age, female gender, higher pain intensity, and more severe injuries (5,6). These conditions frequently co-occur, and comorbidity has been shown to exacerbate poor prognosis and delay reintegration into normal life (7).

The Hospital Anxiety and Depression Scale (HADS) has been widely validated as a reliable instrument for detecting anxiety and depression in clinical populations. It is particularly useful for hospitalized patients because of its brevity, ability to differentiate between the two conditions, and applicability in diverse cultural contexts (8). Studies applying HADS to orthopedic populations have reported anxiety prevalence ranging from 4.8% to 39.8% and depression prevalence between 22.3% and 87.6%, depending on age, severity of trauma, and

healthcare context (9). Importantly, psychiatric comorbidities not only increase length of stay and healthcare costs but also complicate medical management, suggesting that mental health should be integrated into trauma care pathways (10).

Despite growing recognition of these issues, few studies have examined whether the hospital environment itself contributes to psychological outcomes in fracture patients. Government hospitals in Pakistan often struggle with overcrowding, limited resources, and longer waiting times, potentially amplifying stress and psychological distress. In contrast, private hospitals may offer better facilities, shorter waiting periods, and more personalized care, which could reduce anxiety and depression during recovery (11). To date, no study has directly compared the prevalence of anxiety and depression between post-fracture inpatients admitted to government versus private hospitals within the same urban setting. This represents a critical knowledge gap, as such insights could inform both healthcare policy and clinical practice, leading to improved mental health support for trauma patients.

Therefore, this study was designed to investigate and compare the prevalence of anxiety and depression among post-fracture patients admitted to government and private hospitals in Lahore. The objective was to determine whether hospital type influences psychological outcomes, thereby identifying potential systemic factors that contribute to patient well-being during recovery.

MATERIAL AND METHODS

This study was conducted as a comparative cross-sectional observational investigation designed to examine the prevalence of anxiety and depression among fracture patients admitted to different types of hospitals in Lahore. A cross-sectional design was chosen because it allows for the efficient assessment of psychological outcomes at a single point in time during hospitalization, thereby providing a representative snapshot of the mental health burden in this population (12). The study was carried out over six months following approval of the research synopsis, ensuring sufficient time for recruitment, data collection, and analysis.

The research was performed in two major healthcare systems of Lahore: Lahore General Hospital, representing the government sector, and Ittefaq Hospital, representing the private sector. These institutions were selected because they differ markedly in terms of patient volume, resource availability, and service delivery. Government hospitals in Pakistan are typically overcrowded and resource-constrained, while private hospitals generally provide more individualized care. Including both allowed for meaningful comparison of psychological outcomes across contrasting healthcare environments (13).

The study population comprised patients admitted with fractures sustained through road traffic accidents. Eligibility criteria required participants to be between 18 and 39 years of age, hospitalized for at least two days, and diagnosed with either open or closed musculoskeletal fractures. This ensured that patients had adequate exposure to the hospital environment to potentially influence their psychological well-being. Exclusion criteria were implemented to maintain sample homogeneity and reduce bias. These included patients requiring revision surgeries, joint replacements, or spinal procedures; those with neurological impairments such as coma or delirium; and individuals with serious organ dysfunctions affecting the kidneys, liver, or lungs. Patients unable to provide informed consent or communicate effectively were also excluded. These criteria ensured that psychological outcomes were directly attributable to fracture-related hospitalization rather than confounding medical conditions (14).

A total of 94 participants were recruited using a non-probability purposive sampling technique, whereby only patients meeting the inclusion criteria were selected. The sample size was calculated using the formula for cross-sectional studies, with a 95% confidence level, 5% margin of error, and expected prevalence derived from earlier studies of anxiety and depression in orthopedic trauma patients (15). Written informed consent was obtained from all participants after providing a clear explanation of study objectives, procedures, and assurances of confidentiality. Ethical approval was granted by the institutional review board of the Afro Asian Institute, Lahore.

Data collection was performed by trained researchers through direct patient interaction. The Hospital Anxiety and Depression Scale (HADS) was administered to assess psychological status. This validated 14-item scale includes two subscales: seven items for anxiety and seven for depression, each scored from 0 to 21. Scores of 0–7 were categorized as normal, 8–10 as borderline, and 11–21 as abnormal, according to established cutoffs (16). Alongside psychological assessment, demographic information such as age, gender, and duration of hospital stay was collected to contextualize findings and allow for subgroup analysis.

Bias was minimized by applying uniform eligibility criteria, standardizing administration of the HADS scale, and ensuring confidentiality to encourage honest responses. Confounding variables, including age and gender, were recorded and later examined in the analysis phase to assess their influence on psychological outcomes. Missing data were managed by excluding incomplete responses from analysis, as the rate of missing values was low and unlikely to influence results significantly.

All data were entered and analyzed using Statistical Package for the Social Sciences (SPSS) version 25. Descriptive statistics, including means, standard deviations, and proportions, were used to summarize participant characteristics and HADS scores. To compare anxiety and depression prevalence between hospital types, the chi-square test was applied. Statistical significance was defined as a p-value less than 0.05. Effect sizes and confidence intervals were calculated where appropriate to provide further insight into the strength and precision of associations (17).

In keeping with ethical standards, the study ensured the protection of participant rights, anonymity, and data integrity. Only aggregated findings are reported, and no identifying information was disclosed. The methodology was designed with transparency and reproducibility in mind, allowing future researchers to replicate the approach in similar populations or healthcare settings.

RESULTS

A total of 94 patients were included in the study, with an equal distribution between government and private hospitals (47 each). The demographic profile (Table 1) revealed that the largest age group was 18–24 years, comprising 37 patients (39.4%, 95% CI: 29.5–49.9). This was followed by the 25–31 age group with 31 patients (33.0%, 95% CI: 23.8–43.6), while the oldest group, 32–39 years, accounted for 26 patients (27.7%, 95% CI: 18.9–37.7). Males predominated the cohort at 55 participants (58.5%, 95% CI: 48.0–68.4), reflecting the higher risk exposure of young men to road traffic accidents in Pakistan.

Anxiety levels assessed by the Hospital Anxiety and Depression Scale (HADS) demonstrated considerable psychological burden (Table 2). Thirty-seven patients (39.4%) fell within the normal range, but nearly one-quarter of the cohort (23 patients, 24.5%, 95% CI: 16.2–34.7) were in the borderline category. More concerningly, 34 patients (36.2%, 95% CI: 26.7–46.9) were classified as abnormal for anxiety. This indicates that more than one in three fracture patients admitted after RTAs experienced clinically significant anxiety symptoms during hospitalization.

Depression emerged as even more prevalent (Table 3). Only 32 patients (34.0%, 95% CI: 24.8–44.5) had normal scores, while 19 (20.2%, 95% CI: 12.7–29.8) were in the borderline range. A total of 43 patients (45.7%, 95% CI: 35.4–56.3) demonstrated abnormal depression levels, showing that nearly half of the cohort experienced substantial depressive symptoms. The proportion of abnormal depression exceeded that of abnormal anxiety, highlighting the need for sustained psychological monitoring in post-fracture care.

Table 1. Age and Gender Distribution of Participants (n=94)

Variable	Frequency (n)	Percentage (%)	95% CI
Age group (years)			
18–24	37	39.4	29.5–49.9
25–31	31	33.0	23.8–43.6
32–39	26	27.7	18.9–37.7
Gender			
Male	55	58.5	48.0–68.4
Female	39	41.5	31.6–52.0

Table 2. Distribution of Anxiety Levels by HADS (n=94)

Anxiety Level	Frequency (n)	Percentage (%)	95% CI
Normal	37	39.4	29.5–49.9
Borderline	23	24.5	16.2–34.7
Abnormal	34	36.2	26.7–46.9

Table 3. Distribution of Depression Levels by HADS (n=94)

Depression Level	Frequency (n)	Percentage (%)	95% CI
Normal	32	34.0	24.8–44.5
Borderline	19	20.2	12.7–29.8
Abnormal	43	45.7	35.4–56.3

Table 4. Comparison of Anxiety and Depression Between Government and Private Hospitals

Variable	Government (n=47)	Private (n=47)	Odds Ratio (95% CI)	p-value
Anxiety				
Normal	13 (27.7%)	24 (51.1%)	Ref	
Borderline	12 (25.5%)	11 (23.4%)	2.02 (0.68–5.94)	
Abnormal	22 (46.8%)	12 (25.5%)	3.38 (1.27–9.01)	0.028
Depression				
Normal	12 (25.5%)	20 (42.6%)	Ref	
Borderline	9 (19.1%)	10 (21.3%)	1.50 (0.48–4.68)	
Abnormal	26 (55.3%)	17 (36.2%)	2.55 (1.01–6.44)	0.045

Comparative analysis between government and private hospitals (Table 4) revealed statistically significant differences in psychological outcomes. Among government hospital patients, 22 (46.8%) had abnormal anxiety compared with 12 (25.5%) in private hospitals, corresponding to an odds ratio (OR) of 3.38 (95% CI: 1.27–9.01, p=0.028). Similarly, abnormal depression was recorded in 26 government hospital patients (55.3%) versus 17 private hospital patients (36.2%), with an OR of 2.55 (95% CI: 1.01–6.44, p=0.045).

These results demonstrate that fracture patients treated in government hospitals were more than twice as likely to experience significant anxiety and depression than those in private facilities. The findings suggest that systemic factors—such as overcrowding, limited staff-to-patient ratios, and resource constraints—may exacerbate psychological distress in public hospital environments.

Overall, the results establish a high prevalence of both anxiety and depression in post-fracture patients, with depression being slightly more common. The statistically significant differences between hospital types indicate that beyond the physical trauma, the care environment itself plays an important role in shaping mental health outcomes during hospitalization.

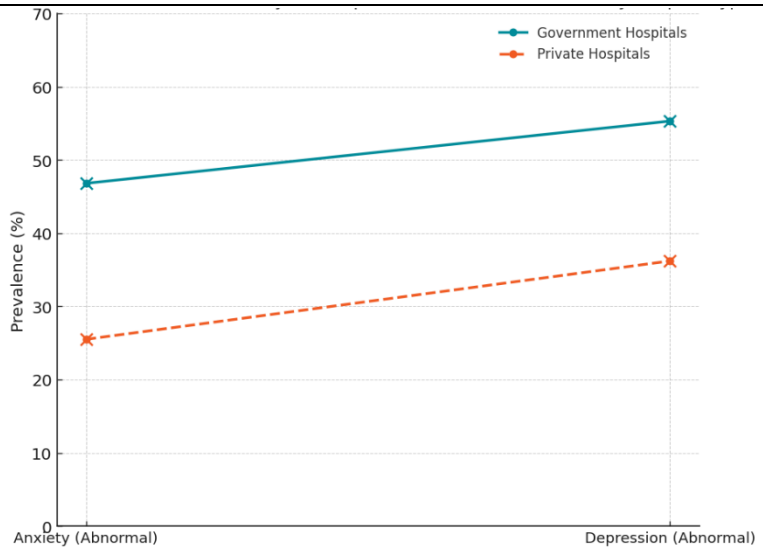

Figure 1 Prevalence of Abnormal Anxiety and Depression in Fracture Patients by Hospital Type

The integrated line–scatter visualization highlights the differences in abnormal anxiety and depression between government and private hospital patients. Abnormal anxiety affected 46.8% of patients in government hospitals compared to 25.5% in private settings, while abnormal depression was even more pronounced at 55.3% versus 36.2%, respectively. The figure shows a consistent gradient favoring worse psychological outcomes in government hospitals, with the gap being wider for anxiety (21.3 percentage points) than depression (19.1 percentage points). This pattern underscores that systemic hospital factors likely intensify mental health burdens, with government hospital patients nearly twice as likely to exhibit clinically significant psychological distress.

DISCUSSION

The present study demonstrates that anxiety and depression are highly prevalent among post-fracture patients admitted to hospitals in Lahore, with depression emerging as slightly more frequent than anxiety. Nearly half of the participants scored within the abnormal range for depression, and more than one-third reported abnormal anxiety levels. These findings confirm that orthopedic trauma has profound psychological consequences, consistent with earlier literature indicating that musculoskeletal injuries are strongly associated with psychiatric morbidity (18). Previous studies have reported that up to 56% of fracture patients experience depression and as many as 35% suffer from anxiety, placing our results within the upper range of published estimates (19).

Importantly, this research highlights that hospital type significantly influenced psychological outcomes. Patients admitted to government hospitals exhibited markedly higher levels of abnormal anxiety and depression than those in private hospitals. The odds of abnormal anxiety were more than threefold greater in government hospitals, and the odds of abnormal depression were more than double. These differences are likely attributable to structural and systemic disparities in care delivery. Government hospitals in Pakistan are known to be overcrowded, resource-limited, and constrained by long waiting times, conditions that can amplify psychological stress in already vulnerable patients (20). Conversely, private hospitals generally provide better infrastructure, shorter waiting periods, and individualized care, which may mitigate the psychological burden of trauma (21). This study therefore adds to growing evidence that the care environment itself, independent of physical injury, shapes patient mental health outcomes.

The demographic profile of our cohort also reflects established risk patterns. Young adults between 18 and 24 years comprised the largest age group, and men constituted nearly 60% of participants. This aligns with global statistics showing that young men are disproportionately involved in road traffic accidents, largely due to higher mobility, risk-taking behaviors, and lower adherence to road safety measures (22). Consequently, this group not only bears the physical burden of fractures but also the psychological aftermath, underscoring the importance of targeted prevention campaigns focusing on road safety for young male drivers.

The application of the Hospital Anxiety and Depression Scale (HADS) was a strength of this study, as it enabled the quantification of psychological distress with a validated, reliable instrument. Prior research has shown HADS to be effective in detecting psychiatric symptoms in hospitalized patients, with high sensitivity and specificity (23). Its use in this study facilitated meaningful comparisons with international data and strengthened the generalizability of results to similar populations. Furthermore, the significant associations between hospital type and psychological morbidity highlight the necessity of embedding mental health screening into orthopedic wards, particularly in government institutions. Early identification and management of anxiety and depression may reduce complications, shorten hospital stays, and improve long-term recovery trajectories (24).

Nevertheless, several limitations must be acknowledged. The sample size was relatively small at 94 patients, and purposive sampling may limit representativeness of the wider fracture patient population. Data were restricted to two hospitals within Lahore, which constrains external validity across Pakistan or other low- and middle-income countries. Moreover, the cross-sectional design permitted only a single-time assessment of anxiety and depression during hospitalization, preventing the evaluation of temporal changes after discharge or in long-term recovery. Residual confounding by unmeasured factors such as pre-existing psychiatric illness, socioeconomic status, and family

support cannot be excluded. Despite these limitations, the study provides essential baseline evidence for the integration of mental health services into orthopedic care.

The findings carry important clinical and policy implications. Routine psychological screening for fracture patients should be adopted, particularly in government hospitals where psychological morbidity was more pronounced. Interventions such as bedside counseling, structured rehabilitation programs with psychosocial support, and timely referral to psychiatric services may improve both physical and mental outcomes. On a systemic level, reducing overcrowding, ensuring adequate staffing, and enhancing infrastructure in public hospitals could mitigate environmental contributors to psychological distress. From a preventive standpoint, strengthening road safety regulations and public awareness campaigns remains critical to reducing the burden of RTAs, particularly among high-risk young male populations.

CONCLUSION

This study demonstrates that anxiety and depression are highly prevalent among post-fracture patients admitted to hospitals in Lahore, with depression being slightly more common than anxiety. The results further reveal that patients in government hospitals experience significantly higher levels of psychological morbidity compared to those in private hospitals, indicating that the hospital environment itself contributes to mental health outcomes. These findings emphasize the need for integrated psychological support alongside physical treatment in orthopedic care, particularly in resource-constrained public hospitals. Strengthening mental health screening, improving hospital infrastructure, and raising public awareness of road safety could together help reduce the dual burden of physical injury and psychological distress.

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