

Gender Differences in the Development of Post-Traumatic Stress Disorder Symptoms among Hospitalized Patient with Physical Injuries

Sabir Zaman¹, Kehkashan Arouj¹, Shahid Irfan², Sabahat Zareen^{3*}

¹Department of Psychology, International Islamic University, ²UN International Organization for Migration, Islamabad, ³Mirpur University of Science & Technology, Mirpur.

Abstract

Background: Physical injuries can have prominent consequences, affecting not only physical health but also psychological well-being, potentially leading to Post-Traumatic Stress Disorder (PTSD). Moreover, gender plays an important role in the development and manifestation of PTSD symptoms in hospitalized patients.

Objective: To observe the development of PTSD in hospitalized patients for physical injuries lasting more than a month in Pakistan Institute of Medical Sciences (PIMS) Islamabad Pakistan.

Methods: This cross-sectional study was conducted at Pakistan Institute of Medical Sciences, Islamabad, during September 2022 to March 2023, and included 261 participants. PTSD symptoms were assessed using the Urdu-translated version of the Clinician-Administered PTSD Scale for DSM-5 (CAPS-5), which aligns with the diagnostic criteria outlined in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5).

Results: The current study revealed that 100% of both male and female hospitalized patients exhibited substantial PTSD symptoms. There were 64.3% male patients categorized as severe while 53.8% females had severe PTSD symptoms and revealed a statistically significant association ($p < 0.05$) of severity of PTSD symptoms and the extent of physical injuries in male patients. The prevalence of severe PTSD symptoms were highest among those with orthopedic trauma (76.0%), while 59.1% female patients of same category showed severe PTSD symptoms.

Conclusion: The study concluded that both male and female hospitalized patients with physical injuries show significant PTSD symptoms, with male showing a higher severity.

Key words: Gender differences, PTSD, hospitalized patients, physical Injuries.

Introduction

Individuals hospitalized due to physical injuries and trauma are at a greater risk of developing psychological and mental health disorders such as PTSD, depression and anxiety. Post-traumatic Stress Disorder (PTSD) is a prominent mental health condition that substantially contributes to the

global disease burden, affecting approximately 4% of the worldwide population.¹ Furthermore, Kessler,² suggests that in approximately 50% of cases PTSD symptoms persist for at least a year, considerably impairing the capabilities and daily functioning of affected individuals. National and regional data play a vital role in shaping policy decisions, planning and developing strategies to address PTSD, and other mental health conditions. In the United States, around 2.5 million individuals are discharged from hospitals each year with physical injuries,³ these individuals often face additional physical health challenges, which can increase the vulnerability to developing mental health conditions such as PTSD and major depressive disorder.⁴

The World Health Organization (WHO) conducted the World Mental Health (WMH) Survey across 26 countries to collect data on the prevalence of post-traumatic stress disorder (PTSD). The primary aim of the survey was to provide a comprehensive insights into the burden of

Corresponding Author:

Sabir Zaman

Department of Psychology
International Islamic University, Islamabad.

Email: sabir.zaman@iiu.edu.pk

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Authors Contribution

SZ conceptualized the project and did the data collection. SZ & KA did the literature search. SI performed the statistical analysis. Drafting, revision & writing of manuscript were done by SZ, SI & SZ.

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mental health disorders including PTSD and to assess the effectiveness of treatment services in different culture and healthcare context.² They utilized standardized structured diagnostic tools to assess representative populations and determine the global prevalence of PTSD symptoms.¹ The findings from the WMH Survey revealed that 70.4% of the participants had experienced traumatic events at some point in their lives.

The research revealed that interpersonal violence, including rape (13.1%), other forms of sexual assault (15.1%), and sudden loss of a loved one (11.1%), carries the highest risk of developing PTSD symptoms.¹ Sexual assault and domestic violence are prevalent forms of interpersonal violence, with statistics indicating that 1 in 5 women and 1 in 20 men experience rape or sexual assault. While trauma is common experience for many the development of PTSD is relatively rare, and this discrepancy can be attributed to various resilience-enhancing factors. These factors include individual differences, social support from friends and family, and the ability to experience positive emotions during adversity, all of which contribute to a reduced likelihood of developing PTSD. Additionally, the development of PTSD symptoms is also influenced by the specific characteristics and type of traumatic event experienced, as suggested by research.^{5,6}

Several studies have consistently demonstrated that individuals hospitalized for physical injuries are at a higher risk of developing psychological disorders. However, a study revealed that the prevalence of psychological disorders among trauma survivors, using a sample from various trauma centers, which may have limitations in terms of generalizability to the larger population of interest.⁷ Although the study's findings provide valuable information, their direct applicability to other medical facilities with different risk factors for PTSD, such as varying injury types, characteristics, and severity, is limited and requires careful consideration, making it a significant challenge to generalize the results across different healthcare settings. According to the National Study on the Costs and Outcomes of Trauma (NSCOT), an important study found that among survivors of physical injuries, 20.7% developed post-traumatic stress disorder (PTSD) symptoms within a year after the traumatic event.⁸ A local study conducted in 2005 examined the prevalence of PTSD among individuals who suffered various types of physical injuries during earthquakes. The study comprised 210 participants, of which 141 had physical injuries, including 51% with soft tissue injuries, 36% with bone injuries, and 13% with spinal injuries. Particularly, 62% of all participants (87 individuals)

developed PTSD, highlighting a significant psychological impact following physical trauma.⁹ Another study found that while women generally showed more severe PTSD symptoms than men, gender differences were minimal among younger (18-24 years) and older (55+ years) adults. Interestingly, age did not influence PTSD symptoms in women at 6 weeks and 6 months, however, relationship emerged at 1 year post-accident, with middle-aged women reporting greater symptom severity than their younger and older counterparts. This relationship was influenced by prior trauma exposure and social support. The meta-analysis found that women are generally more likely to develop PTSD than men, but men exposed to combat or physical trauma may show greater PTSD severity due to higher exposure to traumatic events.¹⁰

The primary objective of this study was to assess the prevalence and severity of Post-Traumatic Stress Disorder (PTSD) symptoms among hospitalized patients with physical injuries. Specifically, the study aimed to explore gender-based differences in the development and manifestation of PTSD symptoms. Additionally, it sought to identify the types of physical injuries most commonly associated with severe PTSD symptoms in male and female patients.

Methods

This cross-sectional correlational study was conducted at Pakistan Institute of Medical Sciences, Islamabad during March 2019 to September 2020. A sample size of 261 participants was statistically calculated, and convenient sampling technique was used to collect data. Individuals aged 18 and above having mild to moderate head injuries or bony fractures, with various categories of injuries, who had been hospitalized for a minimum duration of one week and experienced trauma for more than a month were included in the study. The individuals who had experienced trauma either within the past month or more than six months prior to data collection were excluded from this study. The study collected comprehensive data from participants, including Socio-demographic information: age, gender, income, marital status, and employment history. Injury-related characteristics: obtained through a review of medical records from the participants' hospitalizations, providing details on the nature and severity of their injury by examining these factors, the study aimed to identify potential correlations and relationships between them and the development of PTSD symptoms in this population.

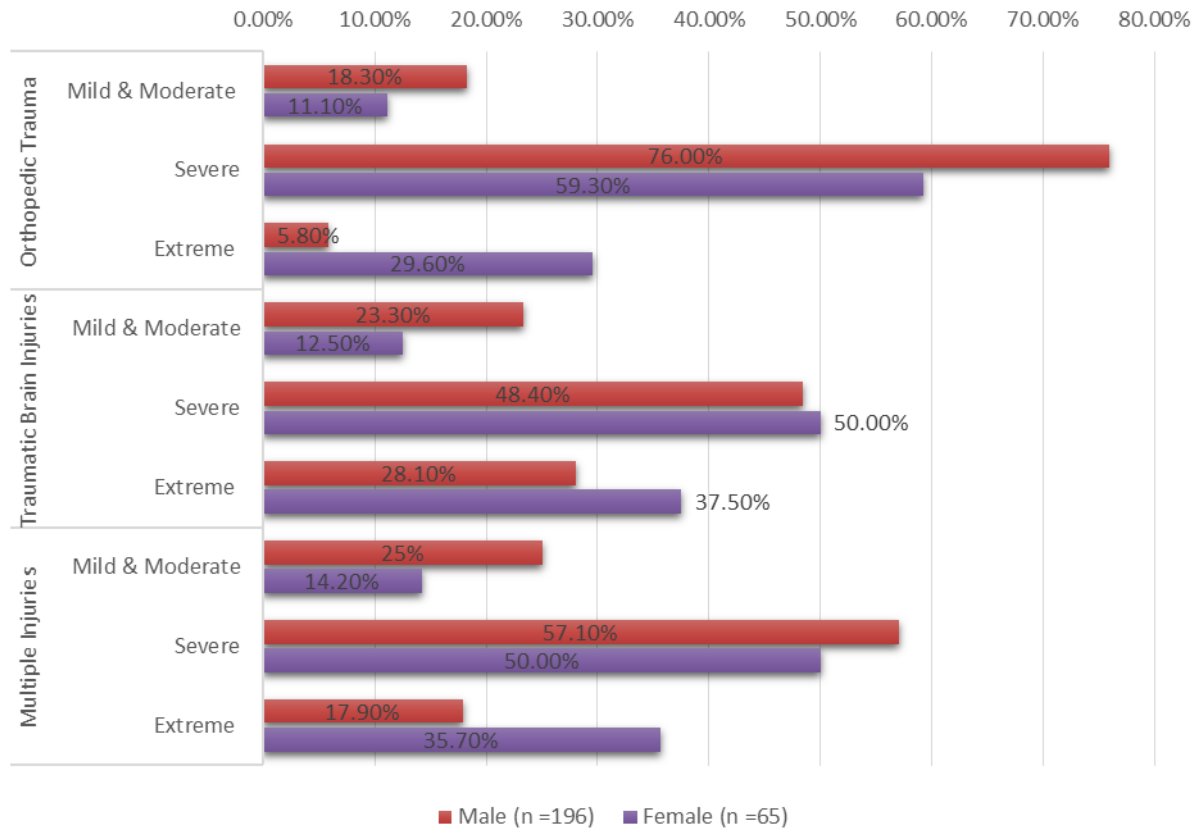


Figure: PTSD symptoms ratio among gender (N=261) trauma survivors.

The study employed the Clinician-Administered PTSD Scale for DSM-5 (CAPS-5 past month) to evaluate the severity of PTSD symptoms, utilizing the Urdu-translated version of the structured interview. This scale comprises 30 items, assessing the frequency and intensity of PTSD symptoms on a five-point Likert scale (0-4). The Urdu version has demonstrated high test-retest reliability (0.96), ensuring consistency in measurements.¹¹⁻¹³ The informed consent was obtained from all participants, either through signed or completed consent forms, ensuring their voluntary participation and understanding of the study's purposes.

Results

Among the total 261 participants, 196 (75.1%) were male, while 65 (24.9%) were female. Most of the participants were married, accounting for 72.4%. The age distribution of most participants fell within the 18-40 years range. Additionally, participants' educational levels were categorized into three groups: High School Certificate (HSC), Higher Secondary School Certificate (HHSC), and

greater than HHSC, representing 37.3%, 33%, and 29.9% of the participants, respectively.

Table 1: Demographic characteristics of the study subjects. (N=261)

Characteristics		n	%
Gender	Male	196	75.1
	Female	65	24.9
Marital status	Married	189	72.4
	Single/unmarried	72	27.6
Age	18-40 years	143	54.8
	41-55 years	76	29.1
	>55 years	42	16.1
Education	High School degree	97	37.2
	HSSC	86	33.0
	>HSSC	78	29.9
Employment status	Employed	75	28.7
	Unemployed	102	39.1
	Students	84	32.2
Injuries characteristics	Traumatic Brain Injury	88	33.7
	Orthopedic Injury	131	50.2
Injury severity	Multiple Injuries	42	16.1
	Mild	117	44.8
	Moderate	72	27.6
	Severe	43	16.5
	Extreme	29	11.1

Note HSSC=Higher Secondary School Certificate

Table 2: PTSD Symptomology and injury types among trauma survivors. (N=261)

Variable	Injury Type	Mild & Moderate n (%)	Severe n (%)	Extreme n (%)	χ^2	p
Male n=196	Orthopedic trauma n=104 (53.1%)	19 (18.3)	79(76.0)	6 (5.8)	19.8	<.01
	Traumatic Brain Injury n=64 (32.7%)	15 (23.3)	31 (48.4)	18(28.1)		
	Multiple Injuries n=28 (14.3%)	7 (25.0)	16 (57.1)	5(17.9)		
Female n=65	Orthopedic trauma n=27 (41.5%)	3 (11.1)	16 (59.3)	8(29.6)	2.37	.88(ns)
	Traumatic Brain Injury n=24 (36.9%)	3 (12.5)	12 (50.0)	9 (37.5)		
	Multiple Injuries n=14 (21.5%)	2 (14.2)	7 (50.0)	5 (35.7)		

Note. *** $p < .001$, ** $p < .01$, * $p < .05$, ns=not significant, χ^2 = Chi-square test

The study investigated three types of injuries: orthopedic injuries (50.2%), traumatic brain injuries (33.7%), and multiple injuries (16.1%). Injury severity was categorized into four groups: mild and moderate, severe and extreme with 44.8% and 27.6%, 16.5% and 11.1% respectively as presented in Table-1.

The Figure illustrates the distribution of PTSD symptom severity categorized as mild & moderate, severe, and extreme among 196 male and 65 female trauma survivors. Overall, male participants showed a higher proportion of severe PTSD symptoms across all trauma types, with the highest being in cases of orthopedic trauma (76.0%). In contrast, female participants consistently showed a higher prevalence of extreme PTSD symptoms, particularly in cases of multiple injuries (35.7%) and traumatic brain injuries (37.5%). Mild and moderate PTSD symptoms were relatively less common in both genders.

As shown in Table-2, the study found that males were more likely to experience orthopedic trauma than traumatic brain injuries or multiple injuries. Male patients with orthopedic trauma showed a significantly higher ($p < 0.05$) incidence of severe PTSD symptoms (76.0%) compared to female patients with orthopedic trauma (59.3%). Furthermore, males with multiple injuries showed a higher severity of PTSD symptoms (57.1%) compared to females with multiple injuries (50.0%). These findings suggest that males are more likely to experience severe PTSD symptoms, particularly in the context of orthopedic trauma and multiple injuries.

Discussion

The results showed that male patients with orthopedic trauma had a significantly higher rate of severe PTSD symptoms, at 76.0%, compared to those with less severe symptoms, indicating a significant correlation between orthopedic trauma and severe PTSD symptoms in male patients. There was a significant association between physical injury and PTSD among male patients, indicating

that males with physical injuries were more likely to develop PTSD. Male individuals are more likely to be involved in severe accidents, violence, or occupational hazards, which cause more life-threatening injuries. This higher intensity and unpredictability of trauma may lead to more severe PTSD symptoms.¹⁴ Specifically, the test showed that males with brain injuries and multiple injuries had a higher likelihood of experiencing severe PTSD symptoms, suggesting a strong correlation between these types of injuries and the development of severe PTSD. However, in contrast to male patients, no significant association between physical injury and PTSD was found among female patients with similar injuries. This result is consistent with previous studies that have shown a link between physical injuries and PTSD, but suggests that this relationship may be specific to male patients, with female patients not showing the same correlation.¹⁴ In contrast, a separate study involving patients with blunt and burn injuries found a different relationship between these injuries and PTSD. While the study did not find a direct link between the injuries and PTSD, it did reveal a significant association between the patients' self-reported overall health and the development of PTSD, suggesting that overall health may play a crucial role in the development of PTSD in this population.¹⁵ In contrast, the present study aligns with previous research findings which have consistently shown a positive correlation between PTSD and physical injury, suggesting that physical injury is a significant predictor of PTSD development.^{16,17} Additionally, a separate study found that individuals with acquired and traumatic brain injuries had a higher incidence of both maladaptive coping mechanisms (schema) and post-traumatic stress disorder (PTSD), suggesting a potential link between brain injuries and the development of these conditions.^{18,19} This study categorized physical injuries into three groups: bony injuries, traumatic brain injuries (TBI), and multiple injuries. The results showed that patients with orthopedic trauma (bony injuries) exhibited more severe PTSD symptoms compared to those with TBI and multiple injuries, suggesting

that orthopedic trauma may be associated with a higher risk of developing severe PTSD symptoms.

This study has several limitations including that the data collection was restricted to patients with traumatic physical injuries receiving treatment in PIMS Islamabad, which may limit the generalizability of the findings to patients with different conditions or injuries. Secondly, the study only focused on the immediate traumatic experiences of the patients and did not consider any previous traumatic events they may have experienced. Despite these limitations, this study provides valuable insights into the post-traumatic stress profiles of injured patients, which can inform policymakers and frontline trauma service providers in resource allocation and treatment planning, ultimately contributing to improved patient outcomes.

Conclusion

This study highlights the significant correlation between physical injuries and severe PTSD symptoms, particularly in male patients who have suffered orthopedic trauma, traumatic brain injury, or multiple injuries. The findings emphasize the importance of healthcare providers being aware of the potential for PTSD symptoms in patients with physical injuries, especially males. Early identification and intervention of PTSD symptoms can lead to improved patient outcomes, enhanced quality of life, and reduced healthcare costs. This study's findings have significant implications, emphasizing the need for healthcare providers to prioritize the mental health and well-being of patients with physical injuries, and highlighting the potential benefits of early intervention and support for those at risk of developing PTSD symptoms. By acknowledging the psychological impact of physical trauma, healthcare providers can provide more comprehensive care, improve patient outcomes and reducing the likelihood of long-term mental health consequences.

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Availability of Data: The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Ethical Approval: The Ethical Committee of International Islamic University, Islamabad approved the study via letter no. IIU-FSS/PSY/DPEC/-2022/8696.

Conflict of Interest: None declared.

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