

DRUG AND ALCOHOL USE IN ORTHOPAEDIC TRAUMA PATIENTS: A PROSPECTIVE STUDY

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Abstract: *The objective of this study is to prospectively investigate the prevalence, patterns, and correlates of drug and alcohol use among orthopaedic trauma patients. After the ethical approval from the institutional review board, this cross-sectional study was conducted at Jinnah Postgraduate Medical Center from 01/09/23 to 29/02/24. Baseline data was collected upon admission and included demographic information (such as age and gender) and a comprehensive assessment of substance use history. Substance use was assessed using validated screening tools, including the Alcohol Use Disorders Identification Test (AUDIT) and the Drug Abuse Screening Test (DAST), to capture patterns of alcohol and drug use, frequency, duration, and any previous treatment history for substance use disorders. In the present study, the prevalence of drug and alcohol use among the orthopedic traumatic participants was (40%). Among them, the majority (51%) were using alcohol, followed by marijuana use (25%), and then cocaine (11%). The means of hospital stay of participants in substance non-users and users (2.4±0.8 vs. 6.83±1.1; P<0.0001). Pre-injury alcohol and drug use appear to correlate with extended hospital stays among patients with traumatic orthopaedic injuries.*

Keywords: Alcohol, Trauma, Drug, Injury

Introduction

Orthopedic trauma is a significant public health issue involving a variety of injuries, from primary fractures to severe polytrauma caused by high-impact incidents like accidents or falls (O'Hara, Isaac, Slobogean, & Klazinga, 2020). These injuries typically need prompt medical care and thorough treatment to reduce long-term impairment and improve functional results. Orthopedic trauma has been thoroughly investigated and treated in clinical practice (Cherpitel et al., 2015). However, there is an increasing acknowledgment of the impact of substance use, such as drugs and alcohol, on the occurrence, seriousness, and results of these injuries. Substance use is widely acknowledged as a significant risk factor for severe injuries in different groups and environments (von Oelreich et al., 2020). Research has consistently demonstrated that people who use drugs or alcohol are more likely to experience traumatic injuries, such as orthopedic trauma, compared to those who do not use these substances (Organization, 2019). Substance use increases the risk of injury by affecting judgment, coordination, and perception, making persons more prone to accidents, falls, and other traumatic events (Haines, Agarwal, & Jung, 2018). Moreover, behaviors linked to substance use, such as hostility, impulsivity, and risk-taking, increase the likelihood of injury in both deliberate and accidental situations (Anderson et al., 2023). Although there is a known connection between substance use and traumatic injuries, there is a lack of studies particularly addressing substance use in orthopaedic trauma patients. Although research has explored the frequency of substance use in trauma populations in general, few studies have focused on its influence on orthopedic trauma results. The lack of research in this area is worrying due to the possible effects of substance use on orthopedic trauma

therapy, such as slower healing, higher complication rates, and less functional recovery (Spratt et al., 2023). Substance use can create specific difficulties while treating orthopedic trauma patients, such as concerns with pain control, following treatment plans, and participating in rehabilitation (Bedell et al., 2023). Understanding the prevalence and patterns of substance use among orthopaedic trauma patients is essential for several reasons. Firstly, identifying substance use in this population can help healthcare providers better assess injury severity and anticipate potential complications. Substance use may exacerbate underlying medical conditions or interfere with the healing process, necessitating a tailored treatment approach. Secondly, addressing substance use in the context of orthopedic trauma care can improve patient outcomes by minimizing the adverse effects of substance use on recovery and rehabilitation. Integrated interventions that combine trauma care with substance use screening, brief interventions, and referral to treatment have shown promise in improving outcomes for trauma patients with substance use disorders. The objective of this study is to prospectively investigate the prevalence, patterns, and correlates of drug and alcohol use among orthopaedic trauma patients.

Methodology

After the ethical approval from the institutional review board, this cross-sectional study was conducted at Jinnah Postgraduate Medical Center from 01/09/23 to 29/02/24. Through non-probability convenient sampling, adult patients aged 18 years and above presenting with acute orthopedic trauma injuries to the emergency department were included in the present study. Informed consent was obtained from all eligible participants before their inclusion

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in the study. Patients with orthopedic trauma injuries resulting from intentional self-harm or interpersonal violence were excluded from the present study. Baseline data was collected upon admission, including demographic information (such as age and gender) and a comprehensive assessment of substance use history. Substance use was assessed using validated screening tools, including the Alcohol Use Disorders Identification Test (AUDIT) and the Drug Abuse Screening Test (DAST), to capture patterns of alcohol and drug use, frequency, duration, and any previous treatment history for substance use disorders. SPSS version 21 was utilized to analyze the data. Descriptive statistics was used to summarize the demographic and clinical characteristics of the study sample, as well as the prevalence and patterns of drug and alcohol use. Chi-square tests or t-tests will be employed to examine differences in substance use between subgroups (e.g., age, gender, injury severity). P value ≤ 0.05 was considered significant.

Results

Two hundred fifty participants fulfilling the inclusion criteria were included in the present study. Table 1 shows all recruited participants' clinical, demographic, and substance use parameters. The average age of the study participants was 34.56 ± 4.65 . Most participants were 18-40 (64%), and most were male (70%). In the present study, the prevalence of drug and alcohol use among the orthopedic traumatic participants was (40%). Among them, the majority (51%) were using alcohol, followed by marijuana use (25%), and then cocaine (11%). Figure 1 shows the means of hospital stay of participants in substance non-users and users (2.4 ± 0.8 vs. 6.83 ± 1.1 ; $P < 0.0001$). Tables 2 and 3 show the stratification of substance use by age and gender.

Table 1: Demographic and clinical parameters

Parameters	Frequency
Age	34.56 ± 4.65
18-40y	160 (64%)
41-60y	60 (24%)
Above 60y	30 (12%)
Gender	
Male	175 (70%)
Female	75 (30%)
Prevalence of drug and alcohol use	100 (40%)
Alcohol use	51 (51%)
Marijuana use	25 (25%)
Cocaine use	11 (11%)
Hospital stay in non-user	2.4 ± 0.8
Hospital stay in users	6.83 ± 1.11

Table 2: Age-wise stratification of alcohol and drug use

Age Groups	Alcohol Use		Total	P value
	Yes	No		
18-40y	34	16	50	0.13
41-60y	18	20	38	
Above 60y	8	4	12	
Total	60	40	100	
Marijuana Use				
18-40y	16	34	50	0.069
41-60y	9	29	38	

Above 60y	0	12	12	0.929
Total	25	75	100	
Cocaine Use				
18-40y	6	44	50	0.929
41-60y	4	34	38	
Above 60y	1	11	12	
Total	11	89	100	

Table 3: Gender-wise stratification of alcohol and drug use

Gender	Alcohol Use		Total	P value
	Yes	No		
Male	53	44	87	0.766
Female	7	6	13	
Total	60	49	100	
Marijuana Use				
Male	21	66	87	0.933
Female	4	9	13	
Total	25	75	100	
Cocaine Use				
Male	10	77	87	0.198
Female	0	13	13	
Total	10	90	100	

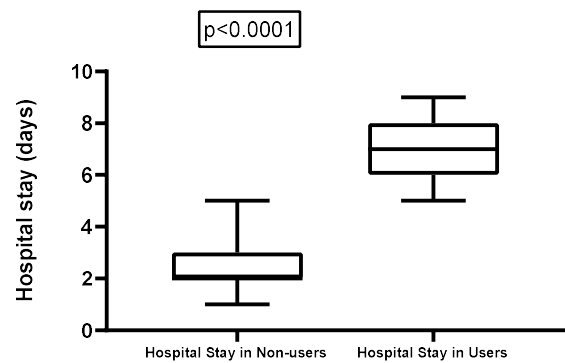


Figure 1: Comparison of length of hospital stay between users and Non-users.

Discussion

This study's results reveal the prevalence of drug and alcohol consumption (40%) and length of hospital stay among orthopaedic trauma patients, emphasizing the intricate relationship between substance use and injury results. The study revealed a significant occurrence of substance use among orthopaedic trauma patients, in line with other studies showing increased rates of substance use in trauma groups (Cherpitel et al., 2015). This confirms the results of earlier research that found alcohol use to be high among trauma patients seen in emergency rooms. Among trauma patients admitted to a Finnish study (2005), Savola et al. found that 86% had achieved a blood alcohol level (BAL) of 1.0 g/L (MacLeod & Hungerford, 2011). As many as 51% of the working-age trauma population had alcohol in their blood upon admission (Savola, Niemelä, & Hillbom, 2005). In another study, one-third of trauma patients admitted to level 1 or level 2 trauma centers tested positive for alcohol, according to a recent retrospective study that retrieved data from the American National Trauma

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Database (NTDB, years 2007–2010)(10). In addition, 28% of trauma patients in the registry tested positive for alcohol, which is consistent with results published in 2013 by Kowalenko et al. from the same database (NTDB, years 2000-2005) (Kowalenko, Burgess, Szpunar, & Irvin-Babcock, 2013). Those between the ages of 21 and 50 had the highest rates of alcohol consumption in this research. A weighted average prevalence of 32.5% was determined from 15 studies regarding alcohol-related visits to trauma centers in the United States (Ahmed & Greenberg, 2019). Nevertheless, these investigations primarily relied on retrospective data and concentrated on metropolitan level I trauma centers; the screening rates ranged from 30.7% to 98.6% (MacLeod & Hungerford, 2011). Limitation of the study: The study's generalizability can be restricted by the sample's characteristics and the setting. The study sample included orthopedic trauma patients from a particular geographic region or healthcare environment, potentially lacking representation of the broader community of orthopedic trauma patients. Furthermore, variations in healthcare systems, cultural norms, and substance use policies could impact the frequency and trends of substance use identified in the study. Therefore, it is essential to be careful when applying the results to different situations.

Conclusion

In contrast to orthopedic trauma patients from twenty years ago, today's demographic of alcohol and drug users within this population skews younger, with a heightened inclination toward substances like marijuana while showing a declining preference for cocaine. Alcohol and drug use before the injury may result in more extended hospital stays for orthopedic trauma patients. Knowing these trends can help medical professionals make informed decisions about clinical management and resource allocation.

Declarations

Data Availability statement

All data generated or analyzed during the study are included in the manuscript.

Ethics approval and consent to participate

Approved by the department Concerned.

Consent for publication

Approved

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Not applicable

Conflict of interest

The authors declared absence of conflict of interest.

Author Contribution

M UMAR FAROOQUE (Registrar)

Study Design, Review of Literature.

Conception of Study, Development of Research Methodology Design, Study Design., Review of manuscript, final approval of manuscript.

KASHIF ANWAR (Registrar)

Conception of Study, Final approval of manuscript.

Manuscript revisions, critical input.

SADAM HUSSAIN (Registrar)

Coordination of collaborative efforts.

Data acquisition, analysis.

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Manuscript drafting.

Data entry and Data analysis, drafting article.

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Data acquisition, analysis.

Coordination of collaborative efforts

JAVED AHMED (Registrar)

Conception of Study, Development of Research Methodology Design, Study Design., Review of manuscript, final approval of manuscript..

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