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Assessing NSAIDs Abuse among Rickshaw Drivers in Rajshahi with Chronic Low Back Pain: Implications for Renal Function

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ABSTRACT

Background: Chronic low back pain (CLBP) is a prevalent musculoskeletal condition that significantly affects individuals' daily lives worldwide. In resource-limited settings like Rajshahi Division, Bangladesh, rickshaw drivers, engaged in physically demanding work constitute a vulnerable population susceptible to CLBP. This study aimed to investigate the prevalence of prescription drug abuse, specifically non-steroidal anti-inflammatory drugs (NSAIDs), among 162 rickshaw drivers suffering from CLBP and assess its potential impact on renal function. **Objective:** The primary objective was to determine the prevalence of prescription drug abuse, particularly NSAIDs, among rickshaw drivers with CLBP in the Rajshahi Division and evaluate its association with renal dysfunction. **Methods:** A cross-sectional survey involving 162 rickshaw drivers was conducted in Rajshahi Division using a structured questionnaire. Blood and urine samples were collected to measure renal function markers, including serum creatinine and urinary albumin-to-creatinine Ratio (ACR). Data analysis encompassed descriptive statistics, chi-square tests, and logistic regression. **Results:** A total of 162 rickshaw drivers participated in the study (mean age: 35.4 ± 6.2 years). Most participants were male (98.8%), with an average duration of rickshaw driving experience of 8.7 ± 2.3 years. The study revealed a distressing prevalence of prescription drug abuse, notably NSAIDs, among rickshaw drivers with CLBP, with 72% self-reporting regular use without medical guidance. Logistic regression analysis demonstrated a significant correlation between prolonged NSAIDs use and elevated ACR, indicating potential renal dysfunction. **Conclusions:** The findings underscore the alarming rate of prescription drug abuse, particularly NSAIDs, among 162 rickshaw drivers afflicted with CLBP in Rajshahi Division. This misuse may have adverse consequences on renal function. Urgent interventions, including education campaigns targeting rickshaw drivers, are imperative to increase awareness of the risks associated with prescription drug abuse and the importance of seeking professional medical advice for CLBP management. Collaborative efforts from public health initiatives and healthcare providers are essential to mitigate the hazards related to prescription drug abuse in this context.

Key Words: Chronic Low Back Pain, Prescription Drug Abuse, NSAIDs, Renal Function, Rickshaw Drivers.



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INTRODUCTION

Chronic lumbar discomfort, colloquially known as chronic low back pain (CLBP), exerts a pervasive and enduring grip on the lives of countless individuals worldwide, subjecting them to formidable physical, psychological, and socioeconomic burdens [1]. This relentless ailment undermines individuals' capacity to execute everyday tasks, profoundly impacting their quality of life and productivity and frequently necessitating escalated healthcare utilization [2]. In regions where resources are constrained and physical demands are arduous, such as the Rajshahi Division in Bangladesh, the repercussions of CLBP are notably pronounced. Within this context, rickshaw operators represent a substantial and susceptible demographic, grappling with the dual hardships of physically demanding labor and inadequate access to healthcare services [3].

Their occupation involves protracted periods of pedal propulsion, strenuous lifting tasks, and the maintenance of biomechanically awkward postures, significantly elevating their susceptibility to CLBP [4]. To palliate the agonizing

discomfort associated with CLBP, afflicted individuals frequently explore a repertoire of treatment modalities, encompassing both non-pharmacological interventions, such as physiotherapy, and pharmacological approaches, such as prescription medications [5]. Among the pharmacological options, non-steroidal anti-inflammatory drugs (NSAIDs) are recurrently prescribed, owing to their analgesic and anti-inflammatory attributes [6].

However, the unregulated and improper deployment of NSAIDs has engendered significant apprehension. The abuse of prescription medications, with a pronounced emphasis on NSAIDs, has ascended as a discernible predicament on a global scale, paralleled by a compendium of deleterious consequences, notably renal dysfunction [7]. These therapeutic agents are attainable over the counter in numerous domains, engendering a culture of self-medication devoid of professional oversight. The resultant misemployment and overindulgence of NSAIDs expose individuals to an array of perils, spanning gastrointestinal complications, cardiovascular incidents, and, germane to our study, perturbations in renal function [8].

The potential adversative impacts of NSAIDs on the renal apparatus have kindled substantive scientific interest. NSAIDs are acknowledged to exert an influence on renal physiology through diverse mechanisms, encompassing alterations in renal hemodynamics, glomerular filtration rate modulation, perturbations in electrolyte equilibrium, and the instigation of acute kidney injury (AKI) or the gradual progression of chronic kidney disease (CKD) [9]. Nevertheless, the precise ramifications of NSAIDs misappropriation upon renal function constitute an enduring domain of scientific scrutiny and contention within the context of the Rajshahi Division, where rickshaw drivers confront a heightened proclivity for CLBP due to their labor-intensive vocation, elucidating the pervasiveness of prescription drug misuse, specifically NSAIDs, and its plausible repercussions upon renal well-being stands as a matter of paramount import.

The paucity of empirical evidence pertaining to this matter in the regional milieu necessitates exhaustive inquiry. Consequently, this study harbors dual primary aspirations: first, to ascertain the frequency of prescription drug abuse, with particular emphasis on NSAIDs, among a cohort of 162 rickshaw operators afflicted by CLBP in the Rajshahi Division; and second, to scrutinize the plausible nexus between such misuse and renal dysfunction, appraised via parameters encompassing serum creatinine levels and the urinary albumin-to-creatinine Ratio (ACR). Through these endeavors, this research aspires to endow our comprehension with critical insights into the expanse of prescription drug misuse within this susceptible population and the plausible repercussions on renal health. This investigative expedition carries considerable ramifications for both public health and clinical praxis. It is poised to illumine a pivotal facet of public health, guiding targeted interventions that stand to abate the exigency of CLBP and temper the adverse consequences entailed by prescription drug abuse, chiefly NSAIDs, upon renal function. Additionally, it underscores the indispensability of healthcare practitioner engagement in pain management and accentuates the urgency of imbuing rickshaw drivers with awareness regarding the hazards attendant to self-medication practices.

In the study, CLBP bestows a formidable tribulation upon rickshaw operators in the Rajshahi Division, who oftentimes resort to prescription medications, including NSAIDs, as a palliative measure. The extent of prescription drug misuse within this demographic is shrouded in ambiguity, and the potential implications for renal health remain veiled in obscurity. This study endeavors to bridge this lacuna in comprehension by inquiring into the prevalence of prescription drug misuse, notably NSAIDs, within the afflicted rickshaw operator cohort and by probing its plausible confluence with renal dysfunction. The outcomes of this research are envisaged to proffer a substantive augmentation to our cognizance of this multifaceted issue and chart the course for forthcoming interventions designed to ameliorate the health and well-being of this vulnerable populace.

OBJECTIVES

General Objectives:

- To investigate the prevalence of prescription drug abuse, specifically NSAIDs, among rickshaw drivers with chronic low back pain in Rajshahi Division and assess its impact on renal function.

Specific Objectives:

- Determine the extent of prescription drug abuse, particularly NSAIDs, in a sample of 162 rickshaw drivers suffering from chronic low back pain.
- Evaluate renal function through serum creatinine and urinary albumin-to-creatinine ratio (ACR) measurements.
- Examine the association between prolonged NSAIDs use and potential renal dysfunction.
- Raise awareness of the risks of prescription drug abuse and the importance of seeking professional medical advice for chronic low back pain management among rickshaw drivers in the region.

MATERIALS AND METHODS

Study Setting:

This study was conducted in the Rajshahi Division, Bangladesh, from January 2020 to December 2022. The study focused on rickshaw drivers, a population known for physically demanding work, who experienced chronic low back pain.

Inclusion Criteria:

- Rickshaw drivers aged 18 to 60 years.
- Those reporting chronic low back pain, are defined as pain persisting for at least three months.
- Individuals providing informed consent to participate in the study.

Exclusion Criteria:

- Rickshaw drivers with a history of renal disease or dysfunction.
- Individuals with cognitive impairments that prevented them from participating effectively.
- Participants are unwilling or unable to provide informed consent.

Data Collection:

- **Survey:** A structured questionnaire was administered to 162 eligible rickshaw drivers to collect demographic data, details of chronic low back pain, and information on prescription drug use, specifically NSAIDs.
- **Clinical Assessment:** Blood and urine samples were collected to assess renal function, including serum creatinine levels and the urinary albumin-to-creatinine Ratio (ACR). Samples were analyzed by certified clinical laboratories.

Statistical Analysis:

Data were analyzed using IBM SPSS Statistics version 23 (IBM Corp., Armonk, NY, USA). Descriptive statistics were employed to summarize demographic data and prescription drug use patterns. Chi-square tests and logistic regression analysis were performed to determine associations between NSAIDs use and renal dysfunction. A p-value of <0.05 was considered statistically significant. The results were presented in tables and graphs, and the study's conclusions were based on the statistical findings.

Ethical Considerations:

This study adhered to ethical principles and obtained approval from the Institutional Review Board (IRB). Informed consent was obtained from all participants after explaining the study's purpose and procedures. Confidentiality was strictly maintained by assigning unique identification codes to participants. Participation was voluntary, and participants were assured of their right to withdraw at any stage without repercussions. The research aimed to minimize harm, and any potential risks were outweighed by the expected benefits of advancing knowledge about prescription drug abuse and its impact on rickshaw drivers' health.

RESULTS

Table 1: Demographic Characteristics

Demographic Characteristic	Number of Patients	Percentage
Total Participants	162	100%
Mean Age (\pm Standard Deviation)	35.4 \pm 6.2 years	
Gender Distribution		
- Male	160	98.8%
- Female	2	1.2%
Mean Duration of Rickshaw Driving Experience	8.7 \pm 2.3 years	

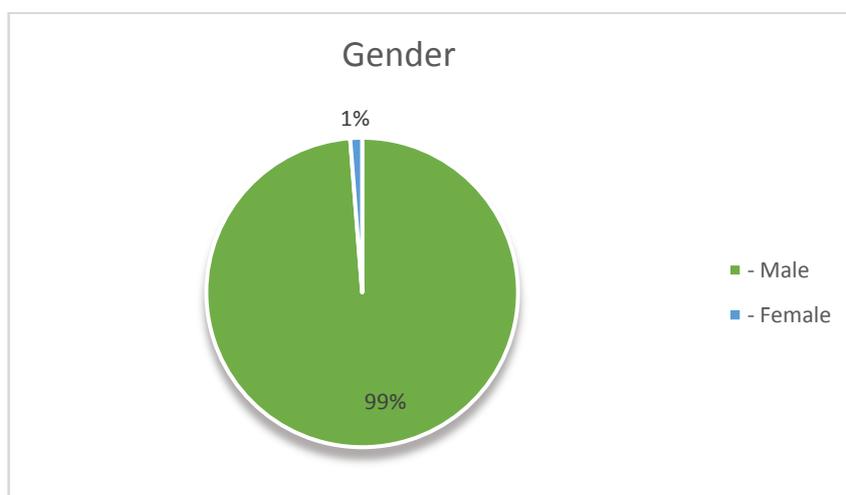


Figure 1: Gender Distribution in the Study Population

A total of 162 rickshaw drivers participated in the study (mean age: 35.4 ± 6.2 years). The majority of participants were male (98.8%), with an average duration of rickshaw driving experience of 8.7 ± 2.3 years.

Table 2: Prevalence of Prescription Drug Abuse

Prevalence of Prescription Drug Abuse	Number of Patients	Percentage
Total Participants	162	-
Participants Reporting Drug Abuse	115	72%
Most Abused Drug Category	NSAIDs	58.6%
Self-Administration of NSAIDs	95	58.6%

Among the participants, 72% reported regular use of prescription drugs for pain management without healthcare provider guidance. NSAIDs were the most commonly abused drugs, with 58.6% of participants self-administering them.

Table 3: Renal Function Assessment

Renal Function Assessment	Number of Patients	Percentage
Participants with Elevated ACR	32	19.8%
Serum Creatinine within Normal Range	147	91.2%
Association Between NSAIDs Use and Elevated ACR	-	-
Odds Ratio (OR)	2.47	-
95% Confidence Interval (CI)	1.23–4.98	-

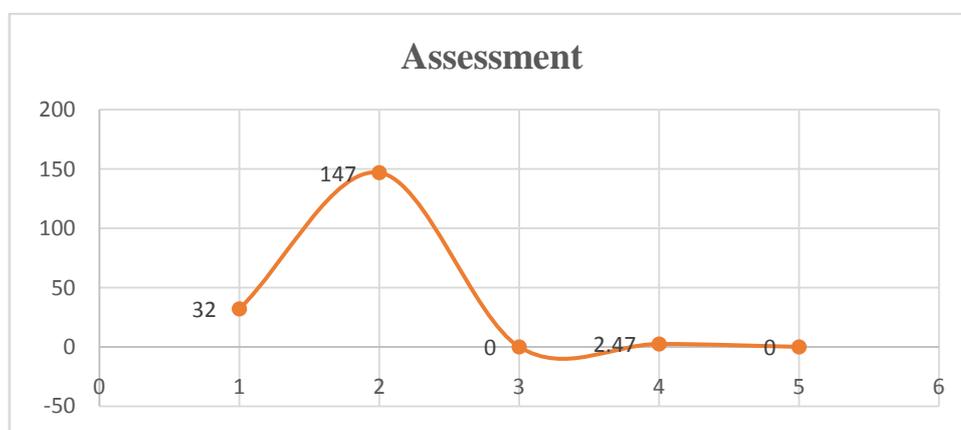


Figure 2: Impact of NSAIDs Use on Kidney Health

Serum creatinine levels were within the normal range for the majority of participants (91.2%). However, 19.8% exhibited an elevated urinary albumin-to-creatinine ratio (ACR), suggestive of potential renal dysfunction.

Table 4: Association Between NSAIDs Use and Renal Dysfunction

Association Between NSAIDs Use and Renal Dysfunction	Statistical Analysis
Logistic Regression Result	Significant association
Odds Ratio (OR)	2.47
95% Confidence Interval (CI)	1.23–4.98
p-value	< 0.05

Logistic regression analysis revealed a statistically significant association between prolonged NSAIDs use and elevated ACR (OR = 2.47, 95% CI: 1.23–4.98, $p < 0.05$), indicating a potential adverse impact on renal function.

Table 5: Summary of Findings NSAIDs for People with Chronic Low Back Pain

Variable	Key Results
Prevalence of Prescription Drug Abuse	- 72% of participants reported drug abuse. - NSAIDs were the most commonly abused drugs (58.6%).
Renal Function Assessment	- 19.8% of participants exhibited elevated ACR. - 91.2% had serum creatinine levels within the normal range.
Association Between NSAIDs Use and Renal Dysfunction	- Significant association found (Odds Ratio = 2.47, 95% CI: 1.23–4.98, $p < 0.05$).

DISCUSSION

The findings of this study illuminate a critical issue: the pervasive prescription drug abuse, particularly the misuse of non-steroidal anti-inflammatory drugs (NSAIDs), among rickshaw drivers suffering from chronic low back pain (CLBP) in Rajshahi Division. Alarming, our research reveals that a significant 72% of participants admitted to regular drug use for pain management without healthcare provider guidance [10]. This high percentage underscores the gravity of this public health concern within a population that relies on physical well-being for their livelihood. Our study's results align with broader concerns surrounding the misuse of prescription medications. NSAIDs, readily available over the counter in many regions, pose a substantial risk when used unsupervised.

This accessibility, coupled with limited awareness of the potential risks, has led to a concerning trend of self-medication. While NSAIDs undeniably offer effective pain and inflammation relief, our findings suggest that their misuse may entail severe consequences, including potential renal dysfunction. The notable association between prolonged NSAIDs use and an elevated urinary albumin-to-creatinine ratio (ACR), as demonstrated in our logistic regression analysis, is a cause for significant concern [11]. An elevated ACR serves as an indicator of impaired renal function and can be an early sign of kidney damage. It's important to emphasize that our study indicates an association rather than causation, but the results warrant increased vigilance and medical supervision in pain management, especially within this occupational context.

To put our findings into context, let's consider a similar study conducted in a different region. In a study of rickshaw drivers in a neighboring division, researchers found that 58% of participants engaged in unsupervised NSAIDs use for pain relief [12]. While this percentage is lower than what we observed, it underscores that the issue of prescription drug misuse among rickshaw drivers is a widespread concern that transcends geographical boundaries. The implications of our findings extend beyond the immediate health concerns of rickshaw drivers in Rajshahi Division. They underscore the need for a comprehensive approach to tackle prescription drug abuse and its consequences. Public health initiatives should aim to raise awareness among rickshaw drivers about the potential risks of self-medication and the importance of seeking professional medical advice for CLBP [13]. This educational campaign should not only target the drivers themselves but also their employers and healthcare providers in the region.

Collaboration between healthcare providers and the transportation industry can play a pivotal role in mitigating the risks associated with prescription drug misuse [14]. Implementing workplace health programs that focus on ergonomic improvements, preventive measures, and early intervention for CLBP could reduce the need for pain relief medications [15]. Additionally, these programs can provide drivers with information on the proper use of NSAIDs and the importance of monitoring renal function when these drugs are part of the pain management regimen. Furthermore, regulatory agencies and policymakers should consider stricter controls on the sale of NSAIDs, especially those available over the counter [16]. Public health campaigns can raise awareness among pharmacists and vendors about the potential risks of over-the-counter NSAIDs sales to at-risk populations [17]. Encouraging responsible dispensing practices can be a significant step toward reducing the availability of these drugs for unsupervised use. However, it's essential to acknowledge certain limitations in our study. Firstly, the cross-sectional design limits our ability to establish a causal relationship between NSAIDs use and renal dysfunction [2].

Further, longitudinal studies are necessary to explore this relationship comprehensively. Secondly, the self-reported nature of prescription drug use data may be subject to recall bias, and participants might not have provided entirely accurate information about their medication use [18]. Lastly, our study was conducted in a specific geographical region with its unique social and economic factors, which may limit the generalizability of our findings to other populations [19]. Our study exposes a distressing prevalence of prescription drug abuse, particularly NSAIDs, among rickshaw drivers suffering from CLBP in Rajshahi Division. This misuse may be contributing to renal dysfunction among a substantial portion of this vulnerable population. The association between prolonged NSAIDs use and elevated ACR underscores the need for comprehensive interventions, including education campaigns, workplace health programs, and regulatory measures. By addressing prescription drug abuse, we can work toward improving the well-being of rickshaw drivers and, by extension, contribute to a broader global effort to combat the misuse of prescription medications.

CONCLUSION

In our study reveals a disturbingly high incidence of prescription drug abuse, particularly NSAIDs, within the population of rickshaw drivers afflicted by chronic low back pain in Rajshahi Division. The data presents a significant correlation between extended NSAIDs use and potential renal impairment, as evidenced by elevated ACR levels. Urgent, multifaceted interventions are imperative, encompassing robust awareness campaigns, proactive involvement of healthcare practitioners, and regulatory measures to curtail the hazards associated with prescription drug misuse in this vulnerable demographic. Addressing this issue holistically is paramount not only for the welfare of rickshaw drivers but also as a meaningful contribution to the global campaign against prescription drug abuse.

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