



Review

Injuries and absenteeism among motorcycle taxi drivers who are victims of traffic accidents



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ABSTRACT

Facial injuries frequently occur in traffic accidents involving motorcycles. The purpose of this study was to determine the prevalence of facial injuries among motorcycle drivers who perform motorcycle taxi service. The study design was cross-sectional. A total of 210 participants who served as motorcycle taxi drivers in a city in northeastern Brazil completed a survey concerning their experience of accidents involving facial injuries and consequent hospitalization and absenteeism from work. The motorcycle drivers included in the study were randomly selected from a list provided by the city. Out of the respondents, 165 (78.6%) who were involved in traffic accidents in the last 12 months, 15 (9.1%) reported facial injuries. The types of facial injury most frequently reported involved soft tissues ($n = 8$; 53.3%), followed by simple fracture ($n = 4$; 26.7%) and dentoalveolar fracture ($n = 3$; 20%). We found an association between facial injuries and absenteeism, as well as an association between the presence of facial injury and the need for hospitalization for a period of 2 days or more. Respondents reported that they had accidents, but due to the use of full face motorcycle helmet the number of facial injuries was low. For most of them, absenteeism was observed for a period of one month or more.

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1. Introduction

Road accidents involving motorcycle drivers are frequently associated with three types of facial injuries: soft tissue trauma, dentoalveolar fracture, and simple fracture.¹ Dentoalveolar fractures include injuries to teeth, support tissues, and alveolar bone,² while simple facial fractures leave little, if any trace of fracture on the face.³

The main causes of all facial injuries are accidents involving motorcycles, followed by accidents involving automobiles and urban violence.^{4–10} Survivors of motorcycle accidents often have more severe lesions than do people injured via other methods.^{11,12} The severity of lesions may explain the longer stays of motorcycle drivers in hospitals and their longer absence from work.

Since 2009, the motorcycle taxi service in Brazil has been recognized as a profession, and is regulated by Federal Law No. 12,009/09¹³; however, it has not lost its informal character, since clandestine services continue to operate. The law requires that the driver be at

least 21 years old and have at least 2 years of driving experience with motorcycles in order to qualify for professional practice.

In emerging countries such as Brazil, young men are more affected than older men in cases of facial injuries resulting from traffic accidents.^{14–17} In Brazil, the prevalence of facial injuries among motorcycle drivers who have suffered accidents was 52.2%,¹⁸ well above the 24.3% found among motorcyclists who have suffered accidents in California, USA.¹⁹

The motorcycle is used in some Brazilian cities for transporting passengers, similar to a taxi service, and has become known as the “mototaxi.” The present study aimed to determine the prevalence of facial injuries among mototaxi drivers in a medium-sized city in northeastern Brazil, to describe the types of facial injuries sustained by mototaxi drivers, and to evaluate the occurrence of hospitalization and absenteeism associated with these injuries.

2. Methods

A cross-sectional study was conducted with mototaxi drivers in a city with 385,213 inhabitants, considered one of the main centers of economic development of the Brazilian Northeast.²⁰ In this city, there are three types of mototaxi services: drivers registered at the municipal agency, the Superintendent of Traffic and Public

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Transport (STPT) (Group 1; $n = 727$); professional drivers working for a private company (Group 2; $n = 308$); and an unspecified number of individuals not authorized to transport people, who are acting clandestinely in the capacity of mototaxi driver (Group 3).

As inclusion criteria for the study, participants were required to be part of Group 1 or Group 2. By national law, respondents' workweek is 44 h, distributed over the seven days of the week, but not exceeding 8 h daily and containing a weekly rest period of 24 h. Those in Group 3 were excluded from the analysis because there was no way of knowing their actual number or obtaining their contact information, since they are not considered legal professionals. Drivers included in the study had driven motorcycles for at least one year. The research was performed between August and October 2011.

We developed a questionnaire to gather information about the occurrence of accidents in the past 12 months. The questionnaire consisted of questions related to demographic data (age, sex, education, and period of license), traffic accidents (occurrence of absenteeism and hospitalization), and facial injuries (presence, type, and location). The questionnaire was tested in a pilot study of 57 drivers. The dependent variable in this study was the occurrence of facial trauma, while the independent variables were age, education, and duration of license.

The population for the study consisted of 1035 registered and private mototaxi drivers. The pilot study found a 7.5% prevalence of facial injury. According to the results of this pilot study, we estimated the sample size using a 95% confidence level and a 7.5% expected prevalence for facial trauma. The minimum sample size required was, thus, 181 mototaxi drivers.

The present sample comprised 210 mototaxi drivers selected by simple random sampling from two lists, one supplied by the STPT and the other by a private enterprise, using the Epi-Info 7 epidemiological statistics program. The interviews were conducted by telephone. When a selected participant was not found, or if that individual refused to participate in this study, another was randomly selected from the list. Refusal to participate in the study was less than 2%. Payment was not offered to participants. On average, participants answered the questionnaire in 10 min.

A similar procedure was used by Hashim and Iqbal,¹ who collected their data from the medical records of hospitalized victims of motorcycle accidents. Despite the similarity of these studies, we must note that collecting injury data from hospital records, which are the typical sources of data in retrospective studies of this nature, may lead to bias due to lack of information from incomplete or poorly written medical records.

The method used in this study attempted to reduce this limitation by interviewing each individual in the sample. We reduced the possibility of recall bias by limiting the classification of injury to three types: soft tissue injury, dentoalveolar fracture, and facial fracture.¹ By using this classification, the respondent would be less likely to confuse the types of trauma. We defined a traffic accident as any collision suffered with another vehicle, object, or pedestrian, as well as a fall that the motorcycle driver may have suffered.

Descriptive statistics included frequency distributions and percentages. Inferential statistical techniques included the chi-square test or Fisher's exact probability test when the conditions for using Pearson's chi-square test were not met. The level of significance used in the statistical tests was 5%. The software used for data entry and statistical calculations was SPSS (Statistical Package for the Social Sciences) Version 17.

The study followed the national and international recommendations regarding research involving human beings (Resolution 196/96 National Health and the Helsinki Declaration). The project was approved by the Ethics Committee in Research, Universidade Estadual da Paraíba (CAAE N: 0091.0.133.000-11).

3. Results

All study participants were men ($N = 210$), among whom 165 (78.6%) had at least one type of traffic accident in the past 12 months. Injuries to the facial region affected 15 individuals (9.1%). Those with such injuries were 18–45 years old, had 8 years of education, and had held a driver's license for 11 or more years. There was no statistically significant association between these variables and the occurrence of facial injury (Table 1).

The descriptive analysis of the type of facial injuries revealed that most occurred in the soft tissues (53.3%, $n = 8$), followed by simple fractures (26.7%, $n = 4$) and dentoalveolar fractures (20%, $n = 3$). Helmet use was reported by 98.2% ($n = 162$) of mototaxi drivers who had accidents.

We found a statistically significant association between the occurrence of a facial injury and being hospitalized for a period of two days or more. Absenteeism was verified for most participants, lasting for a period of one month or more. There was a statistically significant association between the occurrence of facial injury and absence from work; however, the length of absence showed no such association (Table 2).

4. Discussion

This study found a high prevalence of traffic accidents involving mototaxi drivers, but most accidents did not injure the facial region. A possible explanation for the low prevalence of facial injuries may be the use of protective equipment, since most drivers reported using a full-face motorcycle helmet. Brazilian traffic law mandates the use of helmets for drivers and passengers who use motorcycles.¹³ The city where the study was conducted has efficient law enforcement. Due to this factor and fearing fines, few drivers are caught traveling by motorcycle on public roads without using a helmet. A previous study of facial trauma involving motorcycle drivers performed in the same county showed that facial injuries were more frequent,²¹ but there was no indication whether the drivers involved used the motorcycle as a means of work. Thus, it was not possible to make a direct comparison with our study.

The occurrence of facial injuries was higher among younger drivers (age 18–35) and adults (age 36–45) than it was in the older group (age 46 or more). Other studies have shown that people in their second decade of life are more likely to be involved in cases of facial injury.^{1,22–25} In this study, we found no difference between

Table 1
Association between facial injury and sample characteristics.

Variable	Facial injury		Total group N (%)	p Value
	Yes n (%)	No n (%)		
Total	15 (9.1)	150 (90.9)	165 (100.0)	
Age (y)				
18–35	7 (11.9)	52 (88.1)	59 (100.0)	$p^a = 0.212$
36–45	7 (10.9)	57 (89.1)	64 (100.0)	
≥46	1 (2.4)	41 (97.6)	42 (100.0)	
Education (y)				
<8	1 (3.3)	29 (96.7)	30 (100.0)	$p^b = 0.235$
8–11	12 (12.6)	83 (87.4)	95 (100.0)	
≥11	2 (5.0)	38 (95.0)	40 (100.0)	
Years holding a driver's license				
<5	3 (13.6)	19 (86.4)	22 (100.0)	$p^b = 0.683$
6–10	2 (8.7)	21 (91.3)	23 (100.0)	
≥11	10 (8.3)	110 (91.7)	120 (100.0)	

^a Pearson's chi-square.

^b Fisher's exact test.

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