



AN ANALYSIS OF LOWER LIMB INJURIES AMONG MOTORCYCLE ACCIDENT TRAUMA PATIENTS IN A TERTIARY CARE CENTRE, CHENNAI, TAMILNADU

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ABSTRACT

Background: The number of motorcycles increased dramatically in the last decade all over the world. Road traffic accidents (RTA) involving motorcyclists are a leading cause of mortality and morbidity globally and more specifically in India and is turning out to be a major public health problem. Motorcyclists are most vulnerable groups of road accident victims and have a higher risk for lower limb injuries and its complications. This study was done to investigate the lower limb injury patterns among motorcyclist trauma patients attending physical medicine and rehabilitation clinic at Kilpauk Medical College, Chennai, Tamilnadu, India.

Methods: This hospital based cross-sectional study was conducted between July 2019 and December 2019. A total of 190 study subjects with lower limb injuries due to motorcycle RTA were analysed using non- probability consecutive sampling method. The socio-demographic, accident details, lower limb injury survey and outcome assessment was done using a structured questionnaire. Data was coded, entered and analysed using SPSS version- 16.

Result: The mean age of the study group was 30.32 ± 12.14 years. Majority belonged to 31-40 years age group (35.79%) and 86.32% were males. Majority of the study subjects had soft tissue injuries (47.89%) followed by fracture of bones (40.00%). Injuries around ankle and foot were the common occurrence (53.16%) and leg bone fractures showed maximum incidence (47.37%). Around 2% of the subjects underwent lower limb amputation procedure.

Conclusion: This study will stimulate more research into road and traffic engineering, safe designing of motorcycles and innovative health promotion and preventive strategies to raise the awareness of general population to this new age public health problem.

KEYWORDS : Motorcycles, Accidents, Traffic, Trauma, Fractures, Leg Bones, Amputation, Lower Limb Injuries

INTRODUCTION

The number of motorcycles increased dramatically in the last decade all over the world. Motorcycles are cheap and easy to purchase. They are relatively small and lightweight. They lack stability and safety equipment. Due to this fall at high speeds are nearly fatal or lead to severe injuries with residual effects¹.

Road traffic accidents (RTA) involving motorcyclists are a leading cause of mortality and morbidity globally and more specifically in India and is turning out to be a major public health problem. As per national level data released by transport research wing in India in 2016, 82% of riders/pillions sustained injuries and the most commonly affected body regions are the lower extremity and head².

Motorcyclists are most vulnerable groups of road accident victims and have a higher risk for lower limb injuries and its complications. This may be due to the fact that majority of times the limb is the body part to impact with ground and is often squeezed between the motorcycle and colliding vehicle, the ground or some other solid fixed object³.

This study was done to investigate the lower limb injury patterns among motorcyclist trauma patients attending physical medicine and rehabilitation clinic at Kilpauk Medical College, Chennai, Tamilnadu, India.

METHODS

This hospital based cross-sectional hospital-based study was done at the department of physical medicine and rehabilitation, government kilpauk medical college, Chennai, Tamilnadu. One hundred and ninety study subjects with lower limbs injuries from road traffic accidents presented to the physical medicine and rehabilitation department from July 2019 to December 2019 were included using non- probability consecutive sampling method. For the purpose of the study, a motorcycle accident was defined as an accident which took place on the road between two or more objects, one of which

must be motor cycle. A structured questionnaire was used to collect socio-demographic, accident details, lower limb injury survey and outcome assessment details. Descriptive statistics was done for all collected data using MS Excel 2010 and SPSS Version 16. Ethical clearance was obtained from Institutional ethical committee and informed consent was meticulously obtained from study subjects.

RESULTS

A hospital based cross sectional study was undertaken among the motorcyclist trauma study subjects with lower limb injuries in Department of Physical Medicine and Rehabilitation, Government Kilpauk Medical College, Chennai, Tamilnadu. Information was collected from 190 study subjects.

Majority of the study subjects were in the age group of 31-40 years (35.79%) followed by 21-30 years age group (28.42%). The percentage of males among the study population is 86.32% followed by females (13.68%). Collision (45.79%) was the most common mode of injury mechanism followed by fall (42.11%). (Table 1)

The most common type of lower limb injury suffered was soft tissue injuries (47.89%) followed by fractures (40.00%). Regarding the distribution of injuries, it was observed that 53.16% of had ankle and foot injuries followed by 32.11% leg injuries. Pertaining to distribution of fracture 48.17% of had leg fractures followed by 38.16% ankle and foot fractures. (Table 1)

Majority of the study subjects were discharge after hospitalisation (51.05%) and a sizable number of patients were discharged from casualty (46.84%). One study subject underwent above knee amputation and three study subjects underwent below knee amputation. (Table 1)

Table 1. Distribution of Lower Limb Injuries from RTAs based on Socio-demographic Factors

Variable	Groups	n (%)
Age	21-30 years	54(28.42)
	31-40 years	68 (35.79)
	41-50 years	38 (20.00)
	51-60 years	28 (14.47)
	61-70 years	2 (1.05)
Gender	Male	164 (86.32)
	Female	26 (13.68)
Injury Mechanism	Fall	80 (42.11)
	Collision	87 (45.79)
	Run Over	23 (12.11)
Type of Injuries	Blunt Injury	23 (12.11)
	Soft Tissue Injury	91 (47.89)
	Fracture	76 (40.00)
Distribution of Injuries	Hip	6 (3.16)
	Thigh	11 (5.79)
	Knee	11 (5.79)
	Leg	61 (32.11)
	Ankle and Foot	101 (53.16)
Distribution of Fractures	Hip	2 (2.63)
	Femur	4 (5.26)
	Knee Joint	5 (6.58)
	Leg	36 (47.37)
	Ankle and Foot	29 (38.16)
Outcome	Discharged from casualty	89 (46.84)
	Discharged after hospitalisation	97 (51.05)
	Above Knee Amputation	1 (0.53)
	Below Knee Amputation	3 (1.58)

DISCUSSION

This study revealed that lower limb injury among motorcyclist trauma study subjects significantly occurred in 31-40 years age group males. This may be due to the fact that middle aged productive individuals tend to use motorcycles more in relation to work activities and are more prone for accidents due to high travel schedule. This finding is consistent with a study done by Kortor et al, which identified middle age as an important determinant of road traffic accidents⁴.

Results also revealed that collision is the most common form of injury mechanism that causes lower limb injuries. Motorcycle riders are very vulnerable. They do not have any safety equipment like seat belts. In event of a collision they absorb all the energy generated during impact. This leads to extensive injuries especially lower limb injuries due to it getting squeezed between vehicles or surfaces. The same view was echoed in the study done by Wells et al⁵.

In our study, the study subjects more commonly had soft tissue injuries. This affected the ankles and feet more. This may be due to the fact most of our riders do not wear protective shoes. Rather they wear slippers which lead to the unprotected foot getting injured easily on contact. Our findings were consistent with results from study by et al⁶.

In total 76 study subjects had fracture of bones in lower limb. Fracture of leg bones especially tibia was the most common occurrence. This can be explained by the fact that most motorcyclist do not use crash bars. They might help in reducing severity of injury. The same view was published by Batista et al and Fathima et al^{7,8}. We also found that nearly 2% of the study subjects underwent lower limb amputation. Reasons were unsalvageable injuries, to save patients life and sequelae of complex foot injuries⁹.

The strengths of this study are the low attrition rate and use of a valid and reliable instrument for data collection. On the other hand, the limitations of the study are that the data related to sample was obtained from one institution only and limited time for study.

CONCLUSIONS

This study will stimulate more research into road and traffic engineering, safe designing of motorcycles and innovative health promotion and preventive strategies to raise the awareness of general population to this new age public health problem. The results of this study may be useful in development of protection equipment for lower limbs and also promote use of protective shoes and clothing.

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