



## INJURY PATTERNS IN PATIENTS WITH QINGQI MOTORCYCLE RICKSHAW RELATED ROAD TRAFFIC ACCIDENTS PRESENTING AT ACCIDENT AND EMERGENCY DEPARTMENT OF MAYO HOSPITAL, LAHORE.

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**ABSTRACT... Objectives:** The objective of this study was to determine the patterns of the injuries in patients of Qingqi rickshaw related accidents. **Study Design:** Descriptive Cross-Sectional study. **Setting:** Accident and Emergency Department of Mayo Hospital, Lahore. **Period:** Six months from 1<sup>st</sup> of March, 2019 to 31<sup>st</sup> of August, 2019. **Material & Methods:** Non-probability consecutive sampling technique was used and all tri-wheeler Qingqi related trauma patients fulfilling the inclusion and exclusion criteria were included. Frequency and percentages were calculated for patterns of injuries and presented as tables. **Results:** A total of 356 Qingqi rickshaw related injured patients presented in six months study period. There were 243 (68.3%) males and 113 (31.7%) females and a mean age of 32.5 +2.5 years. Soft tissues injuries like subcutaneous edema, abrasions and lacerations were noticed in 206 patients (57.9%). Most common region involved was lower limb in 98 (27.5%) cases followed by upper limb trauma in 65 (18.2%) cases. Ploy trauma was present in 58 (16.3%) and head and spinal injuries were noticed in 27 (7.6%) and 13 (3.7%) cases, respectively. The turning over of the rickshaw due to different reasons (47.2%) and head on collision (38.4%) were the leading cause of serious injuries. None of the Qingqi rickshaw drivers (0%) were wearing helmet. A total of 46 (12.9%) cases were pedestrians. Three patients had to undergo amputation for mangled limb injuries. **Conclusion:** The common pattern of injuries related to Qingqi accidents include lower limb injuries followed by upper limb and poly trauma comprising of head injuries. Males in their younger age group are most commonly injured. These accidents can result in serious morbidity and even mortality. It is now time to consider measures for safety of three-wheelers to reduce such incidents.

**Key words:** Injury, Three-Wheeler Vehicles, Traffic Accidents, Trauma.

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## INTRODUCTION

Qingqi (Chingchi, chand gari), a three-wheeler motorcycle Rickshaw, was first of all introduced by Qingqi, a Chinese company in Pakistan. This is a very popular mode of transportation among poor and lower middle class of the society.<sup>1</sup> It is mainly used for short distances within the cities and often in villages for long distances. It can seat up to six or seven people and is often over loaded. Recently, it has proliferated very rapidly in a very short span of time. The main factor of its popularity is availability and negotiable and affordable fares.<sup>2</sup> However, the Qingqi Rickshaw drivers are often under- age and without driving license.

Qingqi rickshaws are considered to be a major factor for ill-disciplined traffic in cities and a major contributory factor of road traffic accident (RTA) in Pakistan.<sup>3</sup> The lack of safety devices and the sub-quality material and faulty design used in manufacturing of these vehicles along with over-speeding and overloading are the main contributory factors for these accidents.<sup>4</sup> Additionally, the drivers are not well versed with traffic laws and do not follow lane discipline. The roads safety rules are not implemented. The roads conditions are also not satisfactory. Over speeding on the bumpy roads results in wheel lift-offs and turnover leading to accidents. The pedestrians also do not observe road safety

precautions.<sup>5</sup>

The doctors working in emergency departments have to deal with Qingqi related accidents on routine basis. Previous studies conducted in Pakistan have shown that most common injuries are head injuries (41.3%) followed by injuries to the lower limb (29.7%) and poly trauma (14.9%).<sup>6</sup> The morbidity and mortality from road traffic accidents is preventable and can be avoided to a large extent through proper planning and implementation.<sup>7</sup> However, very scarce local data is available that can guide the emergency medical staff in management of such patients. Located in the heart of city of Lahore, Mayo Hospital is the largest tertiary care hospital of the Punjab. A comprehensive number of Qingqi accidents related patients are received on day to day basis. Therefore, this study was conducted to find the patterns of injuries in tri-wheeler Qingqi rickshaw related accidents.

## MATERIAL & METHODS

A descriptive cross-sectional study was conducted at the Resuscitation room of Accident and Emergency Department of Mayo Hospital affiliated with King Edward Medical University (KEMU), Lahore, during the six months period from 1<sup>st</sup> of March, 2019 to 31<sup>st</sup> of August, 2019. All patients of either gender of age between 15-70 years who had met with Qingqi accident were included. Drivers under effect of drug or alcohol and occupants of vehicles other than Qingqi who were involved in Qingqi accidents were excluded. Patients not giving consent for study were also excluded. Non-probability consecutive sampling technique was used and all patients fulfilling the inclusion/exclusion criteria were included. Informed consent was taken from all the study participants.

The data were entered in SPSS version 21 and analyzed through its statistical package. Descriptive statistics were applied. Age was presented as mean +SD and gender, occupation and patterns of injuries were presented as frequencies and percentages. Tables were constructed to presents the age groups, occupations and common injury patterns.

## RESULTS

A total of 356 Qingqi rickshaw related injured patients presented in the study period of six months at the Resuscitation room of Accident and Emergency Department of Mayo Hospital, Lahore. Among these 356 cases, there were predominantly males i.e., 243 (68.3%) and 113 were females (31.7%), thus giving a male to female ratio of 2.2:1. The age range was 15–67 years with a mean age of 32.5 +2.5 years. The age characteristics of cases are given in Table-I.

Age Group	Frequency (n)	Percentage (%)
15 to 20 years	26	7.3%
21 to 30 years	129	36.2%
31 to 40 years	113	31.7%
41 to 50 years	49	13.8%
51 to 60 years	23	6.5%
61 to 70 years	16	4.5%
<b>TOTAL</b>	<b>356</b>	<b>100%</b>

**Table-I. Age-wise breakup of cases of Qingqi related accidents (N = 356)**

The cases belonged to various occupations. The most common were factory workers (97 cases), followed by un-employed or house wives (76 cases) and students (68 cases) which constituted 27.2%, 21.3% and 19.1% of the cases, respectively. Table-II shows various occupations of the study participants.

Occupation	Frequency (n)	Percentage (%)
Factory laborer	97	27.2%
Unemployed / Not working / house wife	76	21.3%
Students	68	19.1%
Drivers	38	10.7%
House maids	31	8.7%
Others	46	13.0%
<b>Total</b>	<b>356</b>	<b>100%</b>

**Table-II. Occupation of the cases of Qingqi related accidents (N = 356)**

The injury patterns were recorded in the cases. Soft tissues injuries like subcutaneous edema, skin abrasions, bruises, lacerations and hematomas present alone or in combination with other injuries were noticed in 206 patients (57.9%). Abrasions were common at all body parts especially the limbs (70%) but lacerated wounds were mainly at hands (33.2%), knees (24.1%), elbows (18.6%) and to lesser extent at feet (9.9%).

The injury patterns show that most commonly affected region was lower limb, which was affected in 98 (27.5%) of the cases. Upper limb trauma was the second most common pattern identified which was present in 65 (18.2%) of the cases. Injuries to more than one body part/system were present in 58 (16.3%) patients and were put in the category of poly trauma patients. Among the 58 patients with poly trauma, facial injuries were present in 31 (53.4%) cases. The facial injuries were mostly soft tissue injuries (60.6%) followed by bony injuries (25.7%) including fractures of zygomatic complex, mid-facial skeleton (zygomatic, nasoethmoid, orbital), mandible and dento-alveolar parts.

Head, cervical spine and facial injuries occurred frequently in roll over and head on collision accidents. Head injuries were observed in 27 (7.6%) patients. Among these patients, base of the skull fracture was the commonest fracture observed and occurred in 17 cases. This was followed by brain contusions which were recorded in about 13 cases and sub-arachnoid hemorrhage was seen in 11 cases. Spinal column injuries were seen in 13 (3.7%) cases. Among these cases, cervical spine fractures were noticed in 5 patients and 3 of them were unstable fractures. Chest injuries occurred in 17 (4.8%) cases, leading to pneumo-hemothorax in 9 and rib fractures in 8 cases. Table-III shows common injury patterns among the cases of Qingqi related accidents.

Injury Patterns	Frequency (n)	Percentage (%)
Lower Extremity Injury	98	27.5%
Upper Extremity Injury	65	18.2%
Polytrauma	58	16.3%
Maxillofacial injuries	39	10.9%
Head Injury	27	7.6%
Abdominal Injury	21	5.9%
Chest Injury	17	4.8%
Spine/vertebral column injuries	13	3.7%
Clavicle	12	3.4%
Pelvic fractures	6	1.7%
Total	<b>356</b>	<b>100</b>

**Table-III. Common injury patterns of the cases of Qingqi related accidents (N = 356).**

The turning over of the rickshaw due to different reasons (47.2%) and head on collision (38.4%) were the leading cause of multiple serious injuries. None of the Qingqi rickshaw drivers (0%) was wearing helmet at the time of accident. Pedestrians also presented with Qingqi related accidents. A total of 46 (12.9%) cases were pedestrians. The injury pattern among the pedestrians showed that minor injuries and lacerations occurred in 17 (36.9%) cases and 13 (28.3%) involved poly trauma. Fractures of the lower limb, either alone or in patients of poly trauma, were present in 12 (26.1%) cases and fractures involving upper limb and shoulder region occurred in 9 (19.6%) cases. Chest injuries were present in 5 (10.9%) cases. There were 4 (8.7%) pedestrians who got head injuries, 3 (6.5%) had abdominal injuries and 3 (6.5%) had to undergo amputation for mangled limb injuries. One pedestrian female was in 35<sup>th</sup> week of gestation and presented with blunt trauma, hit by Qingqi. She had lower abdominal pain, PV bleeding and fetal distress. Patient was referred to Gynecology Department, where emergency Cesarean Section was planned.

## DISCUSSION

The peak age of the patients in this study was 21- 30 years. This is the active age group and the most of Qingqi drivers as well as users belong to this age group. This age result is similar to that of a survey conducted in Sri Lanka in 2015<sup>8</sup> and in India.<sup>9</sup> A male to female ratio of 2.2:1 was observed in this study. Previous studies has reported an even higher percentage (more than 70%) of males.<sup>10</sup> As males in their younger age group have to travel more for work related tasks and drive more as compared to females so there are more prone to accidents.

We noticed common patterns of injuries involving lower limb or upper limb fractures, poly trauma and head injuries. The accidents due to crashes with other high- speed vehicles were found to be associated with serious injuries leading to major surgical interventions and admissions at ICU as compared to crash with low speed or single vehicle. In this study, the main cause of disabilities was due to crashes leading to head injuries. In few patients there were mangled limbs, fracture of

the pelvis and abdominal visceral injuries. Some patients were ejected and thrown away from the Qingqi during crash or roll-over accidents as this is an open vehicle. Occupants suffered from head and limbs injuries due to direct impact of the body part on the road. In these accidents it was noticed that head injuries were due to unsupported occupants had their head hit on the metallic side bars and other parts of the Qingqi.

Similar patterns of injuries are reported in previous studies.<sup>11-14</sup> A study in Karachi also reported lower limb fractures as the most common injuries (in almost 45% of cases) followed by head injuries (28%). Almost 40% of the patients were considered significantly injured at primary survey and required either admission or referral to a better equipped facility.<sup>15</sup> Studies in India have reported a very high rate of poly trauma involving head injury (50%) and mortality rate of 12% in accidents involving motorcycle rickshaws.<sup>16</sup> Another study reported a mean Glasgow Coma Scale (GCS) of 13.4 + 4.3 at presentation, thus emphasizing the potential of head injury in such accidents.<sup>17</sup>

Survey from Pakistan shows that Qingqi rickshaws have the highest rate of road traffic accidents.<sup>18</sup> The high rates of accidents of Qingqi rickshaw are not merely by chance. This transport vehicle is generally over crowded. There is poor manufacturing and faulty design of the vehicle. The driving habits of the drivers are compromised and there is non-compliance of road safety measures.<sup>1</sup> The roads quality and conditions are also a contributory factor as there are bumps, excessive height of speed breakers, opened man-holes. Qingqi has become one of the most favored means of transportation for the low-income group, but for car owners, it has emerged as a source of irritation.<sup>19</sup> The stake holders are in the view that this should not be stopped altogether and proper SOPs related to the designing and the material used in manufacturing can be laid and strictly enforced to prevent accidents.<sup>2</sup>

There is no workable policy regarding these Qingqi rickshaws in Pakistan. Reports show that there are more than 60,000 unregistered Qingqi

rickshaws in Karachi only.<sup>20</sup> At present there are no defined specifications for height and width of the carriage and many vehicles are also carrying advertisement hoardings on their sides. The traffic and the road safety rules must also be strictly followed and awareness created among the general public and drivers to improve the safety of the Qingqi occupants and other road users alike.<sup>21</sup> We hope that this study will serve as a reference for further research to reduce the Qingqi related accidents and help emergency medical staff in devising strategies for better management of such patients.

## CONCLUSION

Based on the results of this study and previous literature it may be concluded that Qingqi rickshaws are a common source of road traffic accident cases encountered in day to day practice in emergency departments. The common patterns of injury include lower limb injuries followed by upper limb and poly trauma including head injuries. Males in their younger age group are most commonly injured. These accidents can result in serious morbidity, limb loss and even mortality. The Qingqi rickshaws, although a favored means of communication for many, has become a serious traffic concern. Along with driver, pedestrians and passengers are equally endangered. A safe and dignified transport system is the right of general public which must be ensured at government level. It is now time to consider measures for safety features and modification of three-wheelers to reduce the grave consequences of its users. Our findings support the need for stricter enforcement of traffic laws among Qingqi rickshaw drivers who drive recklessly.

## DISCLAIMER

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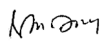




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3	Umme Bilqees	Paper writing & data analysis.	
4	Unaiza Malik	Data analysis.	
5	M. Kashaf Naseer	Data analysis & revisiting critically.	
6	M. Sohail Iqbal Qamar	Data analysis.	