Motorcycle-Related Trauma in South Sudan: a cross sectional observational study.

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Abstract

Motorcycle related trauma is a major cause of morbidity in those of working age in the developing world[1]. One hundred and sixteen patients involved in motorcycle related accidents were identified over four weeks at the Juba Teaching Hospital in South Sudan. Of these 84% were male with an average age of 26.7 years. Most male injuries involved drivers, whereas the majority of female injuries were to pedestrians. The commonest injuries were lacerations, abrasions and fractures, and the commonest regions injured were the lower and upper limbs and the head and face.

Forty-four patients were admitted to the ward. Forty six percent of men interviewed did not hold a license, 96.5% of drivers and 91.3% of passengers were not wearing a helmet and 24.6% of drivers were under the influence of alcohol at the time of injury.

The vast majority of accidents occurred on surfaced roads within Central Juba. This study highlights the need for tighter regulation of motorcycle ownership, usage and personal safety in addition to wider infrastructural development. In doing this it might be possible to reduce morbidity and the socioeconomic impact on those involved in motorcycle related accidents and the families who depend on them.

Significant injuries to the head and face were recorded, but no enquiries were made about cognitive impairment. Organised rehabilitation of those injured needs serious consideration by the Ministry of Health.

Background

A recent influx of petrochemical and charitable organizations has turned Juba into a crowded overpopulated city and brought a new wave of inexperienced motorists. Many young men are using their motorcycles as makeshift taxis, often without licences or personal protection. This coupled with poor road conditions has created a perfect environment for motorcycle related trauma (MRT).

The aim of this study was to determine:

1. The extent of the problem of MRT in Juba
2. The demographics of those involved
3. The method and extent of injury and
4. Contributing risk factors.

These data might help to develop a strategy to reduce MRT and its serious impact on those involved.

Method

The study took place over four weeks (15th April – 10th May 2009) at Juba Teaching Hospital at the emergency surgical outpatient department and the trauma and surgical wards.

To assess how representative these patients were of the overall road traffic-related trauma caseload, clinical details of all patients admitted following road traffic accidents to the surgical and emergency wards between April 2008 and April 2009 were examined.

Results

A total of 116 patients were identified over the 4-week period and 44 (38%) were admitted. All recorded cases took place between 7.45 and 22.00 hours with a peak time between 12.00 and 16.00 hours. The percent of the accidents occurring at different locations were:

- main paved roads in central Juba 70.2%
- outskirts of the city on unpaved road 8.8%
- within 10 miles of Juba 10.6%

The remainder occurred over 10 miles from the hospital.

Characteristics of patients

Of the 116 patients:

- 97 (84%) were males and 19 (16%) were females.
- The average age was 27.4 years for males and 24.1 years for females
- 23 were children (<16 years) and 21 were unemployed. The remainder were students (≥16 years in full time education) or in paid employment of which 10 were military personnel.
- 58 were drivers (all males), 23 were passengers, and 35 were pedestrians. See figure 1.

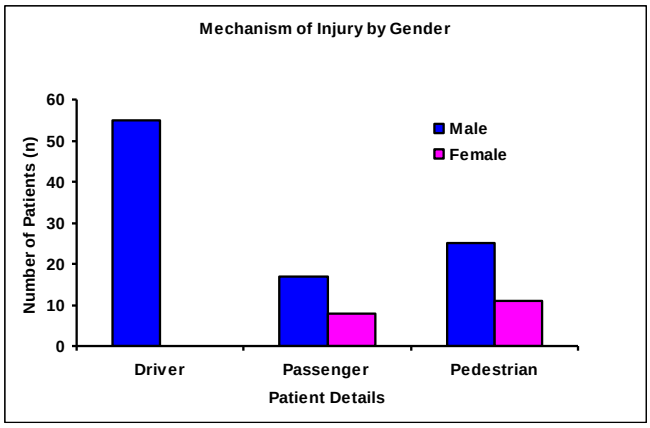

Figure 1.

Figure 2 contrasts the region of the injury in males and females.

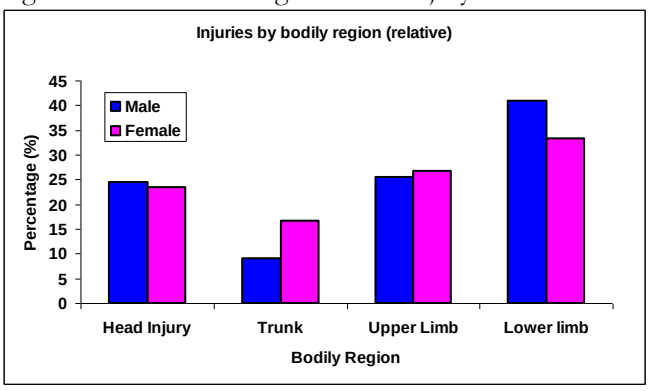

Figure 2.

Table 1 lists the injury by region for drivers, passengers and pedestrians.

Table 1. Injury by region for drivers, passengers and pedestrians

Injury by Region	driver n=58		passenger n=23		pedestrian n=35	
	No.	%	No.	%	No.	%
Head Injury	12	20.7	4	17.4	10	28.6
Facial Injury	15	25.9	6	26.1	3	8.6
Neck	0	0.0	0	0.0	0	0.0
Chest	4	6.9	1	4.3	2	5.7
Abdomen	4	6.9	1	4.3	3	8.6
Back	2	3.4	1	4.3	3	8.6
Shoulder joint	7	12.1	3	13.0	3	8.6
Upper arm	2	3.4	0	0.0	0	0.0
Elbow joint	8	13.8	2	8.7	5	14.3
forearm	6	10.3	3	13.0	2	5.7

Wrist joint	0	0.0	0	0.0	1	2.9
Hand	10	17.2	1	4.3	0	0.0
Hip joint	0	0.0	1	4.3	4	11.4
Thigh	8	13.8	1	4.3	4	11.4
Knee joint	10	17.2	5	21.7	8	22.9
Shin/calf	11	19.0	5	21.7	8	22.9
Ankle joint	4	6.9	1	4.3	1	2.9
Foot	6	10.3	3	13.0	2	5.7
Head	27	46.6	10	43.5	13	37.1
Trunk	10	17.2	3	13.0	8	22.9
Upper limb	33	56.9	9	39.1	11	31.4
Lower limb	39	67.2	16	69.6	27	77.1

The commonest injuries:

- in males were lacerations (50), abrasions (26) and fractures (24)
- in females were contusions (8), lacerations (6), abrasions (5) and fractures (3).

Almost two thirds presented with polytrauma.

Figure 3 shows the type of injury to the 81 drivers and passengers caused by type of collision. Lacerations were the commonest type of injury with fractures seen more commonly in patients who had been hit by a car or had fallen from their motorbike.

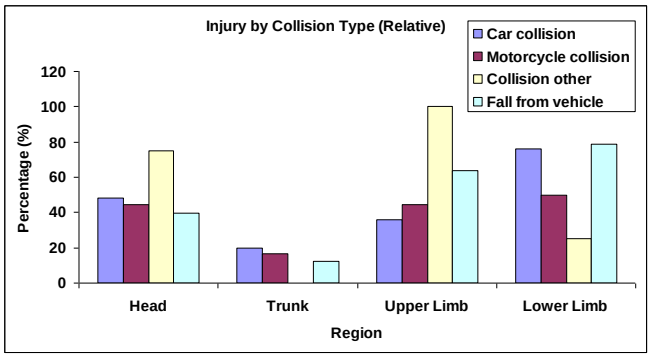

Figure 3.

Risk Factors

Figure 4 compares the risk factors associated with drivers and passengers.

Of the 58 injured drivers: 45.6% had no motorcycle license, 96.5% were not wearing a helmet and 24.6% had been drinking alcohol.

Of the 23 passengers: 26.1% were being driven by a driver without a license, 91.3% were not wearing a helmet and 4.3% had been drinking alcohol

Of the 35 injured pedestrians: 16.7% were hit by a driver without a license.

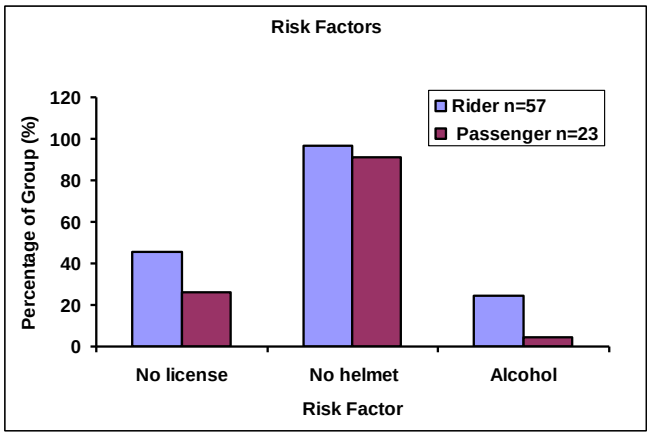

Figure 4.

Ward Admissions

Forty-four patients were admitted to the ward for observation and treatment. Figure 5 shows the percent of all drivers, passengers and pedestrians who were admitted. Of these:

- 40 (90.9%) were male
- 30 had a head injury, 29 had a lower limb injury, and 9 had a truncal injury.

Because many patients had polytrauma the number of injuries was more than 44. Of those with:

- a fracture 77.8% were admitted (21/27) including all three open fractures
- lacerations 37.5% (21/56) were admitted
- abrasions 29.0% (9/31) were admitted
- contusion 16.7% (5/30) were admitted
- haematoma 60% (3/5) were admitted
- dental trauma 71.4% (5/7) were admitted

All patients with substantial external haemorrhage (3/3) or joint dislocation (3/3) were admitted.

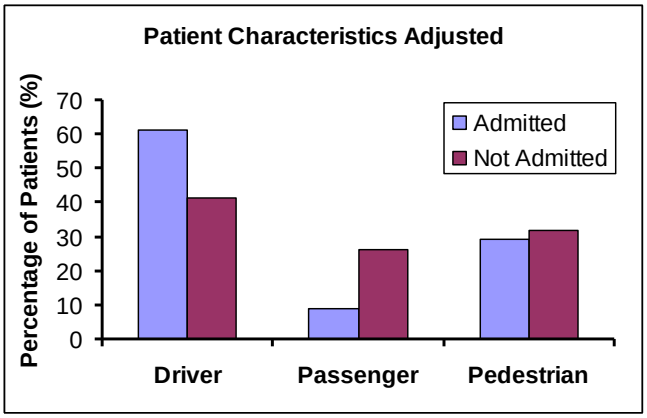

Figure 5.

Discussion

In this study 44 cases of MRT were admitted over the four-week period - a figure higher than the number admitted under the heading road traffic accidents (RTA) over the same period in the previous year. The average monthly admissions for RTA over the entire year was 49.9 patients. Road accidents increased between April and August. This may be due to the more difficult road conditions or decreased visibility caused by the rainy season.

Over 70% of the MRT accidents in this study occurred on the paved roads in Central Juba. Possible reasons are:

- traffic density is high as the paved roads are the main thoroughfare for the city
- the roads are smooth so drivers may drive with less caution
- the straight roads allow drivers to attain a higher speed.

No formal assessment of cognitive function was carried out in those who sustained head injuries and it is therefore not clear what proportion of these patients had persisting impairment of executive function, short-term memory or concentration. A future study needs to incorporate a tool for assessing cognition. Due to lack of Computerised Axial Tomographic (CT) scanning of the brain, brain injuries such as contusions, subdural and extradural haematoma could have been missed.

The study has identified MRT as a significant problem in terms of hospital resources and expenditure and individual morbidity and mortality. At present it is the only study of its kind in South Sudan and the results share many similarities with MRT in other countries [1, 2, 3, 4].

Limitations to this study include note taking and translation errors, imprecise diagnoses due to limited imaging resources, inaccurate description of the timing of the accident or age of the patient, patient self discharge and incomplete recording of patients presenting at night who were not admitted.

References

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