The Impact of Age Groups on Modality and Outcome of Road Traffic Accident Victims in King Fahad Specialist Hospital (Qassim)

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Objectives: To determine and evaluate a possible relationship between different age groups, modality of injury, and the outcome of the victims of road traffic accidents.

Setting: King Fahad Specialist Hospital—Buraidah, Al-Gassim, Saudi Arabia.

Methods: Data was collected from 167 patients’ charts in a 2-year study period (1410–1411). Four age groups were devised and a comparative study was made, on modality and outcome of injury.

Results: Age group I (median age 3.7 years) were involved mainly as pedestrians. Age groups II and III (median age 22 years) were crippled by head injuries. Statistical analysis for head injury in these two age groups was a significant determinant for bad outcome (p value <0.01). On the other hand abdominal, chest and skeletal injuries either alone or in combination with head injury were statistically non-significant factors for bad outcome (p value >0.05).

Conclusion: Seat belt enforcing law, tough penalties for speed breakers, media propaganda and chaperoning of children on roads are mandatory.

Keywords: Road traffic accidents. Age groups. Modality. Outcome.

King Fahad Specialist Hospital is a 570-bed speciality hospital situated in the northern central part of Saudi Arabia. It is a tertiary referral hospital for the Qassim province. The fact that road traffic accidents are a major cause of traumatic emergency admission promoted this study to determine the relationship of different age groups on modality and outcome of involved victims.

Methods

A retrospective study was undertaken on 167 patients admitted during a 2-year period (1410–1411). The patients in this study had all been admitted alive; none had expired in the emergency room or during transfer from the site of accident or the referring hospital. The modality of injury was divided into four groups: drivers (D); passengers (Ps); pedestrian (Pd); and unknown (U).

Age Groups

Age groups were divided into four: I (0–10 years); II (11–20 years); III (21–60 years); IV (over 60 years). All victims were studied for head, chest, abdominal and skeletal injuries. The outcome for simplicity of statistical review was graded as good if no permanent disability,
or bad if there was a permanent disability or the patient needed further referral for an unsolved medical problem.

The $\chi^2$ test was used for statistical analysis.

Results

Figure 1 shows that 67.6% of age group I were involved as pedestrians. In age groups II and III 50% were drivers, and 50% of age group IV were of unidentifiable modality.

Statistical analysis of the different age groups in relation to abdominal, chest, skeletal and head injuries was performed separately and in relation to head injury to delineate the effect of these factors on outcome.

Figure 2 shows that abdominal injury in relation to different age groups was not a determinant of bad outcome. The $p$ value was non-significant: $>0.05$. Figure 2 also shows that chest and skeletal injuries in relation to age groups were not a significant determinant of bad outcome.

Figure 3 shows clearly that head injury was a determinant factor for bad outcome in age groups II and III (D) where the $p$ value was $<0.01$, i.e. significant.

The combined effect of head injury and different abdomen, chest or skeletal injuries as shown in Fig. 2 was not of any statistical significance: $p$ value $>0.05$.

Age groups in relation to period of stay showed no statistical significance: $p$ value $>0.05$ (Fig. 4).

Age groups in relation to injury severity score (1) (ISS) shows no statistical significance: $p$ value $>0.05$ (Fig. 5).

The comparison of different injury modalities with (ISS) shows a statistical significance for the U group: $p$ value $<0.01$ (Fig. 6).
Discussion

Of the injured patients admitted, 159 were Saudi, while only eight were of a different nationality, as admission to this hospital is somewhat restricted to Saudi nationals only.

The whisker plot for age by levels of modality (Fig. 7) shows that pedestrian median age was about 3.7 years i.e. unattended children were on the street. Drivers' median age was 22 years and they had shown erratic, unrestrained behaviour.

The unidentifiable high percentage of age group IV shows clearly the difficulty of obtaining an accurate history from geriatrics due to limiting factors (poor memory, post-traumatic amnesia, deafness and low visual acuity etc.).

The head injuries in age groups II and III were sufficiently severe for the injured to have a bad outcome and increase the burden on society, although these age groups are supposed to be the most productive and the foundation for the progress of any society.

Although severe abdominal injuries necessitated major surgeries (hepatectomy, duodenectomy, partial pancreatectomy) this did not result in a bad outcome and on recovery, patients once again became productive and able to care for their dependants. Major flail chest injury in an
80-year-old necessitated special care referral after 4 weeks of mechanical ventilation with no improvement (lost for follow-up). Spinal injury (Ps) ended in paraplegia but this was statistically insignificant. No victims were recorded as having used seat belts which suggests that the public have chosen not to follow media advice. Speed was not recorded by the traffic police but it was assumed that this was enough for the driver to lose control of the vehicle. Other underlying causes for the accidents were not recorded (i.e., mechanical, light, street etc.). The timelapse between accident and transfer to our hospital was difficult to assess because other primary and secondary medical care centres received these patients first in 35% of the total study.

**Conclusion**

Our study confirms findings by others\(^3\)\(^-\)\(^4\) that road traffic accidents are an important cause of traumatic emergency admission. Children in this region at the age of 3.7 years being left to play on streets unattended are most vulnerable to road traffic accidents. Drivers at 22 years median age
Figure 6a. Relationship between modality and injury severity score (ISS).

Figure 6b. Injury severity score range per modality of trauma.

Modality

1. (D) 

2. (Ps) 

3. (Pd) 

4. (U) 

Figure 7. WHISKER plot for age by levels of modality.
are causing the most bodily damage to themselves by unrestrained motor vehicle behaviour.

Recommendations

Seat belt compulsory law regulation should be passed as the wearing of seat belts is well known to prevent severe head injury. Media coverage of the issue should be more intensified; and there should be tough penalties for speed breakers and those who do not wear seat belts.

It is a continuing tragedy that 15% of our male surgical beds are occupied by road traffic accident victims and 12–14 beds occupied by long-standing vegetatives or quadriplegics needing full nursing care, utilizing considerable resources of the health care system.

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References