**Crash characteristics of adolescents drivers by using surveillance data from hospitals, Karachi, Pakistan**

Teen drivers have been involved in fatal crashes three times more than adults.[1] There is a difference of 30 versus 5.3 crashes per million miles drive for teens and adult drivers respectively.[2] The adolescents are more vulnerable to road traffic crashes due to speeding, violation of safety rules, inexperience and not going through proper training of driving. Drink driving and use of cell phones are also risk factors [3-5].

In most of the countries, the minimum driving age is 18 years. However, in some families, adolescents start driving earlier than the legal age due to many reasons. Their growing desire to be independent, adventure taking and peer pressure are few of the important causes.[6] Graduate driving license is a program to countermeasure the risks for young drivers by restricting their exposure to risk.[7] The program is successful in reducing fatal crashes in young drivers.

The research in area of teen driving is mostly undertaken in high- income countries (HICs) where road built environment is safe, road traffic rules are strict and obtaining license is linked to training both for driving and traffic rules.[4,8] The situation in most low and lower-middle-income countries (LMICs) is altogether contrast. The built environment is not safe, traffic rules are not being followed, use of helmet and seat belt is extremely uncommon and getting license is easy in LMICs by paying bribes.

The researches about circumstances and consequences of crashes by young drivers as well as their demographic and socioeconomic characteristics were studied in HICs. However, this topic is almost untouched in LMICs. Our objective for this study is to determine demographic and crash characteristics of road crashes involving adolescents’ drivers of four wheelers and motorcycles in Karachi, Pakistan.

**Methods**

Design

The study is cross-sectional design during 2007-2014.

Setting

The study setting is Karachi, a large urban area of Pakistan (about 3,530 square kilometers), with an estimated population of 18 million and a total length of the road network of over 8,000 kilometers.

Injury data were extracted from an ongoing road traffic injury surveillance project based on emergency department (ED) from all of the three government trauma centers in the city, and the two private tertiary care hospitals. The detailed methods have been described previously.[9]

These hospitals receive nearly all major trauma cases from the city. The data collectors of the surveillance project gather demographic information on the injured patients and details of the crash by asking victims, their relatives, ambulance drivers or any eyewitnesses. The system was piloted in late 2006 and formally launched in 2007.

Ethical approval of study methods were approved from the Institutional Review Board of the Jinnah Post Graduate Medical Center, which is center of this road surveillance project.

Participants

Road traffic crash victims of age 13-19 years who are drivers of four wheelers and motorcycles visiting emergency departments of participating hospitals with injuries.

Study variables

Road user category, time and location of the crash, type of vehicle involved, helmet use, type of location (intersection or midblock), body parts injured, and hospital outcome (discharged, admitted or dead)

Data analysis

We performed the analysis using R.[10] The categorical variables are described using frequencies and percentages (age, gender, injury patterns, vehicle type etc). Chi-square tests were used to assess crash characteristics associated with drivers of motorcycles versus drivers of four wheelers.

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