Drivers' Behavior Observation Regarding Their Children Passenger Safety Seat

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Abstract

Objectives: the study was designed to determine the prevalence of children's safety seat and seatbelt usage, the position of the children in the vehicles, and to observe how much people adapted to safety seat and seatbelt in Mamak, Ankara.

Methods: The study was an observational survey, conducted in front of the Mamak Cultural Center in the daylight, flowing traffic. 1043 vehicles were observed and data was collected in an observational sheet which included 10 variables regarding the objectives of the research. Data was collected for five days (from 02/12/2013 to 6/12/2013), each day for two hours (from 08:00 am to 10:00 am) in the traffic stream. Collected data was first cleared, entered, edited and analyzed, SPSS version 21 was used.

Results: Totally 1043 vehicle was observed; Out of 1043 vehicles 157 (15.1%) vehicles had children. The prevalence of seatbelt usage among drivers was 43.3% (95% CI 41.7% - 44.9%). The prevalence of seatbelt usage was higher among women than men. The prevalence of restraint children was 24.1% either using a safety seat or seatbelt. Safety seat was used by 17.8% (95% CI = 12.8% – 22.8%) of the drivers and seatbelt by 6.3% (95% CI 2.8% – 9.8%).

Conclusion: the findings are quite lower compared to the studies conducted in other countries. The usage of safety seats has been recently legalized and in this short period of time, it is not possible to increase the parameter of interest to the level to compete with the other countries in the world. On the other hand, effective enforcement of the safety seat has not been strictly practiced in Turkey yet. Therefore, education of parents, caregivers, and drivers regarding the law risks children may encounter when they are not restrained, the usefulness of the safety seat for their children and proper technique for proper usage of the safety seat is recommended. Furthermore, enforcement and legislative strategies for the improvement of the safety measure while traveling is also recommended.

Keywords: Safety Seats, Child Injuries, Behavior Observation

Introduction

Annually 89.7 million injuries occur in the world, 24.3 million because of the road traffic accident, 37.3 million because of falling, 10.9 million because of fire and 17.2 million because of the violence. Injury is the 9th leading causes of the world death, that make 9.7% (male 12,3% and female 7.1%) of all death in the world. Globally 82.5 million Disability Adjusted Live Years (DALYs) caused by injury in 2004 (41.2 million caused by Road Traffic Accident, 21.7 million caused by violence and 19.6 million caused by suicide), which composed 5.4% of all DALYs in the world (1).

Child injuries are a growing global public health problem. They are a significant area of concern from the age of one year, and progressively contribute more to overall rates of death until children reach adulthood. Hundreds of thousands of children die each year from injuries or violence, and millions of others suffer the consequences of non-fatal injuries. For each area of child injury there are proven ways to reduce both the likelihood and severity of the injury – yet awareness of the problem and its preventability, as well as political commitment to act to prevent child injury, remains unacceptably low (2).

It is a major killer of children throughout the world, responsible for about 950 000 deaths in children and young people under the age of 18 years each year. Unintentional injuries account for almost 90% of these cases. They are the leading cause of death for children aged 10–19 years. Road traffic injuries alone are the leading cause of death among 15–19-year olds and the second leading cause among 10–14-year-olds (2).

In addition to the deaths, tens of millions of children require hospital care for non-fatal injuries. Many are left with some form of disability, often with lifelong consequences (2).

Motor vehicle crashes are the leading cause of mortality and morbidity for children younger than 15 years (3). Children are at high risk of fatality in Road Traffic Accident. Head injury is more common among children, whereas sever injury to other parts of the children is relatively rare. Because of those differences, safety restraints measure for children must be constructed differently from those of adults. When children are riding in a vehicle, they must be secured in a vehicle's seat or strapped in with a seatbelt along the journey. Properly using of car safety seat for children can reduce traffic fatality (4).

Infants and young children need to use a car seat; older children should use booster seats or seatbelts. Non-use and misuse of car safety seats are very common and lead to preventable serious injuries or death (5).

In several studies, car safety seats have been shown to be highly effective in preventing serious injury and hospitalization. Age- and size-appropriate car safety seats can reduce the risk of death up to 54% for toddlers and 71% for infants (4). Most countries currently have laws enforcing mandatory car safety seat use (4). The Road Traffic act 2981, article 78, make the usage of safety program during the journey mandatory for a passenger as well as derivers in turkey. After editing, child safety seat usage has been made compulsory by law in June 2010 (6).

Therefore, the study is designed to determine the proportion of children using a car safety seat, to observe how much Turkish people adopted Mandatory car safety seat laws and whether it could also increase the car safety seat usage rate or not.

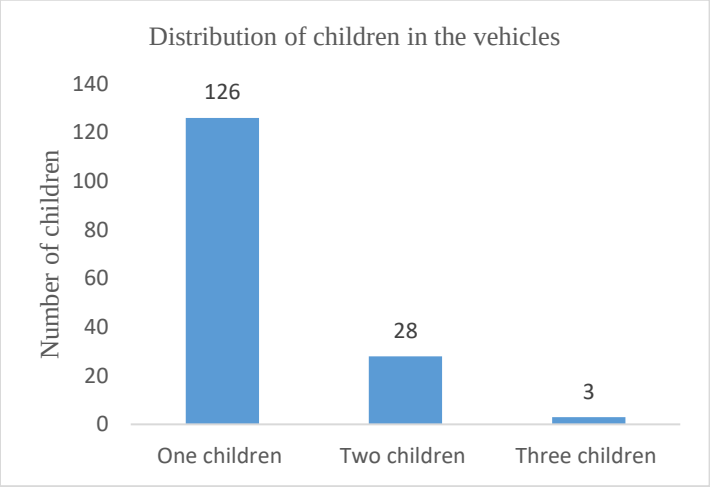
Methodology

The study was a preliminary, field observational survey, conducted in front of the Mamak Cultural Center in the daylight, flowing traffic. Every fifth vehicle of the first line near to pedestrian was taken and observed for the variables of interest.

For data collection, researcher used an observational sheet which included 10 variable regarding the objectives of the research such as type of vehicle (passenger car, van, four-wheel, pickup truck), sex of the drivers, seatbelt of the drivers, presence of the children in vehicle, number of children in the vehicle, position of the children in the vehicle (front seat, back seat, in the laps of the other passenger in front or in back seat), usage of safety seat and seatbelt of the children. Data was collected for five days (from 02/12/2013 to 6/12/2013), each day for two hours (from 08:00 am to 10:00 am) in the traffic stream and the researcher fill out the observation sheet by himself. Collected data was first cleared, then entered and analyzed, SPSS version 21 was used.

RESULTS:

Totally 1043 vehicles were observed, of which 868 (83.2%) were passenger cars, 121 (11.6%) were Van, 28 (2.7%) were four-wheel and 26 (2.5%) were pickup truck. Out of 1043 vehicles, 157 (15.1%) vehicles had children, 877 (84.1%) vehicles did not have children and 9 (0.9%) vehicle was not observed whether to have children or not due to flowing traffic. From 157 vehicles that transport children, 126 (80.3%) vehicles had single children, 28 (17.8%) vehicles had 2 children and 3 (1.9%) vehicles had 3 children, totally of 191 children were witnessed (Figure 1).



Figures 1. Shows distribution of children in the vehicles

This study revealed that totally from 191 children, 25 (13.1%) children were sitting in the front seat, 133 (69.6%) of the children were sitting in the back seat, 16 (8.4%) were sitting in lap of front seat holders and 17 (8.9%) were sitting in the lap of back seat occupants (Table 1.).

Totally 46 (24.1%) children were restrained, either with child safety seats, or seatbelt. The prevalence of children's safety seat usage in the study was 17.8% (95% CI = 12.8% – 22.8%) and the prevalence of children's seatbelt usage was 6.3% (95% CI = 2.8% – 9.8%).

The prevalence of seatbelt usage among driver was 43.3% (95% CI = 41.7% - 44.9%). From 1043 vehicles 915 (87.7%) vehicles were driven by men, out of 915 men drivers 357 (39%) used seat belt and 128 (12.3%) were driven by the women out of 128 women drivers 95 (74.2%) used seat belt, the seatbelt utilization rate is higher in women than men p<0.001.

Table 1: the frequency and percentage of position, seatbelt, and safety seat of the total children

characteristics	Number	Percentage
Children Position		
Front seat	25	13.1
Back seat	133	69.6
Front lap	16	8.4
Back lap	17	8.9
Seatbelt usage		
Yes	12	6.3
No	179	93.7
safety seat usage		
Yes	34	17.8
No	157	82.2
Total	191	**100.0**

The study disclosed that male drivers had 171 children passengers, of which 41 (24%) were sitting in the front seat and 130 (76%) were sitting in the back seat, whereas female drivers carried out 20 children, all of them were sitting in the back seat. The rate of front seat usage for the children is higher in male-driven vehicles than female p =0.006, while the rate of back seat usage for the children is higher in female-driven vehicles than male-driven vehicles.

Male drivers used seatbelt for 6.4% of their children passenger and female drivers used for 5% of their children passenger, this difference was not statistically significant p=0.636.

The rate of safety seat usage for children is higher (40%) in female-driven vehicles than in male-driven vehicles 15% p =0.012.

The study found that the rate of back seat utilization for the children is higher (93%) in the vehicle driven by the drivers who used seatbelt themselves, than the vehicle driven by those who did not use a seatbelt (69.5%) ($p < 0.001$).

The rate of safety seat utilization of children in the vehicle driven by the drivers who used seatbelt themselves is also higher 46.6% than the vehicle driven by those who did not use the seatbelt $p < 0.001$ (Table 7) whereas, the rate of seatbelt usage is not statistically significant ($p=0.488$), between drivers who used or did not use seatbelt while driving.

Discussion

The prevalence of seatbelt usage among drivers was 43.3% (95% CI 41.7% - 44.9%) and is very low if we compare it to the observational study conducted in the campus of Gazi University Faculty of Medicine among university lectures which were (87.24%) (7). The result for this difference might be due to difference in characteristic of drivers, in this study I took vehicle in the traffic flow without considering the driver characteristics, but in the study which was conducted in the Gazi University Faculty of Medicine, all professors, associate professors, and assistants were observed who all owned high sociocultural, economical and academic levels. The prevalence of seatbelt usage in this study is also lower than the observational study conducted by Middle East Technical University which is 52.1% (8) (A behavioral observation study of Turkish drivers' and children's safety belt use) in 2010 - Ankara. The difference might be due to the procedures of the studies, in this study data was collected in one point (in front of Mamak cultural center), while in the other study convenience sample was taken, data was collected from 10 different intersections and observed only vehicles which have children. On the other hand, the prevalence of seatbelt in this study is higher if we compare it to the study conducted on the university employees in Kars province of Turkey, in which 38.4% (9) of participants reported that they are using the seatbelt while they are traveling.

From 1043 vehicles 915 (87.7%) vehicles were driven by men and 128 (12.3%) were driven by the women, 357 (39%) of men drivers and 95 (74.2%) of women drivers used seatbelt, the prevalence of seatbelt usage is higher among women $p<0.001$. the prevalence of seatbelt usage is also higher among the women in the observational study conducted in the campus of Gazi University Faculty of Medicine (prevalence of seatbelt usage among university lecturers) (7). This fact is followed by some other studies that have been conducted in Kingston (10), Belgium, England, France, Germany, Netherlands, and the United State of America (11). The difference in the usage of seatbelt among men and women might be a predictor of the high socio-cultural, educational and economic status of the women.

This study revealed that totally from 191 children 133 (69.6%) of them were sitting in the back seat that can be the best practices advised for safety, children in the front seat were at 40% greater risk of injury, compared with children in the back seat (OR: 1.4; 95% CI: 1.2–1.7) (4), however

seating position work best when the safety seat is used (The overall risk of greater injuries to all body regions for the children with outboard seating position was 2.3% while drivers in the similar crashes had an injury risk of 8.8%) (12).

In the observed vehicles, 46 (24.1%) had a restrained child, either with a child safety seat, or seatbelt. The prevalence of safety seat usage for children in this study was 17.8% (95% CI 12.8% – 22.8%) and the prevalence of seatbelt usage for children was 6.3% (95% CI 2.8% – 9.8%). The prevalence of safety seat and seatbelt usage is lower if we compare it to the observational study conducted by the Middle East Technical University Ankara which is 24.5% and 29.4% respectively (8). The reason for this difference might be the location of data collection, in my study the data was collected from one point for five days (Monday, Tuesday, Wednesday, Thursday and Friday) from 08:00 to 10:00, but in the study that was conducted by the METU (Middle East Technical University), data was collected from more than 10 roadways in January 2009 for 1.5 – 2 hours between 11:30 and 19:30 in Ankara (8) and they only observed vehicles which have children.

The prevalence of restrained children in this study is also lower if we compare it to the study that has been conducted in Midhat Pasha, Catalagzi and Kilimli Family Health Center located in Zonguldak, 54.8% (13) participant in the study reported that they are using safety for their children while they travel, but in number of other studies that have been conducted in Turkey the prevalence of safety seat usage is lower than this study, such as the survey conducted in May and June 2007 at Bakirkoy Dr. Sadi Konuk Research-Training Hospital, 20% (4) of the participant reported that they are using safety seat for their children during the journey, 13.5% of the participant reported that they were using safety seat for their children in the study conducted in Kars province of Turkey (9), and 16. 8% of the parents responded that they are using safety seat for their children in the study that has been conducted in central Ankara (15). The study finding in all the above studies was based on the parental reports rather than direct observation and because of the different methods of the studies, the results are not consistent with each other.

The prevalence of safety seat usage is also lower if it is compared to the other study conducted in the world, for example, national survey of the use of the booster seat in the US estimated the children restrain rat (safety seat, booster seat and seatbelt) as 89% in 2007 – 2008 (16). In Michigan for 0 – 4 years old children it estimated as 94% but for 4 -7 years old children it was estimated as 43.9% (17). In Alaska it was estimated as 80% in 2010 (18). This difference might be related to the period of legalization of the safety seat, the mandatory usage of the safety program was legalized in June 2010 in Turkey but in the US it was legalized in 1985 (19). In this short period of time very less development has been made in the knowledge of the people regarding the law, perception of the people regarding the risk, understanding the safety benefits of the safety seat for their children and understanding discipline how to handle when the children resist using the safety seat. Besides, in Turkey effective enforcement of the safety seat has not yet been strictly practiced.

As the study found out that the prevalence of seatbelt usage among drivers, and the prevalence of restraint children in vehicles (either safety seat or seatbelt) are very low in the Mamak-Ankara, indicative of peoples' lower level of knowledge about the law, lower level of perception regarding the risk, lower level of understanding the safety benefits of the safety seat, and ineffective enforcement of the safety in Ankara. Therefore, education of parents, caregivers and drivers regarding the law, the risk children may encounter when they are not restrained, and usefulness of the safety seat for their children and proper technique for proper usage of the safety seat are very important for effective safety measures. Furthermore, enforcement and legislative strategies for the improvement of the safety measure while travelling is also recommended. As this study was conducted in small area of Ankara, cannot represent the whole Ankara, for the precise and reliable estimation of the population parameters the greater study with proper sample size is also recommended.

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