



Child restraint system use in the United Arab Emirates



Salaheddine Bendak^{a,*}, Khaled Alkhaledi^b

^a Department of Industrial Engineering and Engineering Management, University of Sharjah, PO Box 27272, Sharjah, United Arab Emirates

^b Department of Industrial and Management Systems Engineering, Kuwait University, PO Box 5969, Safat 13060, Kuwait

ARTICLE INFO

Article history:

Received 27 May 2016

Received in revised form 7 August 2017

Accepted 16 September 2017

Available online 6 October 2017

Keywords:

Child restraint system

United Arab Emirates

Traffic safety

Motor vehicle crashes

Parents' behaviour

ABSTRACT

Objective: Deaths and injuries among infants due to traffic crashes in the United Arab Emirates (UAE) are very high when compared to other countries. An efficient way to improve the safety of children in moving vehicles is to use Child Restraint Systems (CRS) to hold the child during any possible collision. The aim of this study is to estimate the rate of CRS use among children under the age of five in UAE, to determine demographic characteristics that affect CRS use, such as parent's age, and education level, and to assess parents' perceptions and knowledge of this issue.

Methods: A roadside observational study was done in two of the seven emirates that constitute UAE, involving 1000 randomly taken observations. Also, a questionnaire was randomly distributed to a sample of 494 parents of children under the age of five.

Results: Results of the observational study show that 16.7% of parents restrain their children in moving motor vehicles. Questionnaire results show that approximately 9% of respondents reported not or rarely restraining their children in moving motor vehicles. Also, 3.4% of them indicated their disbelief in the importance of CRS in reducing harm in case of a crash. Moreover, questionnaire results indicate that young, less educated and male parents reported lower use rate and have less belief in the importance of CRS use in harm reduction in crashes than other groups of parents.

Conclusions: CRS use in UAE is very low and awareness of its importance needs to be improved. Based on the results, practical suggestions are put forward to increase CRS use rate and improve safety conditions for this group of road users.

© 2017 Elsevier Ltd. All rights reserved.

1. Introduction

When children become passengers in moving vehicles, they must be properly restrained in order to maintain their safety in case of any motor vehicle crash. A child restraint system (CRS) helps in absorbing and safely distributing crash impact forces over the child's body while holding the child in place and preventing contact with the vehicle's interior components or ejection from the vehicle. It is estimated that the CRS, when properly used, decrease the chance of death for infants in a motor vehicle crash by 58–71%, depending on the type of the motor vehicle, by reducing the impact of the crash on the child (NHTSA, 1999, 2013).

Despite this, motor vehicle crashes remain a leading cause of death for children below the age of seven in most countries (NHTSA, 2013; WHO, 2015). For example, in Europe, where CRS use is compulsory, more than 800 children under the age of 15 are killed and 100,000 are injured in motor vehicle crashes each year (European Commission, 2011). In United States,

* Corresponding author.

E-mail addresses: sbendak@sharjah.ac.ae (S. Bendak), HF.S@ku.edu.kw (K. Alkhaledi).

almost 700 children under the age of 13 are killed and 123 thousand are injured annually in motor vehicle crashes (NHTSA, 2013). The situation in developing countries where the use of CRS is mainly not compulsory is even worse. For example, 1415 children under the age of 14 die every year in Angola due to motor vehicle crashes, 14,341 children in China and 4971 in the Democratic Republic of Congo (WHO, 2013).

In order for the CRS to perform its designated task, it needs to be implemented correctly on the car seat and the child must be well fitted in the CRS using the ISOFIX system correctly. ISOFIX is a system for connecting CRS systems to motor vehicles which has two rigid anchorages, two corresponding rigid attachments on the CRS and a mean to limit the pitch rotation of the CRS (UN, 2014). In order to accommodate children of different sizes and weights, child restraint systems fall under five categories (UN, 2014; Vesentini & Willems, 2007) as follows:

- Rearward facing CRS (weight: 0–13 kg; height: 0–88 cm approximately).
- Forward facing CRS (weight 9–18 kg; height: 88–110 cm approximately).
- High back booster seats (weight: 15–25 kg; height: 110–150 cm approximately).
- Backless booster seats (weight: 22–36 kg; height: 110–150 cm approximately).
- Seatbelts (weight: 36+ kg; height: 150+ cm approximately).

The issue of how using restraints for children helps in reducing deaths and injuries in motor vehicle crashes is well documented. For example, Lee, Yaghoubian, Stark, Munoz, and Kaji (2012) studied the outcome of 37,375 patients under the age of 16 involved in motor vehicle crashes from the American National Trauma Database. The authors found that 45.7% of all patients were restrained and that higher injury severity score and higher risk of emergency surgery were associated with not using restraints. Moreover, Decina and Lococo (2005) addressed the use, misuse and lack of use of CRSs in six states in USA by observing 5527 children less than 36 kg (80 lb) in 4126 vehicles and interviewing the drivers. Results showed that 62.3% of those children were restrained in a CRS, 25.9% were restrained in a seat belt and 11.8% were unrestrained. The authors reported that the likelihood of sustaining serious injury among unrestrained children was three folds the same likelihood among restrained children.

To compliment how using CRS helps in improving children's safety, observational studies were done to estimate the CRS use rate in many developed countries. For example, Simniceanu et al. (2014) conducted an observational study aiming to determine CRS use rate in various Canadian provinces and compare use rate in 2010 with that of 2006. They found that CRS use rate dropped in provinces with no legislation from 85.7% in 2006 to 81.9% in 2010, increased in provinces with an old legislation from 91.9% in 2006 to 94.9% and increased in provinces with a new legislation from 83.4% in 2006 to 84.1% in 2010. The authors concluded that child safety seat legislation helped improve child restraint use rates in Canada. In another study in Belgium, Roynard, Silverans, Casteels, and Lesire (2014) conducted a roadside observational study of CRS use in randomly selected sites across Belgium. The authors targeted children with stature less than 135 cm. They observed 1461 children and interviewed the drivers. The authors reported that more than 50% of children observed were not correctly restrained and that 10% were not restrained at all. The authors highlighted the relationship between not using or misusing CRS with seat belt use of drivers. They reported that 31% of unrestrained children were accompanying drivers not wearing seatbelts as compared to 7% accompanying drivers wearing them. They also reported that 32% of correctly restrained children were accompanying drivers not wearing their seat belts as compared to 54% wearing them.

In developing countries, human losses due to road crashes are usually higher than those in developed countries. Moreover, limited research has been conducted on CRS use in those countries. The United Arab Emirates (UAE) is not different from other developing countries. UAE had 2.675 million registered motor vehicles in 2013 which made it among the countries with the highest motor vehicle ownership rates in the world (Shahbandari, 2015; WHO, 2015). In 2015, 675 people were killed and 6863 were injured due to the 4788 motor vehicle crashes recorded in UAE (Ruiz, 2016) with an estimated 1.3% of GDP lost due to these crashes (WHO, 2015). Traffic-related fatalities rate in this country is 5.99 per 100,000 people which is considered high when compared to other countries (Khaleej Times, 2014). A disproportionately high number of those killed or injured are children. From detailed statistics published by the World Health Organization (WHO, 2013), death rate of children under the age of 14 due to motor vehicle crashes per 100,000 children in UAE and some other, randomly selected, countries is calculated. The rate is found to be 4.42 in UAE which is, approximately, nine times that of Sweden (0.42), three times that of Australia (1.53) and Hungary (1.67), double that of Azerbaijan (2.01) and Uruguay (2.2) and slightly higher than that of Nepal (4.16) and Indonesia (4.28). At the same time, the rate in UAE is significantly less than that in some other developing countries like Algeria (6.47), Liberia (8.59) and Egypt (10.8).

In UAE, traffic laws make the use of seat belts mandatory on front seats and ban children from sitting on them. The use of restraints for all passengers on rear seats is optional. In this country, there were two published studies that indirectly looked at the issue of CRS use among children. In the first study, Barss et al. (2008) observed restraint use and interviewed drivers of 500 motor vehicles in five petrol stations in the city of Al-Ain in UAE on issues related to restraint use. The authors found that only 4% of children, without specifying age limits, sitting on front seats and 1% on rear seats were restrained. Reasons for not using restraint systems by adults and children according to drivers interviewed included discomfort 42%, forgetfulness 25%, uselessness 17%, carelessness 13%, and being dangerous 3%. In the second study, Grivna, Barss, Stanculescu, Eid, and Abu-Zidan (2013) analysed traffic injury causes among 193 children and youth who were admitted for more than 24 h at surgical wards of a hospital in Al-Ain city in UAE during a 36-month period between 2003 and 2006. Head injuries occurred in 68 % of cases studied indicating, according to the authors, a very low restraint use ratio among those children and youth.

Download English Version:

<https://daneshyari.com/en/article/5037256>

Download Persian Version:

<https://daneshyari.com/article/5037256>

[Daneshyari.com](https://daneshyari.com)