RBO REVISTA BRASILEIRA DE ORTOPEDIA
www.rbo.org.br

Original Article

# Correct use of safety belts and child restraint devices in cars among children in Goiânia☆,☆☆

*Roberto Medeiros de Sousa, Pedro Felisbino Júnior, Felipe de Moura Braga, Sílvio Dias da Costa Neto, Felipe Marques Belo, Sandro da Silva Reginaldo, Frederico Barra de Moraes**

*School of Medicine, Universidade Federal de Goiás, Goiânia, GO, Brazil*

ARTICLE INFO

*Article history:*
Received 23 April 2013
Accepted 10 September 2013
Available online 25 April 2014

*Keywords:*
Traffic accidents
Children
Accident prevention
Child protection systems
Physical restraint

ABSTRACT

*Objective:* to conduct an observational study, by means of campaigns, regarding the use of child restraint devices in cars in Goiânia.
*Methods:* this was a cross-sectional study using a convenience sample built up as cases arose. The data were gathered into an Excel spreadsheet and were analyzed descriptively and statistically (SPSS 16.0), using chi-square and taking $p < 0.05$ as significant.
*Results:* in 2006, 410 cars were evaluated, and in 2010, 544 cars were evaluated. Around 85% of the occupants were using seat belts correctly at both times ($p = 0.650$). In 2006, it was observed that a total of 273 passengers were occupying the rear seats, while in 2010 there were 226. Among these, 178 and 170 were using seat belts, respectively, i.e. 65.2% and 75.22% ($p = 0.001$). In 2006, five children were occupying the front seat without using the seat belt, while in 2010, this number was 42 ($p < 0.001$). In 2010, it was observed that 458 vehicles were transporting children on the rear seats, and this was being done correctly in 214 vehicles, i.e. 46.72%. In 2006, of the 410 vehicles analyzed, only 90 of them (21.95%) were transporting children correctly ($p < 0.001$). In addition, there was a difference in the variables within the year evaluated, in which transportation done correctly in the front seat was much more frequent than transportation done correctly in the rear seats, in both years ($p < 0.001$). Cars transported one to four children, while vans transported one to nine children. In 2006, one van transporting children irregularly was observed, while in 2010 it was done correctly in all cases.
*Conclusion:* comparing these two years (2006 and 2010) in which data were gathered, we can conclude that changes in behavior among drivers in Goiânia have begun, with regard to safety when transporting children in vehicles, with an improvement of 25% ($p < 0.001$). A large part of this has come through changes in knowledge among this segment of the population, through campaigns that have been carried out, including through the media, and because of legal obligations.



☆ Please cite this article as: de Sousa RM, Felisbino Júnior P, Braga FM, da Costa Neto SD, Belo FM, Reginaldo SS, et al. Uso correto do cinto de segurança e dos dispositivos de restrição infantil em automóveis de Goiânia. Rev Bras Ortop. 2014;49:340–344.
☆☆ Work performed in the Department of Orthopedics and Traumatology, Hospital das Clínicas, Universidade Federal de Goiás, Goiânia, GO, Brazil.

* *Corresponding author.*
E-mail: frederico_barra@yahoo.com.br (F.B. de Moraes).

2255-497  http://dx.doi.org/10.1016/j.rboe.2014.04.011

## Uso correto do cinto de segurança e dos dispositivos de restrição infantil em automóveis de Goiânia

*Palavras-chave:*
Acidentes de trânsito
Crianças
Prevenção de acidentes
Sistemas de proteção para crianças
Restrição física

RESUMO

*Objetivo:* fazer um estudo observacional, por meio de campanhas, sobre o uso dos dispositivos de restrição infantil em automóveis de Goiânia.
*Métodos:* estudo transversal por amostra de conveniência conforme surgimento dos casos. Os dados foram coletados em uma tabela Excel, analisados de forma descritiva e estatística (SPSS 16.0), com o uso do qui-quadrado, com $p < 0,05$ como significativo.
*Resultados:* em 2006, foram avaliados 410 automóveis, enquanto que em 2010 foram avaliados 544, nos quais cerca de 85% das pessoas usavam o cinto de forma correta nos dois períodos ($p = 0,650$). Em 2006, foram observados 273 passageiros no banco dianteiro e em 2010, 226. Usavam cinto de segurança 178 e 170, respectivamente, ou 65,2 e 75,22% ($p = 0,001$). Em 2006, cinco crianças ocupavam o banco da frente sem o uso do cinto de segurança. Em 2010, esse número foi de 42 ($p < 0,001$). Em 2010, foram observados 458 veículos que transportavam crianças no banco traseiro, 214 de maneira correta, ou 46,72%. Em 2006, dos 410 veículos analisados, apenas 90 (21,95%) transportavam crianças de maneira correta ($p < 0,001$). Além disso, houve diferença entre as variáveis dentro do ano avaliado, no qual o transporte correto no banco da frente foi bem mais frequente do que o no banco de trás, nos dois anos ($p < 0,001$). Carros transportavam de uma a quatro crianças e as vans, de uma a nove crianças. Em 2006 foi observada uma van que transportava crianças de maneira irregular, enquanto que em 2010 todas estavam corretas.
*Conclusão:* na comparação desses dois períodos, podemos avaliar que houve um início de mudança no comportamento do motorista goianiense no que tange à segurança no transporte de crianças em automóveis, com melhoria de 25% ($p < 0,001$). Grande parte disso decorreu da mudança de atitude da população após as campanhas feitas, até pela mídia, e da obrigatoriedade da lei.



## Introduction

According to the National Traffic Department (DENATRAN), traffic accidents are the main cause of deaths among children aged one to fourteen years in Brazil. In 2008, 22,472 cases of injuries among children up to the age of 12 years, and 802 deaths in the same age group, were recorded.[1] The World Health Organization (WHO) has estimated that in 2015 traffic accidents will be the main cause of morbidity and mortality among children. This situation generates high costs for the healthcare system, especially for developing countries.[2] According to the mortality information system (SIM) of DATASUS (Informatics Department of the National Health System, SUS), there were 5309 deaths due to external causes (as the main cause of death) in the age group from one to fourteen years in 2010, thus representing 31.5% of the total for that year.[3]

With the aim of diminishing these high accident rates among the youngest age groups, campaigns have been conducted over recent years. Special attention has been given to the use of child restraint devices (CRDs) in vehicles. In Brazil, in conformity with what has already become the reality in other countries, a law regulating the use of these CRDs was created. Resolution no. 277 of the National Traffic Council (CONTRAN), of May 28, 2008,[4] established minimum safety conditions for transporting passengers under the age of 10 years in vehicles and clarified the use of CRDs. This law came into force in its year of publication, on an educational basis, and compliance became obligatory from 2010 onwards.

CRDs are popularly known as "child seats" and, according to the CONTRAN resolution, they include "baby comfort seats" or "convertible seats", which are used up to the age of one year, "child seats" for the ages of one to four years, "booster seats" for the ages of four to seven and a half years, and finally, the vehicle's own seat belt for children over the age of seven and a half years.[4] The aim of this study was to conduct observations, through campaigns, regarding CRD use in cars in the city of Goiânia.

## Material and methods

This was a cross-sectional study on a convenience sample. In May 2006, a survey was conducted in Goiânia in front of the main private schools, at the time that children arrived, regarding the correct use of protection equipment in vehicles. The data observed included whether the driver was using the seat belt, whether the front-seat passenger was using the seat belt, whether the front-seat passenger was a child or an adult and whether the appropriate CRD was being used on the rear seats. This campaign was supported by the Brazilian Society of Orthopedics and Traumatology (SBOT) in Goiás and the