

The Prevalence of Seat Belt Use in Kingston, Jamaica

A Follow-up Observational Study Five Years after the Introduction of Legislation

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ABSTRACT

An observational cross-sectional study conducted in Kingston in 2004 showed that seat belts were used by 81.2% of private motor vehicle drivers and 74.0% of front seat passengers. This was significantly improved compared to 21.1% and 13.6% respectively in 1996 before the introduction of legislation in 1999 ($p < 0.001$). Females were significantly more likely than males to wear seat belts, both when driving (92.5% vs 77.3%; $p < 0.001$) and as front seat passengers (79.9% vs 66.3%; $p < 0.001$). Of the 2289 motor vehicles examined, all except one were equipped with seat belts. Rear passenger utilization of seat belts was not examined. Drivers of new vehicles were more likely than other drivers to use seat belts ($p < 0.001$). Male drivers, drivers of older vehicles and all passengers may require specific targeting in an educational and enforcement campaign if the maximum benefits of seat belt use are to be realized.

Prevalencia del uso del Cinturón de Seguridad en Kingston, Jamaica un Estudio Observacional de Seguimiento, Cinco Años Después de Introducida la Legislación

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RESUMEN

Un estudio transversal observacional llevado a cabo en Kingston en el año 2004 mostró que los cinturones de seguridad eran usados por el 81.2% de los conductores de vehículos motorizados privados, y el 74.0% de los pasajeros del asiento delantero. Esto representa una mejoría significativa en comparación con el 21.1% y el 13.6% respectivamente en 1996 antes de que se introdujera la legislación en 1999 ($p < 0.001$). Las tendencias de las mujeres a usar cinturones de seguridad fue significativamente mayor que la de los hombres, tanto al conducir (92.5% vs 77.3%; $p < 0.001$) como al viajar como pasajeras en el asiento delantero (79.9% vs 66.3%; $p < 0.001$). De los 2289 vehículos motorizados examinados, todos – excepto uno – estaban equipados con cinturones de seguridad. No se examinó la utilización de los cinturones de seguridad por parte de los pasajeros en los asientos traseros. Los conductores de vehículos nuevos mostraron una tendencia mayor que los otros conductores a usar cinturones de seguridad ($p < 0.001$). Los conductores varones, los conductores de vehículos más viejos, y todos los pasajeros puede que requieran ser objeto específico de una campaña destinada a educarlos o a hacer cumplir la ley si se desea maximizar los beneficios del uso del cinturón de seguridad.

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INTRODUCTION

Road traffic accidents are an emerging global epidemic, causing 13% of the disease burden from injuries and 1.2

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million deaths every year (1). In 20 years, there will be a 65% increase, mainly in developing countries. This was the theme of a WHO/World Bank report produced on World Day 2004: *A 5-Year WHO strategy for road traffic injury prevention.*

Seat belt usage has saved more lives than any other road safety intervention and its efficacy in the reduction of mortality from road traffic accidents by 25–67% has been well documented (1–8). Reduction in morbidity, ventilation requirements, intensive care unit stay, hospital stay, hos-

pitalization costs and insurance claims are additional benefits (4, 7, 9, 10).

Road traffic accidents are a major public health problem in Jamaica despite the introduction of breathalyzer, seat belt and helmet legislation (12). In 2002, injuries due to road traffic accidents required over 25 thousand days of care for those admitted to hospital, and cost the Government an estimated \$US8.2 million (12). Increased number of roads, less qualified drivers, ignorance or flouting of the law and inadequate enforcement of all laws, particularly speed limits are all potential contributing factors. To achieve maximum compliance with legislation, it is generally accepted that propaganda and publicity campaigns are of little value if unaccompanied by highly visible and consistent enforcement of the law (4, 6, 13–15).

A study conducted in 1996 demonstrated that 21.1% of private motor vehicle drivers and 13.6% of front seat passengers voluntarily wore seat belts in Kingston, Jamaica, where there was no law requiring this at the time (11). In 1999, Jamaica introduced seat belt legislation mandating fines for non-compliant drivers and passengers. Legislation applied to front and rear seat occupants of private motor cars, contract carriages and hackney carriages as well as to front seat passengers of trucks, stage carriages and express carriages. There were some exceptions to the legislation, such as vehicles used for police and fire brigade purposes.

It was felt that it was timely to repeat the observational study five years after the implementation of legislation to assess the effect of the law on driver and passenger behaviour. In this context, the present study was undertaken to examine seat belt use in 2004 and to compare it to levels of use in 1996.

SUBJECTS AND METHODS

The method has been previously published (11) and was followed exactly as before so as to ensure consistency in the comparisons. Also, three of the previous four observers were involved in the present study.

The survey included the drivers and front seat passengers (when present) of private motorcars, station wagons, vans, pick-up trucks and four-wheel drive vehicles. Public passenger vehicles including buses and taxis, commercial vehicles, ambulances, government and diplomatic vehicles were excluded since public passenger vehicles are not usually fitted with seat belts in Jamaica and government and diplomatic vehicles were considered unlikely to represent average Jamaican practice in private vehicles. Observations were carried out in the mornings and evenings at peak hours during weekdays over a three-week period at the same previously used seven major intersections chosen to be representative of all areas of the city including peripheral points of entry into the city and the inner city. Vehicles 1, 3 and 5 in stationary positions at the beginning of a traffic light cycle were observed, followed by vehicles 2, 4 and 6 on the following cycle. This sequence was alternated until data col-

lection was complete. Samples were taken from two to four directions of travel. The presence and use of seat belts for driver and front seat passenger, as well as their gender were recorded. Seat belt use in rear seat passengers was not examined.

The vehicles were also graded based on their condition and thus their implied age. One new observer was trained in the observation procedure and the recording of data prior to data collection in a manner similar to that done previously. Training consisted of identification and categorization of eligible vehicles using photographs and making on-site observations. Vehicles were categorized into three grades according to the age and condition of the vehicle. Newer vehicles were classified as Grade 1, old vehicles as Grade 3 and those of intermediate age and condition as Grade 2. Reliability measurements showed there was 80% agreement between observers, which improved to 98% with training, prior to data collection.

A total of 2371 vehicles were observed. Most of the observations (88.3%) were made in the mornings. Of the 2371 vehicles observed, 82 (3.5%) were not included in the analysis due to poor visibility, usually due to darkly tinted windows. One additional vehicle was not equipped with a seat belt. Consequently, the analysis comprised 2288 vehicles.

Differences in seat belt use between genders, site and grades of vehicles were analyzed using chi-square tests.

RESULTS

There was a front seat passenger in 754 (33%) of the 2288 vehicles used in the analysis. Five hundred and eighty-six (25.6%) of the drivers were females while there were 430 (18.8%) new cars, 1416 (61.9%) were intermediate and 442 (19.3%) were old. The overall seat belt usage rate was 81.2% for all drivers and 74.0% for front seat passengers (Table 1).

Table 1: Driver and front passenger seat belt use in equipped vehicles, by gender

Gender	Belted drivers n = 2288 (%)	Belted front passengers n = 754 (%)
Male	1315/1702 (77.3)	216/326 (66.3)
Female	542/586 (92.5)*	342/428 (80.0)*
Total	1857 (81.2)	558 (74.0)

*Chi-square ($p < 0.001$)

However, female driver seat belt usage was 92.5%, significantly ($p < 0.001$) more than that among male drivers (77.3%). In addition, more female passengers (80%) wore belts than males (66.3%), ($p < 0.001$).

Eighty-eight per cent (87.7%) of drivers in Grade 1 vehicles wore seat belts compared with 74.5% of drivers of Grade 2 vehicles and 80.2% of drivers of Grade 3 vehicles (Table 2). There was no difference in the rate of seat belt use

Table 2: Seat belt usage by drivers and front seat passengers according to age/condition of vehicles

Subject	Grade 1 (newer)	Grade 2 (intermediate)	Grade 3 (older)	Total
Driver (%)*	377/430 (87.7)	1136/1416 (80.2)	344/442 (77.8)	1857/2288 (81.2)
Front passenger	77/97 (79.4)	370/502 (73.7)	111/155 71.6	558/754 (74.0)

*Chi-square ($p < 0.001$)

among front seat passengers of the various types of cars (Table 2).

Observation sites at the periphery of the city, where traffic entered and left the city onto a highway, were compared with observation sites within the city. Seat belt use was 716/903 (79.3%) in the former and 1141/1385 (82.4%) in the latter, not significantly different ($p = 0.55$). Neither was there also any difference in seat belt use among front seat passengers of cars at the two sites ($p = 0.43$).

DISCUSSION

All vehicles, except one, in the present study were equipped with seat belts compared to the previous study, when 10.1% of vehicles were not. Since that time, brisk car importation has succeeded in replacing and modernizing most of the rolling stock of vehicles. It was worthy of note that there were a large number of vehicles in which the driver was the sole occupant, a more common situation than previously obtained.

This study demonstrates that legislation introduced in 1999 has been followed by a substantial and significant increase in the point prevalence of seat belt use by drivers and passengers, males and females. This was not unexpected as this has been the experience in other countries (4, 6, 8–10). However, it would appear from the present study, that there is need for improved seat belt utilization, particularly among male drivers and passengers, and female passengers. In addition, without enforcement, prevalence falls and with it, the benefits of reduced morbidity, mortality and costs. It has been shown that fines have the greatest and most consistent effect on compliance (3, 4, 13–15).

A limitation of the study was that a three-week period may not be representative of consistent behaviour, which itself may be subject to random or systematic variation. However, in reference to the latter, there were no special circumstances such as educational campaigns or police checks in effect at the time of the study. The benefits of seat belt use also apply to rear seat passengers but the prevalence of their use was not examined in this study.

While seat belt legislation and enforcement can help to reduce morbidity, mortality and costs from driver and passenger injury, a large proportion of road traffic accident victims

in Jamaica are pedestrians, cyclist and motorcyclists (16). Legislation concerning helmet use was also passed in 1999 but there is no available data on compliance. This is an area for further investigation and another potential injury reduction strategy. This study cannot evaluate the impact of seat belt law and compliance on primary usage outcomes, a consideration that may form the basis of additional research.

The loss and suffering associated with road traffic deaths and injuries are preventable. Although Jamaican motor vehicle users have become more compliant with seat belt usage after the introduction of the seat belt law in 1999, education, legislation, law enforcement and a firm political will must be applied in an optimal relationship to provide the best conditions for life for all citizens. At the present time, the reduction of traffic related accidents, injuries and mortalities must be a priority in Jamaica, where there is an urgent need for injury prevention and control. Seat belt law enforcement represents one available strategy that must be enforced.

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