Helmet Laws in Jamaica: An Observational Study of Non-Compliant Motorcycle Accident Victims

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Citation

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Abstract

Aim: Despite the implementation of mandatory helmet laws in Jamaica in 1999, compliance remains poor. We carried out a descriptive study of non-compliant motorcycle accident victims in order to define a high-risk population to target for educational campaigns.Methods: Demographic and clinical data were collected from all motorcycle accident victims treated at tertiary referral hospital in Jamaica between January 1, 1999 and January 1, 2007. Pedestrians and automobile passengers involved in collisions with motorcycles were excluded. The demographics of the sub-population of non-compliant patients were analyzed using SPSS version 12.Results: There were 270 motorcycle accident victims, of which 136 (50.4%) were un-helmeted. The majority of non-compliant patients were in the third and fourth decades of life. There were 11 non-compliant females at a mean age of 27 years (SD 8.4; Range 16-42; Median 26; Mode 26) and 125 non-compliant males at a mean age of 32.2 years (SD 109; Range 7-63; Median 30; Mode 27). There were trends toward decreased compliance in females (11/13 females vs 125/257 males) and pillion passengers (23/26 pillion passengers vs 112/244 drivers). Since 1999, there has been a downward trend in the prevalence of non-compliance with helmet laws. Conclusion: The compliance with mandatory helmet use on Jamaica's motorways is low. Educational campaigns targeting high-risk groups may be an effective strategy to improve compliance. Young women in the second and third decades who are pillion passengers on motorcycles comprise a high-risk group that deserves special attention in public health campaigns. It is time for legislators to revise the legislation with special attention to appropriate penalties for non-compliance and motorcycle license issuance protocols.

INTRODUCTION

Motorcycle users contribute 13% of all road traffic accident victims admitted to the University Hospital of the West Indies (UHWI), a tertiary care hospital in Jamaica [(1)]. In 1999, the Jamaica government introduced legislation mandating all motorcycle users to wear approved protective headgear [(2)]. Despite this, less than half of motorcycle accident victims on Jamaican roads are compliant with the helmet laws [(3)].

It has been suggested that public educational campaigns targeting high-risk populations can increase the use of protective headgear [(4)]. This observational study attempts to define the population of patients who were non-compliant with helmet laws in this setting. This information will be useful to define the population at risk in order to target them for educational campaigns.

METHODS

Ethical approval from the local ethics committee was secured to collect and analyze data for this study (UWI/ECP51 2008/2009). Over an eight year period from January 1, 1999 to January 1, 2007, we identified all consecutive motorcycle accident victims treated at the UHWI, one of two public hospitals serving the capital city of Kingston.

Motorcycle accident victims who were un-helmeted at the time of the collision were identified based on reports provided by police and/or paramedic personnel. Only un-helmeted motorcycle users involved in collisions were evaluated in this study. Helmeted riders, pedestrians and automobile passengers who were involved in collisions with motorcycles were excluded from further analysis. This was a convenience sample and we did not attempt to evaluate collision victims who presented to other hospitals or those who did not seek medical attention for whatever reason.

In the group of un-helmeted motorcycle collision victims, we collected demographic data including age, gender, position on the motorcycle, associated alcohol and/or recreational drug use. Because the purpose of this study was to describe the demographics of non-compliant motorcycle users, we did not evaluate resultant injuries or therapeutic outcomes. We did not evaluate rider experience/training or details surrounding the collisions because these data relied on historical information from patients that may have sustained injuries compromising the accuracy of their reports. The demographics of the sub-population of patients who were un-helmeted at the time of their accident were analyzed. The data were entered into a Microsoft Excel worksheet and analyzed using SPSS version 12.0.

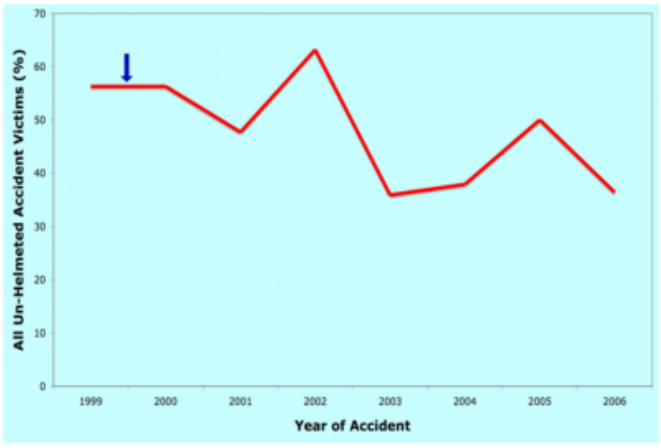
RESULTS

During the study period, there were 270 motorcycle accident victims admitted to hospital. Of this, there were 136 (50.4%) un-helmeted patients. Very little data could be collected on the use of drugs and/or alcohol because serum toxicity screens were not routinely performed in this setting.

When the data were examined chronologically, there was a downward trend in the proportion of un-compliant motorcycle accident victims presenting to hospital (Fig. 1).

Figure 1

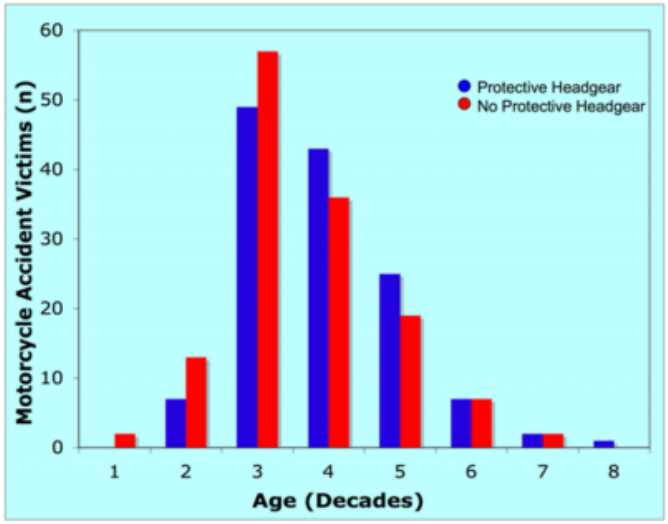
Figure 1. Trends in the Prevalence of Un-Helmeted Motorcycle Accident Victims. Arrows mark the introduction of helmet laws in 1999.



The majority of non-compliant patients were between the ages of 20 and 39 years of age. It was noted that as patient age increased beyond the third decade, there was a trend toward increased compliance with the use of protective headgear.

Figure 2

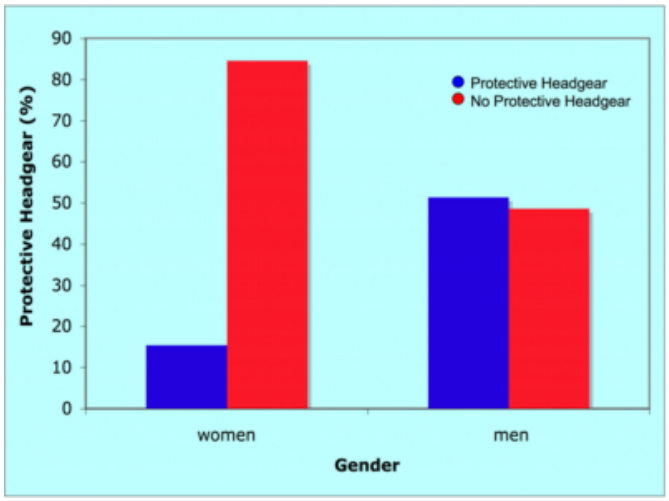
Figure 2: Distribution of motorcycle accident victims by age and helmet use.



Meaningful statistical analysis could not be achieved due to small sample size when gender was analyzed, but there was a trend for females to be less compliant with the use of protective headgear (fig. 3). There were 11/13 non-compliant females at a mean age of 27 years (SD 8.4; Range 16-42; Median 26; Mode 26). There were 125/257 non-compliant males at a mean age of 32.2 years (SD 109; Range 7-63; Median 30; Mode 27).

Figure 3

Figure 3: Motorcycle Accident Victims' Compliance with Helmet Laws.

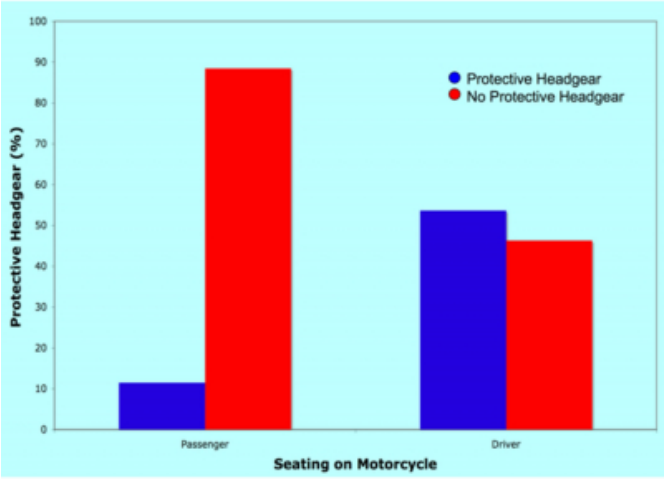


We evaluated the accident victims' placement on the motorcycles. There were 23/26 passengers and 112/244 riders without protective headgear. Again, due to small sample size statistical significance could not be demonstrated, but there was a notable trend for pillion

passengers to be less compliant with helmet use than riders (Fig. 4).

Figure 4

Figure 4: The Placement of Un-Helmeted Accident Victims on the Motorcycle.



DISCUSSION

The advantages of wearing protective headgear during motorcycle travel have been demonstrated repeatedly in the medical literature [5-8]. Un-helmeted riders are seriously disadvantaged in the event of a road traffic accident because they have an increased incidence of overall head injury, traumatic brain injury, overall injury severity, ICU requirements and mortality [5-9].

The government of Jamaica amended the Road Traffic Act in 1999 by introducing legislation to make approved helmet use mandatory for "all persons at all times while driving or riding on a motorcycle" [2]. Despite this, there are data to suggest that less than half of local motorcycle accident victims were in compliance with these laws at the time of their accident [1].

The use of alcohol and recreational drugs has been shown to negatively influence helmet use by motorcyclists [10]. Although attempts were made to evaluate alcohol and/or recreational drug use, we were unable to collect substantial data because routine toxicity testing was not performed in this setting. This is important information and may be the target of future prospective studies.

It was reassuring to see that there was a trend to increased compliance since the amendment of the Road Traffic Act in 1999 [3]. Seven years after the introduction of the helmet law, 61.8% of riders wore protective headgear compared to 34.4% of all riders immediately after its introduction in 2000. We hope to see a continued trend toward increased compliance to maximize the benefits of helmet use.

Among other interventions, a public educational campaign is one method through which we can increase compliance with the Jamaica Road Traffic Act. We have now identified a target audience for such a campaign.

Young males are commonly thought to be the gender that is more involved in risk taking behaviour [11]. It was interesting to note that young women and pillion passengers were the groups that were less compliant with helmet use. Although speculative, potential reasons for non-compliance may include: unexpected travel for short distances; high cost of supplemental helmets; misinterpretation of the laws as being applicable to motorcycle riders only; and local culture where female pillion riders are scantily clad without helmets. These are all points that can be targeted by educational campaigns.

The age at which helmet use was less prevalent was as expected, young persons in the third and fourth decades. It was reassuring to see that as motorcycle riders increased in age, and presumably in maturity, the prevalence of helmet use increased. This may have important implications on the issuance of rider licenses only to select individuals who are mature enough to handle the responsibility of motorcycle use. Although controversial, this suggestion may warrant consideration and review by legislators.

We believe that it may be time for legislators to revise the helmet laws in Jamaica. Currently, any person who is in contravention of the helmet laws "is liable on a summary conviction before a Resident Magistrate – in the case of a first offence, to a fine not exceeding $2,000.00" (equivalent to $27.34 USD) and "in the case of a second offence, to a fine not exceeding $5,000.00" (equivalent to $68.35 USD). These fines are not appropriate deterrents in modern times. Implementation of more realistic penalties may motivate more motorcycle users to be compliant with the helmet laws.

We recognize that a selection bias exists in this study because we have only evaluated patients who have been involved in road traffic accidents. Another study method could have been to perform interviews with unselected un-helmeted riders on Jamaican roads to identify the reason for non-compliance. However, we were not able to devise a feasible method to identify / interview this group, who would likely not be willing to cooperate by answering questions about their criminal offence. In any event, observational studies are superior to interview methods in

establishing behaviour patterns. This report may direct the design of a larger observational study to evaluate the reasons for noncompliance of all un-helmeted riders on Jamaican roads.

Jamaica's health care system is already burdened due to epidemic levels of trauma [1,12]. Public educational campaigns and visible law enforcement to increase the use of protective headgear should prevent or reduce the severity of injuries consequent to motorcycle accidents on Jamaican roads. We have identified female motorcycle users in the third and fourth decades and pillion passengers as the groups with the highest rate of non-compliance with the helmet laws. Educational campaigns should target all males and females who are motorcycle riders, but should pay special attention to this group to increase their compliance with the helmet laws.

CONCLUSIONS

The compliance with mandatory helmet use on Jamaica's motorways is low. Educational campaigns targeting high-risk groups should be an effective strategy to improve compliance. Young women in the second and third decades who are pillion passengers on motorcycles represent a high-risk group that deserves special attention in public health campaigns.

It is time for legislators to revise the legislation with special attention to appropriate penalties for non-compliance and motorcycle license issuance protocols.

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