SHORT COMMUNICATION

Prevalence, correlates, and changes in injury epidemiology between 2006 and 2010 among 13-15 year Moroccan school attending adolescents

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Abstract

Injuries are the leading cause of mortality among 10-19 years old children and adolescents globally. This study reports on correlates of injuries using multivariate analysis and compares trends in injury from 2006 to 2010 in Morocco. For the prevalence of all cause injury, there was a statistically significant decrease between year 2006 and 2010, cumulatively, as well as for each sex. Within same years, boys reported having sustained more injuries than girls, and this difference was found to be statistically significant. Within same years, boys reported having sustained more fall injuries than girls; however this was statistically significant for year 2006 only. All cause injuries were also found to be statistically significantly more common in boys compared to girls in the year 2010, in the multiple logistic regression model. To further mitigate the burden of injury malady in Morocco among adolescents; all stakeholders i.e. health policymakers, paediatricians, psychiatrists, general practitioners, teachers, and parents need to choreograph their moves in concert.

Keywords: Injury, Adolescents, Morocco.

Introduction

Injuries are the leading cause of mortality among 10 to 19 years old children and adolescents globally; with over 830,000 under the age of 18 years dying yearly due to unintentional injuries, mostly in low and middle income countries like Morocco.[1] The 'Convention on the Rights of the Child' obligates signatory countries — including Morocco — to take measures for protecting children from injury as part of ensuring survival and development of the child.[2] In Morocco, injuries are responsible for 11% of the total disease burden.[3]

Several risk factors have been reported to be associated with injuries among adolescents; being male, smoking, low socio-economic status, age, and psychological distress.[4-9] There are no nationally representative studies on the prevalence and correlates of injury among adolescents in Morocco, describing the correlates of injury in a multivariate analysis.

In 2006, a nationally representative survey was conducted among school attending adolescents, which was subsequently repeated in 2010; providing a unique opportunity to compare prevalence of injuries among adolescents between these two survey years. This study reports on correlates of injuries using multivariate analysis and compares trends in injury from 2006 to 2010 in Morocco.

Methods and Results

The Moroccan national authorities, Centers for Disease Control and Prevention (USA), and the World Health Organization have conducted Global School-based Student Health Surveys (GSHS) in Morocco, in 2006 and 2010. Both surveys used similar methodology i.e. by employing a two-stage cluster sample design to produce nationally representative estimates for all students in the 1st, 2nd, and 3rd Prep. Schools. They were selected using probability proportional to size during the first stage, while classes were randomly selected in the second stage; with all students being eligible to participate in the selected classes. The detailed descriptions of both surveys as well as data are available, and were accessed from the CDC's GSHS website.[10] To describe factors associated with self-reported serious injury — defined as an injury that makes one "miss at least one full day of usual activities (such as school, sports, or a job) or requires treatment by a doctor or nurse" — in the past twelve months, in Moroccan school attending adolescents aged 13 to 15 year old, data for 2010 GSHS were used. Comparisons were made between the prevalence of serious injury owing to any cause, as well as injuries sustained specifically due to falls, between boys and girls and between the two GSHS surveys of 2006 and 2010. Psychological index was created to determine psychological distress comprising of four questions.[4] For questions: during the past 12 months how often one felt lonely, or having been worried about something that one could not sleep at night; responses of 'most of the time' and 'always' were coded as 1 while responses of 'never', 'rarely', and 'sometimes' were coded as 0. Having no close friends was coded as 1 while having one or more close friends was coded as 0. Finally, for having ever seriously considered attempting suicide in the past 12 months was

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Table-1: Self reported serious injury in the past 12 months and comparisons for years within and between2006 and 2010 by sex.

Injury	2006	2010	Year difference (Between 2006 & 2010)	Boys vs. Girls (Within Same Year)	
	Percent (95% CI)	Percent (95% CI)	P-Value	P-Value 2006	2010
Any serious injury	<0.001	<0.001			
Boys	52.5	34.6	<0.001		
	(45.9, 59.0)	(29.4, 39.9)			
Girls	36.0	23.3	<0.001		
(31.5, 40.4)	(19.4, 27.2)				
Total	44.7	29.5	<0.001		
	(40.2, 49.2)	(25.3, 33.6)			
Fall injury	<0.001	0.27Boys	16.5	8.4	<0.001
	(14.0, 19.1)	(6.7, 10.1)			
Girls	10.7	6.7	0.025		
	(7.9, 13.6)	(4.3, 9.0)			
Total	13.9	7.6	<0.001		
	(11.5, 16.2)	(6.4, 8.8)			

Table-2: Survey respondent's demographic and other characteristics and associations with sustaining injuries in bivariate and multivariate analyses.

Factor	Total n* (%**)	Crude OR*** (95% CI§)	Adjusted OR*** (95% CI§)
Age (years)	@13.98 (0.02)		
13	648 (31.8)	1	1
14	764 (38.4)	1.23 (0.84, 1.80)	1.55 (0.76, 1.74)
15	585 (29.8)	1.50 (1.02, 2.21)	1.22 (0.82, 1.83)
Sex			
Female	968 (45.5)	1	1
Male	1016 (54.5)	1.74 (1.38, 2.1)	1.93 (1.49, 2.50)
During the past 30 days, how often did you go hungry because there was not enough food in your home?			
Never/Rarely	1500 (76.6)	1	1
Sometimes/Most of the time/Always	462 23.(23.4)	1.61 (1.27, 2.04)	1.25 (0.89, 1.74)
During the past 30 days, did you smoke cigarettes or use other tobacco products, such as Shisha or Tanfiha?			
0 Days	1806 (90.5)	1	1
1 or more days	184 (9.5)	5.88 (3.98, 8.70)	4.04 (2.76, 5.91)
Psychological distress score			
0	1200 (60.8)	1	1
1	522 (26.0)	2.17 (1.60, 2.94)	2.15 (1.57, 2.94)
2 or higher	275 (13.2)	3.54 (2.58, 4.85)	3.72 (2.62, 5.26)

@Population mean and Standard Error. *Unweighted frequencies. **Weighted percentages. ***Odds Ratios. §Confidence Intervals.

coded as 1 for affirmative answer and 0 for negative answer. Maximum possible score was 4 i.e. one for each question, while minimum possible score was zero. Design-based analysis using STATA-13 was done using simple and multivariate logistic regression; factors found to be statistically significant at p <0.05 level on simple logistic regression were used for the multiple logistic regression model. For design-based comparison of injury prevalence differences in proportions between boys and girls and between the two surveys for 2006 and 2010, t-tests were used to determine the statistical significance, with p-value of <0.05; using previously reported method.[11]

Table-1 lists the prevalence rates of all-cause serious injuries as well as serious injuries caused specifically by falls in respondents; including comparisons between boys, and girls, as well as comparisons between the years 2006 and 2010.

For the prevalence of all cause injury, there was a statistically significant decrease between year 2006 and 2010, cumulatively, as well as for each sex. Within same year, boys reported having sustained more injuries then

girls, and this difference was found to be statistically significant. Similar pattern was observed for fall injuries. However, there was no statistically significant association between boys and girls for the 2010.

Table-2 provides the respondent's demographic and other characteristics, as well as association with all-cause self reported serious injury in bivariate and multivariate analyses. Age and low socioeconomic status — determined from responses to the question on whether one went hungry because there was not enough food in one's home — were found to be statistically significant in simple but not on multiple regression model. Highest odds ratios were found for the association of having sustained injuries and use of any tobacco products on one or more days during the past thirty days. Results of the goodness-of-fit-test concluded that this model was a good fit for the survey data.

Conclusion

The prevalence of all cause injury was lower in 2010 compared to 2006; this was true for both gender groups individually, as well as cumulatively. Reduction in self-reported serious injuries in this high risk age group testifies to health promotion and other injury prevention measures taken from 2006 to 2010. However, there is a need to augment injury prevention initiatives like legislative measures for window guards, and implementation and enforcement of safety standards for protecting adolescents.[12]

Within same years, boys reported having sustained more injuries then girls in general, as well as for fall related injuries. However, there was no statistically significant association between boys and girls for fall related injuries in 2010. Nonetheless, all cause injuries were found to be statistically significantly more common in boys compared to girls in the year 2010, in the logistic multiple regression model. Being male has been reported to be a high risk factor for sustaining injuries and results from Morocco depict the same profile of association.[4-9] Fall related injuries were specifically looked into, because it was the most common type of injury reported by students in both surveys. Use of tobacco was strongly associated with having sustained serious injury in the past 12 months, followed by psychological distress; these associations with tobacco use have also been noted in several studies.[4-9] To further mitigate the burden of injury malady in Morocco among adolescents; all stakeholders i.e. health policymakers, paediatricians, psychiatrists, general practitioners, teachers, and parents need to choreograph their moves in concert.

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