

Prevalence, Types and Risk factors of Non Fatal Injuries among Secondary School Students in Abha City-KSA

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Abstract: Background: Injury in developing and transitional economies is an important public health problem. Indeed, injury accounts for 9% of global mortality, with the majority of these injury deaths occurring in lower- and middle-income countries, result in both social and economic loss. Increased availability of motor vehicles is likely to raise the risk of traffic injuries. The inexperience and ongoing neurodevelopment of adolescents might leave them vulnerable to some health risks associated with economic change. The World Health Organization defines injuries as “the physical damage that results when a human body is suddenly subjected to energy in amounts that exceed the threshold of physiological tolerance – or else the result of a lack of one or more vital elements, such as oxygen”. The risk factors for injury vary depending upon its type. The majority of assaults involve younger people. Risks of both unintentional and intentional injury have been shown to be related to socioeconomic status, with those at the greatest risk living in the most deprived areas. Objectives: 1) To calculate injury rates among male secondary school students, 2) To Identify the types of injuries and 3) To Identify possible risk factors associated with injuries. Subjects And Methods: This study followed a cross-sectional design. It was conducted in Abha City. 829 male secondary school students studying at a general governmental secondary school in Abha City were included in the study. Results: The prevalence of non-fatal injuries among male secondary school students was 49%. The Places of the majority of non-fatal injuries were streets (89.9%) while schools and homes were reported by 4.2% and 1.2% of the students. Students who have more than five brothers were at 7.6 folded risk of having non-fatal injuries as compared to those who have no brothers. Students whose family income was between 5001 and 10000 or > 10000 SR/month were at 7 or 13 folded risk for non-fatal accidents, respectively as compared to those whose family income was below or equal 50000 SR/month. Students with history of psychic trouble or chronic diseases were at 4 and 5 folded risks respectively for having non-fatal injury. Smoker students were at double risk for non-fatal accidents than non-smokers. Conclusions: Non-fatal accidents are a prevalent public health problem among male secondary school students in Abha, KSA. Road traffic accidents are the main reported among them. High-family income, large family size, smoking, chronic diseases and psychic troubles were significantly associated with non-fatal injuries.

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1. Introduction

Injury in developing and transitional economies is an important public health problem. Indeed, injury accounts for 9% of global mortality, with the majority of these injury deaths occurring in lower- and middle-income countries, result in both social and economic loss (1). Increased availability of motor vehicles is likely to raise the risk of traffic injuries (2). The inexperience and ongoing neurodevelopment of adolescents might leave them vulnerable to some health risks associated with economic change (3).

The World Health Organization defines injuries as “the physical damage that results when a human body is suddenly subjected to energy in amounts that exceed the threshold of physiological tolerance – or else the result of a lack of one or more vital elements, such as oxygen”. Injuries can be classified into two distinct categories, those that are unintentional (e.g., falls) and those that are intentional (e.g., assaults) (4).

Injuries can leave people with serious physical pain, disability and psychological trauma, which may require long-term care by families and health services. Consequently unintentional injuries place a significant economic burden on public services and society as a whole, with loss of work and school days impacting on businesses and individuals (5).

Injuries kill more than 5 million people every year worldwide, accounting for nearly 1 out of every 10 deaths globally. They affect people of all ages and socio-economic status of a nation (6). Unintentional injuries are a leading cause of death among children and young adults. Over 875,000 children <18 years of age die annually in the world as a result of injuries (7). Injuries are the leading cause of long-term disability, and healthcare costs in most industrialized countries (8).

The injury mortality rates of males are twice as high as that of females worldwide (9). In Qatar, A male to female death ratio of 3.4:1 for all types of

injuries leading to death. This could be due to the fact that boys are more aggressive and adventurous than girls (6). Blum and Nelson-Nmari (10) reported that among leading causes of death in people aged 15–29 years are (unintentional injuries, violence, and suicide) (10).

Patterns of injury change with physical maturity, with young men in particular, incurring trauma mainly from unintentional injuries, violence and traffic accidents (11). Consequently, health profiles change rapidly from early adolescence to young adulthood (3).

Unintentional injuries accounted for around 12,000 deaths in England and Wales in 2007. Self-harm and assaults were also responsible for around 100,000 and 43,000 hospital admissions in England in 2007/08 respectively (12). It was estimated that in UK the cost of interpersonal violence (e.g., assault) alone was £24.4 billion in 2003, with health services incurring a cost of around £2.2 billion (5).

The WHO (13) reported that in the Kingdom of Saudi Arabia, the highest rate for disability-adjusted life years (DALYs) is that for unintentional injuries, being 7.6. It is more than double that of cardiovascular diseases, which ranks the second (3.1).

The most common injuries were falls, road traffic accidents. Males were more affected by injuries than females (14).

Patterns of injury change with physical maturity, with young men in particular, incurring trauma mainly from unintentional injuries, violence and traffic accidents. These injuries have their long-term disabilities of children, economic burden for individuals, and hardship for survivors and family care-givers (15).

The risk factors for injury vary depending upon its type. The majority of assaults involve younger people (16). Furthermore, both children and older people experience higher rates of pedestrian road traffic accidents than other age groups. Risks of both unintentional and intentional injury have been shown to be related to socioeconomic status, with those at the greatest risk living in the most deprived areas (17). The etiology of injury involves a complex interplay between human and environmental factors. Patterns of injury vary according to demographic factors including age, sex, residence and socioeconomic status, all of which are difficult to modify (18). Adolescence, in particular, is an important period because it is the time when young people are experimenting with, and also establishing, their lifestyle, attitudes, concepts, beliefs and habits that may have long-term influences on their health (19).

The rapid social, physical and mental development occurring during adolescence is important as many health behaviours, which become manifest in adulthood, have their origins during younger years (20). A number of theories offer different explanations for the relationship between development and risk-taking among adolescent. For example, biologically-based theories attribute risk-taking behaviour to genetic predispositions and hormonal changes mediated through pubertal timing (21).

Objectives:

To calculate injury rates among male secondary school students

To identify the types of injuries

To identify possible risk factors associated with injuries.

2. Subjects And Methods:

This study followed a cross-sectional design. It was conducted in Abha City, which is the capital of Aseer Region in Saudi Arabia.

We used a multi-stage sampling method to obtain a representative sample. We used school and grade as stratum, and then selected classes by cluster sampling in each stratum. In total, 829 male secondary school students studying at a general governmental secondary school in Abha City were included in the study out of 900 invited to participate in the study with a response rate of 92.1%.

This study concentrated on male secondary school students since males are significantly more vulnerable to injuries than females.

Operational Injury Definition:

The injury in this study was defined as any injury meeting at least one of the following criteria: (1) an injury for which the student received medical treatment at the school nurse's office, (2) an injury for which the student received emergency medical care from a doctor at a hospital or a private medical office, (3) an injury for which the student received first aid from his/her parent, or (4) an injury that was not treated but caused the student to miss a half day or more of school or regular activities.

A self-administered questionnaire including Personal characteristic of student: Age, family size, birth order, scholastic year, nationality and parent's education, father's job etc. And Variables related to injuries: occurrence of any injury within the past 12 months, type (intentional, unintentional), mechanism (assault, fire/hot exposure, fall, road traffic accident, drowning, poisoning, etc.); site (home, school, outdoor) etc. was used to collect data which was analyzed using SPSS version 18.

Prior to data collection, students were fully informed about the objectives of the study. Each

student had the right to accept or refuse participation in the study. Students were notified that they do not have to declare their names on the data collection sheet. The collected data was kept confidential and will be used only for research purposes.

3. Results:

The study included 829 secondary school students out of 900 invited to participate in the study with a response rate of 92.1%. Their socio-demographic characteristics are presented in table (1). Their ages ranged between 15 and 22 years with a mean of 17.5 ± 1.2 years. Second-year (science) and third year (science) students present 44.1% and 26.8% of the participants. Most of the students were Saudi (76.4%). Most of the students reported from one to five brothers (77.9%) and sisters (83.4%). First birth order was found among 23.5% of the students while second and third birth orders were reported among 43.9%. Fathers of more than half of the students had university graduation (50.7%) and mothers of 40% of them had university graduation. The fathers of 22.1% of the students were employees and of 19% were military or police persons. More than half of the students had private houses (53.8%) and more than 5 rooms in the house (60.5%). The family income was more than 10000 in 45.4% of the students.

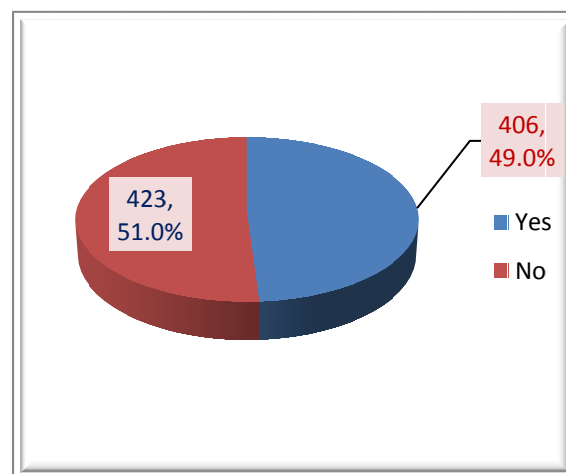
Table 1: Socio-demographic characteristics of secondary school students (n=829).

Characteristics	No.	%
Age in years		
≤17	418	50.4
>17	411	49.6
Range (years)	15-22	
Mean±SD (years)	17.5±1.2	
Class		
1 st	151	18.2
2 nd -Science	366	44.1
2 nd -Literature	12	1.4
3 rd -Science	222	26.8
3 rd -Literature	78	9.4
Nationality		
Saudi	633	76.4
Non-Saudi	196	23.6
Number of bothers		
none	26	3.1
1-5	646	77.9
>5	157	19.0
Number of sisters		
none	98	11.8
1-5	691	83.4
>5	40	4.8
Birth order		
1 st	195	23.5
2 nd - 3 rd	364	43.9
>3 rd	270	32.6

Table 2: Socio-demographic characteristics of secondary school students (n=829). (cont.)

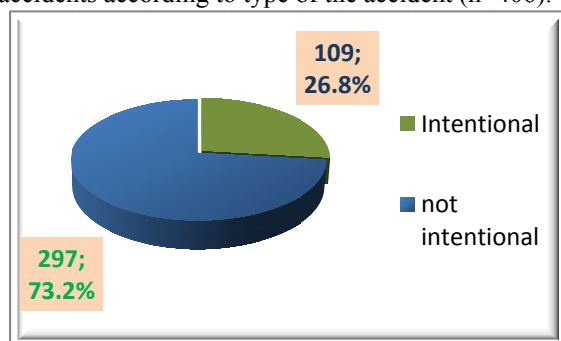
Characteristics	No.	%
Father's education		
Illiterate	31	3.7
Primary	90	10.9
Intermediate	85	10.3
Secondary	203	24.5
University	420	50.7
Mother's education		
Illiterate	129	15.6
Primary	143	17.2
Intermediate	95	11.5
Secondary	130	15.7
University	332	40.0
Father's job (819)		
Manual worker	79	9.7
Military and police	156	19.0
Teacher	99	12.1
Employee	181	22.1
Physician	73	8.9
Engineer	40	4.9
Retired	122	14.9
Business	69	8.4
Type of residence		
Rent	383	46.2
Private	446	53.8
Income (in SR/month) (819)		
≤5000	146	17.8
5001-10000	301	36.8
>10000	372	45.4

The prevalence of non-fatal injuries among male secondary school students was 49% as shown in Figure (1),



Most of these injuries were not intentional (73.2%) as displayed in figure (2).

Figure (2): Distribution of students with history of accidents according to type of the accident (n=406).



Regarding types of accidents, 65.4% were car accidents, 14.7% were injuries during playing and 10.1% were stabbing wounds. Suicidal attacks were reported by 7.6% of the students. Figure (3)

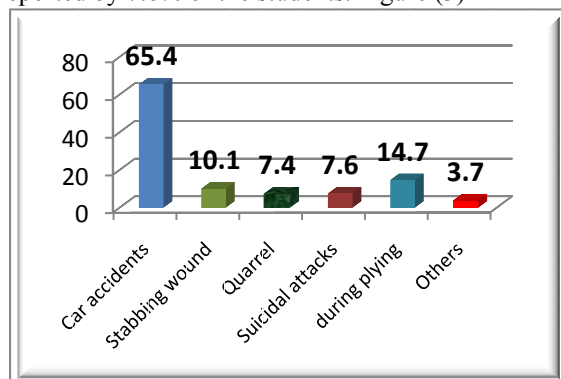


Figure (3): Causes of non-fatal injuries among male secondary school students, Abha city (n=406).

The Places of the majority of non-fatal injuries were streets (89.9%) while schools and homes were reported by 4.2% and 1.2% of the students as shown in figure (4).

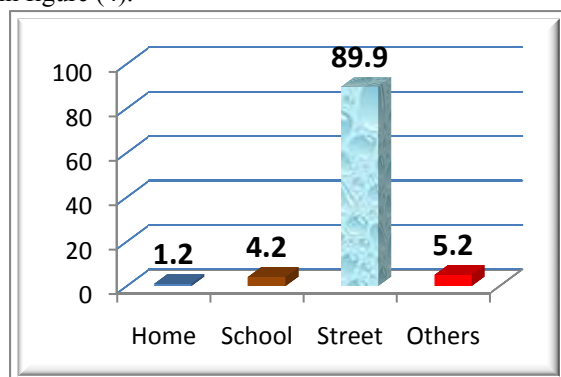


Figure (4): Place of injuries among male secondary school students, Abha city (n=406).

Of students reported non-fatal accidents, 247 (60.8%) had injured during accidents. The results of

injury were wound (63.2%), fracture (17%) or both (19.8%). The place of emergency care was hospital in most of injured cases (80.6%) while it was home or school among 10.5% and 3.6% of the injured students, respectively

44.2% of the injured students stayed one day or less in the hospital while 31.2% of them stayed more than 10 days.

Factors associated with non-fatal injuries:

Non-fatal injuries were reported among 58.9% of students aged over 17 years compared to 39.2% among those aged 17 years or less. This difference was statistically significant, $p < 0.001$. It was reported among 61.6% of Saudi students compared to only 8.2% among non-Saudi students. This difference was statistically significant, $p < 0.001$. Also, it was reported among 59.2% of students who have more than 5 brothers compared to only 15.4% among those having no brothers. This difference was statistically significant, $p < 0.001$. 36.9% of students whose fathers are teachers and among 60.9% of students whose fathers are military persons or working in police had not fatal injuries compared to only 24.1% among those whose fathers are manual workers and among 30% of students whose fathers are engineers. This difference was statistically significant, $p < 0.001$. Injuries were not significantly associated with student's birth order. Non-fatal injuries were reported among 56.2% of students who fathers are university graduated and among 20% of students whose fathers are primary school educated. This difference was statistically significant, $p < 0.001$. Similarly, non-fatal injuries were reported among 52.1% of students who mothers are university graduated and among 34.9% of students whose mothers are illiterate. This difference was statistically significant, $p = 0.001$. 71.2% of students whose family income was >10,000 SR/month had not fatal injuries compared to only 11% among students whose family income was 5,000 or less SR/month. This difference was statistically significant, $p < 0.001$.

As regard to the association between type of residence and non-fatal accidents non-fatal injuries were reported among 74.4% of students who has private house compared to only 19.3% among those who has rent house. This difference was statistically significant, $p < 0.001$. Non-fatal injuries were reported among 51.8% of students whose family has private car compared to only 17.6% among those whose family has no private car. This difference was statistically significant, $p < 0.001$. It also was reported among 85% of students who has nervousness and psychic trouble history compared to 33.2% among those who has no such history. This difference was statistically significant, $p < 0.001$. Non-fatal injuries

also were reported among all diabetic and epileptic students (100%) compared to 44.3% among those who has no history of any chronic disease. This difference was statistically significant, $p < 0.001$. Non-fatal injuries were reported among 66.7% of students with both of hearing/visual weakness compared to 48.4% among those who has no audio-visual problems. This difference was statistically significant, $p = 0.024$. Injuries were reported among 77.5% of smoking students compared to only 40.6% among non-smokers. This difference was statistically significant, $p < 0.001$.

Table 3: Risk factors for non-fatal injuries among male secondary school students, Abha: Multivariate logistic regression analysis.

Risk factors	OR	95% CI
Number of brothers		
None ®	1.0	
1-5	2.9	0.79-7.11
>5	7.6	1.66-18.31*
Family income ®		
≤5000 (n=146)	1.0	
5001-10,000 (n=301)	6.8	1.62-11.02
>10000 (n=372)	13.4	3.2-22.26
History of psychic trouble		
No ®	1.0	
Yes	3.9	1.29-9.32
History of chronic diseases		
No ®	1.0	
Yes	4.6	2.38-19.25
History of smoking		
No ®	1.0	
Yes	2.1	1.05-4.21

® Reference category

In the multivariate analysis, students who have more than five brothers were at 7.6 folded risk of having non-fatal injuries as compared to those who have no brothers. Students whose family income was between 5001 and 10000 or > 10000 SR/month were at 7 or 13 folded risk for non-fatal accidents, respectively as compared to those whose family income was below or equal 50000 SR/month. Students with history of psychic trouble or chronic diseases were at 4 and 5 folded risks respectively for having non-fatal injury. Smoker students were at double risk for non-fatal accidents than non-smokers. (Table 3)

4. Discussion:

Compared with a rate of 49 non-fatal injuries per 100 adolescents aged 15–22 in our survey, there were 22.1% injuries per 100 children aged 0–17 in USA (22), 11.2 injuries per 100 children aged 0–11 and 17.1 injuries per 100 children aged 12–21 in the US, according to the 1997 NHIS (23). However,

many of the potential risk factors assessed in our study were not assessed in the NHIS. The higher prevalence reported in our study could be attributed to the facts that the present study was conducted on only males and in the age of middle to late adolescents. In Qatar, Bender *et al.* (6) reported a male to female death ratio of 3.4:1 for all types of injuries. This could be due to the fact that boys are more aggressive and adventurous than girls. Similarly, in Riyadh, Gad *et al.* (14) reported 22.2% of children and early adolescents having had injuries in the previous 12 months. Males were more affected by injuries than females (26% vs. 18%).

In the current study, suicidal attacks represent 7.6 of non-fatal injuries among male adolescents. In Western world, a prevalence of 21.2% had been reported by Ross and Heath (61). Islamic regulations prohibit suicidal attacks; is the explanation for the difference between the two prevalence.

Road traffic injuries are a major cause of death and disability globally, with a disproportionate number occurring in developing countries (24,25). In many developed countries, injuries are now the leading cause of death among children and young adults (26). In accordance with that, the present study revealed that car accidents were reported by 65.4% of students with non-fatal accidents (representing a prevalence of 32% among all male students). In Malaysia, the number of motor vehicle injury cases was gradually increased with age and reached its maximum that was 31.0% among the adolescents (27). In Riyadh, Gad *et al.* reported a prevalence of road traffic accidents of 15% among children and early adolescents. This difference could be attributed to difference in age group between the present study and that of Gad *et al.* (14).

Some researchers found that socioeconomic status (SES) was an important risk factor for injuries (28, 29). In our study, we found that non fatal injuries were more among students with higher family income compared to students whose family income was less. Increased availability of motor vehicles is likely to raise the risk of traffic injuries (2). While a study in China showed that low socioeconomic standard students with large family size had a higher risk of injury than high socioeconomic standard students and that socioeconomic background has a major impact on injury risk (30). In our study, students who have more than five brothers were at 7.6 folded risk of having non-fatal injuries as compared to those who have no brothers.

In this study, non-fatal injuries were reported more among students whose mothers are university graduated than among students whose mothers are illiterate. Two other studies indicated that children of unemployed mothers were at greater risk (31,32).

In this study, current smoking, was associated with non fatal injuries These findings resonate with a study among South African school adolescents where, among boys, smoking and drunkenness were found to be predictors for injuries (33),

It is proposed that a number of personality factors may influence a personal risk of becoming injured. Results from the present study showed that injured students had a significantly higher level of psychic troubles in comparison to non-injured students. These results are consistent with Andreas (2010) findings which found a relationship between injury and somatic trait anxiety (34).

In this study, Non-fatal injuries were reported more among students with both of hearing/visual weakness compared to those who has no audio-visual problems. Several studies in the USA, Europe and Australia have reported details on the determinants of injuries at home. Having poor eyesight have been found to be significant predictors of injury-causing falls (35).

In the current study, students with history of chronic diseases were at 5 folded risks for having non-fatal injury and this supports the results of a study of eight countries in Europe. This latter study followed epileptic cases and matched non-epileptic controls for nearly 17,500 person-months, and found that those with epilepsy reported more domestic accidents, more hospitalization and more medical complications compared with the controls (36). Another study showed that Patients with epilepsy or diabetes mellitus have slightly increased risks of traffic accidents as compared with unaffected persons (37).

Conclusions:

Non-fatal accidents are a prevalent public health problem among male secondary school students in Abha, KSA. Road traffic accidents are the main reported among them. High-family income, large family size, smoking, chronic diseases and psychic troubles were significantly associated with non-fatal injuries.

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References:

- 1- Krug E.G., Sharma G.K., Lozano R. The global burden of injuries. *Am J Public Health*. 2000;90:523–526.
- 2- Kopits E, Cropper M. Traffic fatalities and economic growth. *Accid Anal Prev* 2005; 37: 169–78.

- 3- Patton GC, Coffey C, Sawyer SM, Viner RM, Haller DM, Bose K, Vos T, Ferguson J, Mathers CD. Global patterns of mortality in young people: a systematic analysis of population health data. *Lancet* 2009; 374: 881–92.
- 4- Peden M, Oyegbite K, Ozanne-Smith J, Hyder AA, Branche C, Rahman AKMF, Rivara F, Bartolomeos K. World report on child injury prevention. World Health Organization: Geneva, 2008.
- 5- Scuffham P, Chaplin S, Legood R. Incidence and costs of unintentional falls in older people in the United Kingdom. *Journal of Epidemiology and Community Health*, 2003; 57:740-744.
- 6- Bender A, Hussain SJ, Ghaffar A, Abou-Taleb H, El-Sayed HF. Trends in childhood trauma mortality in the fast economically developing State of Qatar. *World J Pediatr* .,2011; 7(1):41-44
- 7- Hyder AA, Sugerman DE, Puvanachandra P, Razzak J, El-Sayed H, Isaza A, Rahmang F, Peden M. Global childhood unintentional injury surveillance in four cities in developing countries: a pilot study. *Bull World Health Organ* 2009; 87:345–352.
- 8- Ekman R, Svanstrom L, Langberg B. Temporal trends, gender, and geographic distributions in child and youth injury rates in Sweden. *Inj Prev.*, 2005; 11:29-32.
- 9- Philippakis A, Hemenway D, Alexe DM, Dessypris N, Spyridopoulos T, Petridou E. A quantification of preventable unintentional childhood injury mortality in the United States. *Inj Prev.*, 2004; 10:79-82.
- 10- Blum RW, Nelson-Nmari K. The health of young people in a global context. *J Adolesc Health* 2004; 35: 402–18.
- 11- Patel V, Flisher AJ, Hetrick SE, McGorry PD. Mental health of young people: a global public-health challenge. *Lancet* 2007; 369: 1302–13.
- 12- Office for National Statistics (ONS). Health statistics quarterly: No. 39. Office for National Statistics: London, 2008.
- 13- World Health Organization (WHO). Country profile of Environmental Burden of Disease. Saudi Arabia. Public Health and the Environment Geneva 2009, p. 1.
- 14- Gad A, Al-HYPERLINK " <http://www.ncbi.nlm.nih.gov/pubmed?term=%22Al.2010.57{3},179-84> .
- 15- R. Childhood injuries seen at an emergency department. *J Pak Med Assoc*. 2008; 58(3):114-8.
- 16- Bellis MA, Hughes K, Anderson Z, Tocque K, Hughes S. Contribution of violence to health inequalities in England: demographics and trends in emergency hospital admissions for assault.

- Journal of Epidemiology and Community Health, 2008; 62:1064-1071.
- 17- Lyons RA, Jones SJ, Deacon, Heaven M. Socioeconomic variation in injury in children and older people: a population based study. *Injury Prevention*, 2003; 9:33-37.
 - 18- Lescoghier, I., & Scavo-Gallagher, S. (1996). Unintentional injury. In R.J. DiClemente, W.B.Hansen & L.E. Ponton (Eds.), *Handbook of adolescent health risk behaviour* (pp. 225–258).
 - 19- Geckova, A., Tuinstra, J., Pudelsky, M., Kovarova, M., van Dijk, J.P., Groothoff, J.W., *et al.* (2001). Self-reported health problems of Slovak adolescents. *Journal of Adolescence*, 24(5), 635–645.
 - 20- Lloyd, C.B. (2005). *Growing up global: The changing transitions to adulthood in developing countries*. Washington, DC: National Academic Press.
 - 21- Igra, V., & Irwin, C.E. (1996). Theories of adolescent risk-taking behavior. In R.J. DiClemente, W.B. Hansen & L.E. Ponton (Eds.), *Handbook of adolescent risk taking behavior* (pp. 35–53).
 - 22- Nordstrom DL, Zwerling C, Stromquist AM, Burmeister LF, Merchant JA. Identification of risk factors for non-fatal child injury in a rural area: Keokuk County Rural Health Study *Injury Prevention* 2003; 9:235–240.
 - 23- Warner M, Barnes PM, Fingerhut LA. Injury and poisoning episodes and conditions: National Health Interview Survey 1997. *Vital and Health Statistics* 2000; 10 (202).
 - 24- Murray CJ, Lopez AD. Alternative projections of mortality and disability by cause 1990-2020: global burden of disease study. *Lancet* 1997; 349: 1498-1504.
 - 25- Bener A. The neglected epidemic: road traffic accidents in a developing country, State of Qatar. *Int J Inj Contr Saf Promot.*, 2005; 12: 45-7.
 - 26- Bener A, Crundall D. Road traffic accidents in the United Arab Emirates compared to western countries. *Adv Transport Stud Int J.* 2005; 6: 5-12.
 - 27- Mustafa MN. Overview of current road safety situation in Malaysia, 2006 http://www.unescap.org/ttdw/common/TIS/AH/files/egm06/roadsafety_malaysia.pdf (27-8-2007) (Publication. Retrieved 27-8-2007, from Ministry of Works, Malaysia:http://www.unescap.org/ttdw/common/TIS/AH/files/egm06/roadsafety_malaysia.pdf.
 - 28- Cubbin C, LeClere FB, Smith GS: Socioeconomic status and the occurrence of fatal and nonfatal injury in the United States. *Am J Public Health* 2000, 90(1):70-77
 - 29- Bell NJ, Schuurman N, Morad Hameed S: A small-area population analysis of socioeconomic status and incidence of severe burn/fire-related injury in British Columbia, Canada. *Burns* 2009, 35(8):1133-1141.
 - 30- Guanmin Chen, , Gary A. Smith, , Shusong Deng, Sarah Grim Hostetler, and Huiyun Xiang: Nonfatal Injuries Among Middle-School and High-School Students in Guangxi, China. *Am J Public Health.* 2005 November; 95(11): 1989–1995
 - 31- Matheny AP. Injuries among toddlers: Contributions from child, mother and family. *Journal of Pediatric Psychology*, 1986; 11: 163-76.
 - 32- Scholer SJ, Hickson GB, Mitchel EJ, Ray WA. Persistently increased injury mortality rates in high-risk young children. *Archives of Pediatrics and Adolescent Medicine* 1997; 151(12): 1216-9.
 - 33- Peltzer, K. (2006). Injury and lifestyle factors among school-aged black and white South African children in the Limpopo Province. *African Safety Promotion: A Journal of Injury and Violence Prevention*, 4(3), 15–25.
 - 34- Andreas Ivarsson and Urban Johnson: psychological factors as predictors of injuries among senior soccer players. a prospective study. *Journal of Sports Science and Medicine* (2010) 9, 347 - 352.
 - 35- Iinattiniemi S., Jokelainen J., Luukinen H. Exercise and risk of injurious fall in home-dwelling elderly. *Int J Circumpolar Health.* 2008;67:235–244.
 - 36- van den Broek M., Beghi E. Accidents in patients with epilepsy: types, circumstances, and complications: a European cohort study. *Epilepsia.* 2004; 45:667–672.
 - 37- Hansotia P, Broste SK. The effect of epilepsy or diabetes mellitus on the risk of automobile accidents. *N Engl J Med.* 199; 1324(1):22-6.

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