

Study of risky behaviors leading to unintentional injuries among high school students in Tehran, Iran

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ABSTRACT

الأهداف: دراسة السلوكيات الخطيرة التي تؤدي إلى الإصابات الغير مقصودة بين طلاب الثانوية في طهران خلال العام 2009م.

الطريقة: أجريت هذه الدراسة المقطعية خلال الفترة من أكتوبر إلى ديسمبر 2009م. شملت الدراسة 727 مشارك من أصل 237,300 (185151 مدرسة حكومية، و52149 مدرسة غير حكومية) تم اختيارهم بطريقة العينة العشوائية ذات المراحل المتعددة، وقد تم اختيار 8 مقاطعات تعليمية من أصل 20 مقاطعة وتم تقسيمها إلى 3 مناطق: الشمال، والوسط، والجنوب. لقد قمنا بجمع البيانات في كل مقاطعة باستخدام طريقة العينة العشوائية العنقودية وذلك بتوزيع الاستبيان الموحد من مركز التحكم بالأمراض بأمريكا والمعتمد في إيران. لقد قمنا بدراسة السلوكيات الخطيرة المؤدية للسقوط، والحروق، والتسمم، وحوادث الطرق.

النتائج: لقد كان متوسط عمر المشاركين في الدراسة 16.8 ± 1.2 عاماً، ويتراوح ما بين 12-18 عاماً. وأشارت نتائج الدراسة إلى أن 44% من الذكور و38% من الإناث قد كانوا معرضين للسلوكيات الخطيرة المؤدية للسلوكيات الغير مقصودة. ولقد كان هناك اختلافاً واضحاً من الناحية الإحصائية في القيادة من غير رخصة بين الذكور ($p=0.000$)، وبين المدارس الحكومية ($p=0.000$). لقد كان استخدام الدراجات النارية منتشراً في شمال طهران ($p=0.000$)، وتمت ملاحظة اختلافاً واضحاً بين الذكور وذلك فيما يخص حالات التسمم، والقيادة من غير رخصة، وقيادة الدراجات النارية، وقيادة هذه الدراجات من غير خوذة ($p=0.000$).

خاتمة: أظهرت الدراسة بأن قرابة نصف الذكور وأكثر من ثلث الإناث المشاركين في الدراسة قد كانوا معرضين للسلوكيات الخطيرة المسببة للإصابات الغير مقصودة، ولهذا فإن العمل على وقاية الطلاب من التعرض لهذه السلوكيات يعد من الأمور الضرورية وخصوصاً في المناطق النائية وبين الذكور.

Objectives: To determine risky behaviors leading to unintentional injuries among Tehrani high school students in 2009.

Methods: This cross-sectional study was carried out between October and December 2009. Out of 237,300

(185151 governmental, 52149 non governmental) Tehrani high school students in both genders, 727 subjects were selected by multistage randomized sampling. Among 20 education districts, 8 districts were selected and divided by stratified sampling into 3 areas: North, Center, and South. Data were collected by cluster random sampling in each district using the standard questionnaire of the Management Diseases Center of America, which had been validated in Iran. Subjects were healthy students aged 12-18 years. Risky behaviors including fall, burn, poisoning, and road traffic injuries were studied.

Results: The mean age of subjects was 16.8 ± 1.2 , range 12-18 years. Overall, 44% of boys and 38% of girls were exposed to risky behaviors leading to unintentional injuries. Significant differences were observed in driving without licence among boys and in governmental schools ($p=0.000$). Using a motorcycle was more prevalent in the south of Tehran ($p=0.000$). Significant differences were observed among boys related to poisoning substance exposure, driving without a licence, motorcycle driving, and non-helmet use during motorcycle driving ($p=0.000$).

Conclusion: Approximately half of the boys and more than one-third of the girls were exposed to risky behaviors leading to unintentional injuries. Prevention of unintentional injuries caused by children's risky behaviors is crucial, particularly among boys and those from deprived areas.

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Unintentional injuries are the leading cause of death for children in the world. In 2003, the Centres for Disease Prevention and Control (CDC) of America reported 10,216 deaths of children between the ages of 0-18 years due to unintentional injuries. However, deaths are merely the tip of the iceberg. There were 8,403,181 nonfatal unintentional injuries to children of the same age group in 2005.¹ The 5 leading causes of injury death among children under age 18 are motor vehicle injuries, fires and burns, drowning, firearms and suffocation.² Childhood and adolescence is an important period in each person life. Many important maturity changes such as behavioral and emotional growth, puberty and personality occurred in this period. Comprehensive interventions that engage the community at large and combine strategies such as education programmes and traffic calming measures can reduce the incidence of childhood pedestrian injury. Evaluations conducted in the US, Australia and Norway has reported reductions in child pedestrian injuries of between 12% and 54%. The greatest reductions were found in those projects that involve a wide variety of governmental and voluntary organizations in its implementation. The use of multiple interventions, repeated in different forms and contexts, begins to develop a culture of safety within a community.^{3,4} Bakhshani et al⁵ showed high prevalence of risky behaviors leading to intentional and unintentional injuries among Zahedani high school students in Iran compared with other countries. The last official census which was conducted in 2006 showed that population of children and teens was 18.8% of total population. Iranian population faced to a young structure and the rate of unintentional injuries will be high during the next years. There were limited studies in Iran on children's unintentional injuries. Lack of accurate information related risky behaviors leading to unintentional injuries among Iranian high school students is the main reason to this assertion. This study was conducted to determine risky behaviors leading to unintentional injuries among Tehrani high school students in 2009.

Methods. This cross-sectional study was carried out between October to December 2009. Out of 237300 (185151 governmental, 52149 non governmental) of Tehrani high school students in both genders, 727 subjects were selected by multistage randomized sampling. Among 20 education districts of Tehran, 8 districts were selected and divided by stratified sampling into 3 areas: North, Center and South (North: districts 1 and 4, Center: districts 5, 6, and 10; and South: districts 14, 16, and 18). Data were collected by cluster random sampling in each district using standard questionnaire of Management Diseases Centre of America which

was validated by Bakhshani et al⁵ in Zahedan, Iran. Subjects were healthy students aged 12-18 years (ill students considered epilepsy, diabetic catch cold caused confusion were excluded). Risky behaviors on falls, burns, poisonings and road traffic injuries, and also demographic information of students (namely, age and gender and parents, education, kind of schools) were collected by trained experts with a same educational and age level. Ethical approval was obtained from the Ethics Committee of Shahid Beheshti University of Medical Sciences, Tehran, Iran.

The Statistical Package for Social Sciences Version 17.1 (SPSS Inc. Chicago, IL, USA) was used for all data analyses. Chi square statistic test was used to compare the governmental and non-governmental high school students, districts, and genders. License certification in Iran is 18 years. Governmental school were charged by government and their budgets were district, and the non governmental schools were charged by private sectors aid. High income families often are living in the north, middle income families in the center and low income families in the south of Tehran city, so findings related in Tehran areas present socioeconomic status in different areas. *P*-values less than 0.05 were considered significant.

Results. The mean age of subjects was 16.8±1.2, range 12-18 years. Overall, 53.3% were boys. Approximately 44% of boys and 38% of girls exposed to risky behaviors leading to unintentional injuries. No significant differences were observed by age group and children's risky behavior.

Percentage of risky behavior variables among high school students is presented in Table 1. Use of pedestrian passenger bridge was the highest and poisoning by obstinate drug usage was the lowest rate in the more time usage among risky behaviors. Driving without licence is significantly higher in boys than in girls.

Rate of driving without licence according to gender and kind of schools is presented in Table 2.

Rate of using a seat belt by gender and kind of schools is presented in Table 3. Motorcycle using and non-use of seat belt was more prevalent in governmental schools and south areas of Tehran (*p*=0.000).

Using a seat belt by educational level is presented in Table 4. Approximately one-fifth of subjects drove without licence and doing activity which caused fall and obstinate drug using. Using of pedestrian bridge was more than two-third among girls and one-third among boys. Approximately half of subjects did not use a helmet during motorcycle riding. Significant differences was observed among boys related to poisoning substance expose, driving without licence, motorcycle driving, and non-helmet use during motorcycle driving (*p*=0.000).

Table 1 - Distribution of risky behaviors among high school students in Tehran, Iran during the year 2009.

Variables	Very little n (%)	More time n (%)	Never n (%)
Passenger bridge use	188 (24.3)	495 (64.0)	90 (11.6)
Parents, supervision	188 (24.4)	227 (29.4)	356 (46.2)
Using fall preventive device	147 (19.2)	95 (12.4)	524 (68.4)
Doing work independently	262 (33.6)	449 (58.2)	61 (7.9)
Burn prevention education	303 (39.4)	104 (13.5)	363 (47.1)
Exposed to poisoning drugs	182 (23.7)	53 (6.9)	329 (42.9)
Control of label before using	130 (30.4)	317 (41.9)	209 (27.6)
Helmet use	86 (11.0)	67 (8.6)	348 (44.7)
Motorcyclist use	279 (35.9)	307 (39.5)	127 (17.8)
Skate and cyclist use	298 (38.7)	201 (26.1)	271 (35.2)
Activities which can falls	112 (14.7)	26 (3.4)	623 (81.9)
Poisoning by obstinate drug usage	35 (4.6)	11 (1.4)	723 (94.0)

Table 2 - Distribution of driving without license according to gender and type of schools among high school students in Tehran, 2009.

Variables	Driving without license		
	Very little	Most of the time	Never
Gender			
Boys	138 (34.0)	122 (30.0)*	141 (36.0)
Girls	80 (25.0)	21 (6.0)	225 (69.0)
Total	218 (30.0)	143 (20.0)	366 (50.0)
Kind of schools	Seldom	Most of the time	Non usage
Governmental	144 (29.0)	108 (21.0)*	252 (50.0)
Non governmental	74 (33.0)	36 (16.0)	14 (51.0)
Total	318 (30.0)	144 (20.0)	336 (50.0)

*p=0.000. Data are expressed as number and percentage (%)

Table 3 - Distribution of using a seat belt by gender and type of schools among high school students in Tehran, Iran during the year 2009.

Variables	Seat belt usage		
	Very little	Most of the time	Never
Gender			
Boys	150 (38.0)	184 (46.0)	62 (16.0)
Girls	129 (41.0)	123 (39.0)	65 (20.0)
Total	279 (39.0)	307 (43.0)	127 (18.0)
Kind of schools	Seldom	Most of the time	Non usage
Governmental	187 (39.5)	194 (39.0)	107 (21.5)*
Non governmental	82 (38.0)	113 (52.3)	21 (9.7)
Total	269 (38.0)	307 (44.0)	128 (18.0)

*p=0.000. Data are expressed as number and percentage (%)

Table 4 - Distribution of using a seat belt by educational areas among high school students in Tehran, Iran during the year 2009.

Areas	Never	Occasionally	Most of the time
North	19 (12.0)	59 (36.0)	84 (52.0)
Center	49 (19.0)	94 (37.0)	111 (44.0)
South	63 (20.0)	131 (42.0)	117 (38.0)*

*p=0.034

Discussion. Approximately half of boys and more than one-third of girls in Tehran exposed to risky behaviors leading to unintentional injuries. Driving without licence, poisoning substance expose, motorcycle riding, not using of a helmet during motorcycle riding was higher among boys. Riding motorcycle and not wearing seatbelt as a car passenger/driver was more prevalent in the south of Tehran and governmental schools. These findings are consistent with O'Carroll et al⁶ study showed that boys had a significantly higher injury rate than the girl's students. Approximately one-fifth of subjects drove without licence and had activities which caused fall and obstinate drug using. The 5 leading causes of injury death among children under age 18 are motor vehicle injuries, fires and burns; drowning, firearms and suffocation.⁷ Parents and caregivers need to know the greatest risk factors for their children and to take the appropriate steps to reduce the risk of unintentional injury. We found that students who were boys from south of Tehran with lower family income had a higher risky behaviors leading to unintentional injuries. Based on our findings, we observed that socioeconomic background has a major impact on children's risky behaviors. It seems that a particular silent feature of poverty for health consequences is exposure to multiple environmental risk factors. Poverty is positively associated with unintentional injuries occurring among adolescents.⁸⁻¹¹ Near to half of subjects did not have any supervision by their parents and burn prevention education. Other studies showed that children are routinely left unsupervised for portions of their time awake, are often out of sight of their supervisors, and that supervision of children who are out of view is poorer than the child in view. Parents routinely supervise in ways that can elevate young children's risk of home injury. Supervision interacted with some child attributes to elevate children's risk of medically attended injury and with other attributes to decrease injury risk.¹²⁻¹⁵ Some interventions to decrease the rate of unintentional injuries showed that caregivers who were randomized to receive the intervention improved significantly in their overall practices regarding home safety, particularly within the areas of poisoning, cut, and burn prevention. In addition, caregivers who were provided with free safety equipment and instructions for

proper use were reported greater use of these devices as compared with caregivers in the control group.¹⁶ Nearly two-third of subjects did not use preventive devices for falls. To decrease the occurrence of injuries caused by falls, strategies should include awareness campaigns, parent's education about the mechanisms of falls, increase parental supervision during playing activities, and legislative measures to ensure the safety of windows and balconies. Monash University Accident Research Center findings on unintentional injury prevention which was focused on education showed that injury prevention in schools requires a systematic approach and should target the most common causes of injury particularly serious injury, with special attention to age and gender and specific patterns. Unintentional injury prevention initiatives should aim to reduce injuries. Keeping the environment free from hazards and caregiver supervision are crucial.¹⁷ As children grow, they become more independent and take more responsibility for their own activities. Although low level of risk-taking behavior might be normal for this age group, however, excessive risky behaviors and exposure to high-risk environments can be particularly dangerous. This study is the first report on risky behaviors leading to unintentional injuries in Iran.

The current study was carried out in Tehran city, the capital of Iran, so it could be a limitation to generalize. In some of schools we faced to little cooperation in spite of legal permission.

This study is the first epidemiological overview of the basic frequencies and distribution of risky behaviors leading to unintentional injuries experienced by children in Iran. Parents and care giver need to know the high risk factors, conformity to unintentional injuries peril decrease, and the health policy maker need to consider an appropriate health program according to bulk, intensity, preventable, and measurable of outcome and result.

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