

Violence and Unintentional Injuries Among School Students Aged 15 - 19 Years in Jordan

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Background: Despite considerable research on violence and unintentional injuries among Jordanian students that focused primarily on those aged 13 - 15 years, very little attention has been paid to such injuries regarding 15 - 19 year-old students.

Objectives: The purpose of this study was to estimate the prevalence of violence and unintentional injuries, among the Jordanian school students aged 15 - 19 years, and to compare the patterns of these behaviors between male and female students.

Materials and Methods: This descriptive-analytic cross-sectional study comprised 750 secondary school students and carried out on randomly selected eight comprehensive secondary schools (four schools for females and four schools for males) from the public educational directorate located in Amman. A modified Arabic version of the general school health survey questionnaire was used to measure violence-related behaviors and unintentional injuries.

Results: The findings showed that 26.8% of students had been physically attacked. Overall, 43.3% of students were involved in a physical fight and 20.1% were bullied. Overall, 45.3% of students sustained serious injuries, of whom 31.2% were engaged in playing or training for sports, 35.6% were injured in a fall, and 60.3% hurt themselves by accident, with broken bone or dislocated joint presenting the most serious injuries. There was a difference between male and female students regarding physical attack, physical fight, and injuries.

Conclusions: It is necessary to implement an effective school health program including social and physical environments that promote safety and prevent injuries and violence.

Keywords: Bullying; Physical Fight; Physical Attack; Secondary School Students; Unintentional Injuries; Violence

1. Background

School students aged between 15 - 19 years are in the middle and late stages of adolescence, and are especially vulnerable to high-risk behaviors that can affect their health and lead to illness and death (1). Violence and unintentional injuries are two of the interrelated areas of vulnerability (2, 3), which have substantial impact on the health of adolescents (4). Adolescents are more likely to engage in risk-taking behaviors compared to younger children or adults due to many developmental, emotional, and social factors such as lacking adult monitoring and support, and feeling of independence (5).

Violence has been defined by the world health organization (WHO) as "an intentional use of physical and psychological force or power, threatened or actual, against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, mal-development, or deprivation" (6). Adolescents' violent behaviors include weapon carrying (e.g. gun, knife, or club), physical fight, relationship violence, peer violence, school violence such as bullying, slapping, or punching to weapon use, and suicidal behaviors (ideation and attempts) (7-9).

Bullying is one of the adolescents' violence that threatens young people's well-being in schools and neighborhoods (10). It is defined as unwanted aggressive acts against someone who cannot easily defend himself or herself. It can take the form of physical or verbal harassment, and involves repetition and imbalance of power (11).

Unintentional injuries are a leading cause of death and disability among adolescents (12). These injuries include many types, in which the majority occurs as a result of motor vehicle crashes, falls, poisonings, drowning, suffocation, fires and burns, and firearms (8, 13-15). Furthermore, high school students display other behaviors of unintentional injuries involving not using seat belt when driving or sitting in the front seat, riding with a driver who has been drinking alcohol, and drunken driving (12).

Promoting healthy practices among adolescent students and taking steps to protect them from health risks, in addition to formulating interventions and policies are critical for preventing health problems in adolescence and adulthood across countries (16).

In Jordan, 10.97% of the population ages between 15 - 19 years (17). Adolescents in Jordan have always been influ-

enced by new ideas and fads, especially in the city and urban areas (18). In addition, strong gender differentiation still occurs regarding socialization of Jordanian adolescence (19). Socialization and parenting practices are not the same for boys and girls (18). In addition, Jordanian culture and norms give more flexibility and freedom for males than females in learning social skills and making choices (20).

Despite considerable research on violence and unintentional injuries among Jordanian adolescents that focused primarily on students aged 13 - 15 years (21, 22), there has been very little attention devoted to this field in adolescents aged 15 - 19 years. The most recent evidence showed that 46.7% of Jordanian schoolchildren aged 13 to 15 years were involved in a physical fight, of whom 43.7% sustained serious injuries, and 41.6% were bullied (22). These results are closer to those of Oman study, which showed 47.6% of students aged 13 to 15 years were involved in a physical fight, of whom 40.9% were seriously injured, and 47.3% bullied (23).

2. Objectives

The purpose of this study was to estimate the prevalence of behaviors related to violence and unintentional injuries, to describe these behaviors among the Jordanian school students aged 15 - 19 years, and to compare the patterns of these behaviors between male and female students.

3. Materials and Methods

This descriptive-analytic cross-sectional study was conducted in the period between February and May 2014. The study was carried out in public comprehensive secondary schools in the capital of Jordan, Amman. These schools included single sex students in the 10th to 12th grades, who were recruited using multi-stage random sampling technique. The study comprised educational directorate in five districts. The participants were randomly selected from two educational zones. Then, from each selected zone, two male and two female public comprehensive secondary schools were selected randomly. One class of the tenth grade was randomly selected from each school. In addition, seven to ten students from each available section (scientific, literary, information technology, health education, and home economics) in the first and the second secondary grades were selected randomly. The inclusion criteria were students who had Jordanian nationality, aged between 15 to 19 years, and willing to participate in the study. The sample size consisted of 750 students who divided into 375 males and 375 females, and was calculated by using a confidence interval of 95% ($\alpha = 0.05$) and statistical power of 80% ($\beta = 0.20$) (24).

The parents or guardians of students in each of randomly selected classrooms were sent a parental consent form and a letter describing the study and informing that participation was voluntary and anonymous. The parents or

guardians who did not want their student to participate, they were asked to return the consent form to the school, but all agreed with the study and did not return the form. Data collection took place during physical education class at each school sites. The students completed the questionnaires independently during one school period lasting 10 - 20 minutes for each class. Ethical approvals were obtained from the ministry of education, selected educational zones, and participating schools.

The questionnaire was developed by using a modified Arabic version of the Global School-based student health survey questionnaire (GSHS) (22). Furthermore, the questionnaire included major socio-demographic variables consisting of student's age, gender, grade, family income/month, and grades in school.

Global school-based student health survey questionnaire is a self-reported questionnaire that targeted students aged 13 - 17 years to assess the risk and protective measures involved (25). Validity of this questionnaire was assessed continuously in adolescent risk behaviors studies (26). Regarding reliability, only one published report found an average agreement of 77% between test and retest (25). The area related to violence and unintentional injury was only selected from the modified Arabic version of GSHS for including in the study (22). The study questionnaire was reviewed for validity by asking three community health experts to rate content validity index (CVI), which was calculated and was equal to 1.

The final version of questionnaire was composed of socio-demographic variables, which included five questions, and violence-related behaviors that consisted of 15 questions related to physically attacked students, physical fight, bullying, personal safety, and suicidal behaviors. In addition to unintentional injuries, the study included eight questions related to injuries, personal safety, and education about first aid skills. An injury was operationally defined as a wound that was treated by a doctor or a nurse (27). Furthermore, most serious injury was defined as the injury that needed a long period to heal (28). All items in the questionnaire were scored on various Likert-type scale.

This questionnaire was then pilot tested on 60 students in order to test data collection procedures and compute the reliability coefficient. According to the pilot study result, questions were clear to the most of students. Internal consistency was used in ascertaining reliability of the instrument between individual items. The Cronbach's Alpha that obtained from the pilot data for this study was 0.88.

Descriptive statistics were used to describe all study variables and included frequencies and percentages. Chi-square (χ^2) was also used to examine the gender differences in health violence-related behaviors and unintentional injuries. The level of significance was adjusted at alpha level of ≤ 0.05 .

4. Results

Table 1 presents findings related to socio-demographic

characteristics. It revealed that 25.5% of students were the tenth grade, 37.2% in the first secondary, and 37.3% in the second secondary levels. Furthermore, 44.9% of students' families had enough to live on, with no extra income. The majority of students (59.7%) had excellent to very good grades at school.

Table 2 presents findings related to violence-related behaviors, which revealed that 26.8% of students had been physically attacked one or more times. The prevalence of students who had been physically attacked was higher among males (35.5%) than females (18.1%). Almost 26.5% of students had been physically attacked by a teacher one or more times. Male students (45.6%) were more physically attacked by a teacher than females (7.5%). More than half of students (52.0%) had been verbally abused by a teacher once or more times. In addition, 21.9% of students had been physically attacked by an adult family member, and 19.3% were hit, slapped, or physically hurt by a friend on purpose.

Overall, 43.3% of students reported that they had been in a physical fight once or more times. The prevalence of having been in a physical fight was higher among males (62.1%) than females (24.5%). Almost one-third (34.0%) of students had been in a physical fight on school property at least on one occasion. The prevalence of male students who had been in a physical fight (51.5%) on school property was more than females (16.5%). Overall, 17.3% of students were taught in school classes' how to avoid physical fights and violence during the school year.

Almost, one-fifth (20.1%) of students reported that they had been bullied on one and more days during the past 30 days. The most common methods of bullying were being left out of activities or completely being ignored (28.5%), and being hit, kicked, pushed, shoved around, or locked indoors (24.5%).

Furthermore, 14.9% of students had not gone to school at least one day during the past 30 days because of unsafe way to or from a school. In addition, 11.5% of students reported that they had not gone to school at least one day in the past 30 days due to unsafe school. Moreover, 25.1% of students had their property been stolen or intentionally damaged at school by someone at least once during the past 30 days. Overall, 20.3% of students reported that they seriously considered attempted suicide of whom 14.7% actually planned a suicide.

Chi-square test was done to show differences in behaviors between male and female students (Table 2). These included physical attack ($\chi^2 = 33.959$, $P < 0.001$), physical attack by a teacher ($\chi^2 = 143.933$, $P < 0.001$), verbal abuse by a teacher ($\chi^2 = 22.336$, $P < 0.01$), involvement in physical fight ($\chi^2 = 121.619$, $P < 0.001$), physical fight on school property ($\chi^2 = 105.595$, $P < 0.001$), and harming personal safety including stolen or deliberately damaged property by someone ($\chi^2 = 14.916$, $P < 0.05$).

As a whole, 45.3% of students had been seriously injured at least once Table 3. Male students experienced such injuries more (49.3%) than females (41.3%). Almost 31.2% of

students with serious injury were engaged in playing or training for sports at the time, of whom 35.6% were injured in a fall, and 60.3% hurt themselves by accident. Of female students 69.7% were exposed to the most serious injury when playing or training for sport more than male students (52.4%). The most serious injury reported in 45.9% of the students was due to a broken bone or dislocated joint. Male students (53.0%) were subjected to a broken bone or dislocated joint more than female students (37.4%).

As for personal safety, 77.1% of students ever or rarely wore a seat belt when being with someone who drives a car. The prevalence of female students who reported wearing seat belt was more than male students (79.5% vs. 74.7%). In addition, 31.9% of students attended school classes that taught the methods of avoiding or preventing motor vehicle accidents. Female students were more likely to be taught how to avoid or prevent these accidents than male students (41.3% vs. 22.4%). Moreover, 42.7% of students reported that they were taught school classes about first aid skills in case of an injury to self or someone else.

Table 1. Socio-Demographic Characteristics of Study Population^a

Characteristics	Percentage
Age, y	
15 < 16	22.0
16 < 17	35.2
17 < 18	36.5
18 and more	6.3
Grade	
Tenth	25.5
First secondary	37.2
Second secondary	37.3
Family Income/Month	
Enough and extra	44.7
Enough and no extra	44.9
Not enough	10.4
Grades at School	
Excellent (90 - 100)	26.4
Very good (80 - 89)	33.3
Good (70 - 79)	19.1
Medium (60 - 69)	19.2
Weak (50 - 59)	2.0

^a N = 750.

Table 2. Gender Difference in Violence-Related Behaviors ^a

Questions	Total ^b	Gender ^c		Test χ^2	P Value
		Male	Female		
Students' Physically Attacked					
Prevalence of students physically attacked once or more in past 12 months.	201 (26.8)	35.5	18.1	33.959	0.000 ^d
Prevalence of students physically attacked by a teacher once or more in past 12 months.	199 (26.5)	45.6	7.5	143.933	0.000 ^d
Prevalence of students verbally abused by a teacher once or more in past 12 months.	390 (52.0)	57.9	46.1	22.336	0.002 ^d
Prevalence of students physically attacked by an adult family member once or more in past 12 months.	164 (21.9)	23.7	20.0	4.786	0.686
Prevalence of students hit, slapped, or physically hurt by a friend on purpose in past 12 months.	145 (19.3)	21.3	17.3	3.327	0.189
Physical Fight					
Prevalence of students in a physical fight once or more in the past 12 months.	325 (43.3)	62.1	24.5	121.619	0.000 ^d
Prevalence of students in a physical fight on school property once or more in the past 12 months.	255 (34.0)	51.5	16.5	105.595	0.000 ^d
Prevalence of students who taught in any classes how to avoid physical fights and violence.	130 (17.3)	16.5	18.1	4.754	0.093
Bullying					
Prevalence of students bullied on one or more days in the past 30 days.	151 (20.1)	22.7	17.6	7.565	0.272
Among students who had been bullied on one or more of the 30 days, the prevalence of those who were most often left out of activities on purpose or completely ignored.	43 (28.5)	21.2	37.9	12.621	0.082
Personal Safety					
Prevalence of students who missed school one or more days because they felt unsafe on the way to or from school in the past 30 days.	112 (14.9)	14.7	15.2	1.134	0.769
Prevalence of students who missed school one or more days because they felt unsafe at school in the past 30 days.	86 (11.5)	12.8	10.1	3.828	0.281
Prevalence of students had been stolen or deliberately damaged property, such as car, clothing, or books on school property one or more days in the past 30 days.	162 (21.6)	25.1	18.1	14.916	0.037 ^d
Suicidal Behaviors					
Prevalence of students who, in the past 12 months, seriously considered attempting suicide.	152 (20.3)	18.1	22.4	2.112	0.146
Prevalence of students who, in the past 12 months, made a plan to attempt suicide.	110 (14.7)	13.3	16.0	1.065	0.302

^a N = 750, including 375 male and 375 female participants.^b Values are presented as No. (%).^c Values are presented as %.^d Significant at P ≤ 0.05.**Table 3.** Gender Difference in Unintentional Injuries ^a

Items	Total ^b	Gender ^c		Test χ^2	P Value
		Male	Female		
Serious Injuries					
Prevalence of students seriously injured one or more times in the past 12 months.	340 (45.3)	49.3	41.3	11.266	0.127
Prevalence of seriously injured students hurt while playing or sport-related training	106 (45.5)	45.5	14.2	58.717	0.000 ^d
Prevalence of seriously injured students hurt as the result of a fall.	121 (35.6)	35.1	36.1	27.988	0.000 ^d
Prevalence of seriously injured students with most serious injury resulting from hurting themselves by accident.	205 (60.3)	52.4	69.7	16.585	0.002 ^d
Prevalence of seriously injured students whose most serious injury was a broken bone or dislocated joint.	156 (45.9)	53.0	37.4	19.372	0.007 ^d
Personal Safety					
Prevalence of students who never or rarely wore a seat belt when riding in a car or other motor vehicle driven by someone else in the past 30 days.	578 (77.1)	79.6	74.7	2.866	0.718
Prevalence of students who taught in any classes how to avoid or prevent motor vehicle accidents	239 (31.9)	22.4	41.3	34.580	0.000 ^d
Education About First Aid					
Prevalence of students who attended classes on first aid skills in case of an injury to themselves or someone else.	320 (42.7)	30.4	54.9	48.266	0.000 ^d

^a N = 750, including 375 male and 375 female participants.^b Values are presented as No. (%).^c Values are presented as %.^d Significant at P < 0.05.

The chi-square test was used to find differences between male and female students regarding injuries. As shown in Table 3, male and female students were statistically different regarding the time of serious injury, major cause, method of happening, the most serious injury sustained by the students, and school classes about avoiding or preventing motor vehicle accidents and first aid skills with $P \leq 0.05$ considered as significant.

5. Discussion

In this study, more than one-quarter of students had been physically attacked. This result showed lower prevalence than Oman study (23). This lower prevalence for Jordanian students might be due to underreporting of students because of the norms and traditions that exist widely in the eastern Jordanian community where students fear especially males to talk about this problem (17). Violent behavior is strongly influenced by cultural and social norms. These norms could protect against violence or could support and encourage such measure. Cultural acceptance of violence as a method of solving conflicts or as a way of taking care of a child is considered as a risk factor of violence (29). Therefore, efforts to prevent violence must consider how social pressures and expectations influence individual behavior.

Regarding to violence by teachers, the results indicated that more than one-quarter of students had been physically attacked and more than half of them had been verbally abused by teachers. There are many reasons for teachers' violent behaviors such as overcrowded classrooms, insufficient resources, and an increased emphasis on students' testing and achievement (30). Such teacher behavior damages student's self-esteem and creates unhealthy classroom climate, which influences academic learning and encourages bullying on school property (30). Therefore, interventions for preventing violence by teachers in schools are essential.

The results of this study showed that more than one-quarter of students had been physically attacked by an adult family member. Previous studies have shown that family violence can lead to negative psychological repercussions such as depression and anxiety, and disruptive behaviors among adolescents (31, 32)

The results showed that more than one-third of students had been in a physical fight. In contrast to U.S study result, Jordanian adolescents reported higher prevalence of being involved in physical attack (33). This high prevalence might be due to shortage of accessible social rehabilitation and counseling centers for adolescents staffed with health care providers who exhibit nonjudgmental attitudes, and have competency and maintain confidentiality in dealing with adolescents (34, 35). Moreover, the students who are frequently involved in fights lack anger control methods and ways of resolving conflict (36).

Furthermore, one-third of students in this study had been in a physical fight on school property, which is high-

er than U.S study (33). This alarming result urges the Ministry of Education to seriously tackle this issue in schools. The most powerful risk factor for school violence is anger, especially sudden rage (37). Furthermore, the students believe that the only acceptable and effective way for any conflict is fighting (36).

There is an evidence that school violence is linked to bullying and the overall school environment (38). The study showed that one-fifth of students were bullied. Both female and male students were almost equally prone to bullying. This result is inconsistent with a previous study in Jordan, which showed that more than one-third of student experienced bullying (22).

This study showed that the prevalence of seriously considering suicide attempts was higher than a previous study in Jordan (22). This could be explained by approximately more than one-third of a study sample who sit for a general certificate of secondary education exam called (tawjihi), which is a stressful period for the whole country, the students' families and students themselves. It is considered as the decisive factor that determines a student's future. It is a celebration time for those who pass and it is very sad occasion for those who do not (18).

The study found that overall prevalence of students who were seriously injured was 45.6%, and injuries were more frequent among males than females, which is closer to a previous study in Jordan (22). In addition, these results are consistent with the results reported by other Arab countries (23, 27).

Consistent with a previous Jordanian study (22), this study suggested that most serious injuries are due to playing or sport-related training. In addition, these injuries were more prominent in males than females, which are also consistent with previous studies (22, 27, 28). It is recognized that risk of sport-related injuries among adolescents is increased when there is inappropriate practice, improper protective equipment, and incorrect education (39). Falls were predominant causes of injury among adolescents, which is supported by the results of other studies (22, 27). A broken bone or dislocated joint was considered as the most serious injury, also supported by previous researches (22, 29).

The study found that more than two-thirds of students never or rarely wore a seat belt when sitting in a car. In Jordan, a national seat belt wearing laws are only applicable to drivers and are moderately enforced (40). Finally, teaching first aid courses were taken by only less than half of Jordanian students, which is much lower than that of Oman study (23). Therefore, it is very necessary to encourage first aid classes in schools.

The limitations of this study was that study samples recruited from only public schools, which does not necessarily reflect adolescents from other educational sectors such as private and military schools.

This study showed that violence and unintentional injuries are prevalent issues among students in the schools and are more frequent among male students. These is-

sues require a coordinated response from students, parents, teachers, counselors, and communities to control and eliminate the negative impact on health and society. The ministry of education must take serious actions addressing these issues at schools, and update working legislations and policies that prevent violence and bullying at schools. In addition, it is crucial to implement an effective school health program including social and physical environments that promote safety and prevent injuries and violence in all schools. In addition, it is suggested to encourage educational activities by teaching the needed knowledge and skills in order to create safe and healthy lifestyles, provide needed social problem-solving skills, and to include instructions about the safety in the physical education instructional program. Furthermore, there is a need to raise public awareness via mass media on these aspects and their negative consequences. Future research is warranted to study all public and private schools, in addition to determining the existing risk factors among adolescent students.

Author's Contributions

Malakeh Z. Malak was responsible for study concept and design; acquisition of data; analysis and interpretation of data; drafting of the manuscript; critical revision of the manuscript for important intellectual content; statistical analysis; administrative, technical, and material support; and study supervision.

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