

Violence-related injury of children in Israel: age-dependent pattern

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Objective To characterize the population of children hospitalized as a result of violence.

Methods This retrospective study used data from the Israeli National Trauma Registry on patients aged 0–17 years hospitalized for trauma during 1998–2006. Of 65 430 patients, 2060 (3.1%) had violence-related injuries. Descriptive statistics and bivariate analysis were used to characterize injury patterns and multivariate analysis was used to identify factors associated with severe injury.

Findings Half the victims of violence < 18 years of age were 15–17 years old. Most were boys. Violence-related trauma occurred more often than other trauma in the street, at school or in a public place or leisure facility, but less often at home. Unarmed brawling and stabbing were the most common types of violence. Brawling affected Jewish children more, while non-Jewish children were more often injured by firearms. The boundaries of age groups with different injury rates corresponded to the “institutional” childhood stages of the Israeli educational system: the violence-related injury rate dropped after the first year of life, stayed low during kindergarten, rose slightly during elementary school and rose steeply during secondary and high school. The percentage of males increased with each age group. The street became more dangerous with age, while school and home became safer. Adolescents aged 15–17 years, newborn infants and those injured by firearms had the highest risk of severe injury.

Conclusion Age and type of violence were the most important predictors of violence frequency and severity. Ethnicity lost importance when adjusted by these factors. Further research on their influence on violence-related injury is needed.

الترجمة العربية لهذه الخلاصة في نهاية النص الكامل لهذه المقالة. . Al final del artículo se facilita una traducción al español. Une traduction en français de ce résumé figure à la fin de l'article.

Introduction

Violence-related injury remains one of the leading causes of child mortality worldwide, especially in low-income countries.¹ Lately, even some developed countries have experienced a significant rise in interpersonal violence.² Although there are many different interpretations of this phenomenon,³ children could be the first to feel the burden in almost any country because they belong to one of the most vulnerable groups in society.⁴

This context makes Israel a very interesting example. It is an economically developed country in a less developed region and its society is divided into two distinct and sometimes hostile, ethnic groups.^{5,6} There is a possibility that children who grow up among such tensions will develop violent behaviour towards one another or even become victims of adult frustration,⁷ both of which may result in an increase in violence-related child injury.

By using data from the Israel Trauma Registry, it may be possible to discover the scope of increased interpersonal violence, how it varies throughout childhood years and whether there are differences between the Jewish majority and the non-Jewish minority population in Israel.

The objective of this paper is to describe the epidemiological characteristics of violence-related injuries in children in Israel during the study period. Specifically, the aims are:

- to characterize the population of children hospitalized as a result of violence in Israel;

- to identify patterns of injury in subgroups of the paediatric population in order to focus preventative and interventional efforts on vulnerable groups.

Methods

The study was carried out retrospectively using data from 10 trauma centres that participated in the Israeli National Trauma Registry between 1 January 1998 and 31 December 2006. These included all six first-level trauma centres in the country. All registered patients aged 0–17 years were included. The trauma registry contains data on all injured individuals who attend a hospital up to 72 hours after the injury and who are either admitted to hospital, die in hospital (including the emergency department) or are transferred to another hospital for admission. The trauma registry does not include data on injuries that result from poisoning, drowning or suffocation; on patients who are discharged from hospital after treatment in the emergency department; or on individuals who arrive at the emergency department 72 hours or more after injury. Data are collected by specialized staff in each hospital and the registry is updated once a year. During the study period, the registry included data on 65 430 patients aged 0–17 years.

Two subsets of injured individuals were selected for the study using the registry data: the primary subset included all victims of violence aged 0–17 years ($n = 2060$) and the secondary subset included all patients aged 0–17 years injured by any other means ($n = 63\,370$). Victims of violence

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were identified by the external cause of injury (*International classification of diseases, ninth revision, clinical modification, ICD-9-CM, codes E960–E968*)⁸ and did not include victims of police action or military hostilities.

Statistical analyses were performed using SAS software version 9.1.3 (SAS Institute, Cary, NC, United States of America). The level of statistical significance was set at $P < 0.05$ (χ^2 test) for all analyses. The ICD-9-CM codes were used to classify the cause of the injury and the diagnosis: firearms E965.0–E965.9, stabbing E966, unarmed brawling E960.0 and assault with an object E968.2. In the analysis, the frequency of violence-related injury was compared to that of all other types of injury, and the frequencies of the different types of violence-related injury were compared within different population subgroups. The parameters considered were age, gender, ethnic group, the location where the violent event occurred, the severity of the injury and the type of violence used.

Multivariate logistic regression was performed to determine the probability of sustaining a severe injury as a result of violence, with gender, ethnic group, age, violent event location and type of violence taken into account. The response variable was severe injury (i.e. an injury severity score, ISS, greater than 16) and the explanatory variables were age (divided into five groups), gender, ethnic group, type of violence used (four groups) and violent event location (five types of location). Odds ratios (ORs) with 95% confidence intervals (CIs) were calculated.

Results

During the study period, the Israeli Trauma Registry recorded data on 2060 children with violence-related injuries, which corresponded to 3.1% of all child injuries reported to the registry.

Comparison with non violence-related injuries

Most (86.7%) victims of violence were boys, and the male:female ratio was much greater for violence-related injuries than for other injury types (Table 1). About half of the victims of violence were aged 15–17 years, whereas most of those injured by other means were younger than 13 years. No difference in ethnic composition was

Table 1. Violence-related and non violence-related trauma in children by sex, age group, ethnic group, location of violent event, day of the week and time of day, Israel, 1998–2006^a

Variable	Non violence-related trauma		Violence-related trauma	
	% ^b	No.	% ^b	No.
Sex^c				
Male	68.3	43 253	86.7	1786
Female	31.7	20 084	13.2	271
Age group^c (years)				
< 1	8.4	5 293	2.5	52
1–5	38.5	24 399	5	103
6–12	34.2	21 655	22.7	468
13–14	7.6	2 827	15.4	318
15–17	10.3	6 524	49.9	1027
Ethnic group^c				
Jewish	63.3	40 108	63.2	1301
Non-Jewish	36.2	22 947	35.4	730
Violent event location				
Street	29.2	18 514	34.7	714
School	6.3	3 989	15.1	311
Home	39.6	25 067	14.3	295
Public place or leisure facility	3.8	2 411	11.4	234
Other	21.1	13 389	24.5	506
Day of the week				
Weekend	29.1	18 458	32.8	675
Weekday	70.9	44 912	67.2	1385
Time of day^c				
06:00–15:59 (school time)	35.7	22 633	30.3	624
16:00–21:59 (after school)	48.2	30 515	34.7	714
22:00–05:59 (night)	15.8	9 983	34.7	715
All child injuries recorded in the Israeli Trauma Registry	96.9	63 370	3.1	2060

^a The data were obtained from the Israeli National Trauma Registry.

^b The difference between the figures for violence-related and non violence-related trauma is significant ($P < 0.0001$) for all variables except the day of the week.

^c The total does not equal 2060 because some data are missing.

found between violence-related and non violence-related trauma: about one-third of individuals affected in each category were non-Jewish (the actual proportion of non-Jews in the population of Israel is about 25%, and 99% of them are Arabs)⁹.

As shown in Table 1, there were significant differences between violence-related and non violence-related injuries in children in terms of the circumstances of the injury (i.e. time and location): violence-related injuries occurred more often in the street (34.7% versus 29.2%), in school (15.1% versus 6.3%) and in public places or leisure facilities (11.4% versus 3.8%), but much less often at home (14.3% versus 39.6%; $P < 0.0001$). Such injuries were also

much more frequent during the night hours (34.7% versus 15.8%). Violence-related injuries, like other types of injury, were sustained during the weekend in about one-third of cases.

Most violence-related injuries were caused by unarmed brawling (36.7%) or stabbing (30.5%). Firearm injuries constituted only 5.5% of all violence-related injuries but 18.4% of all severe violence-related injuries (i.e. ISS > 16) and were associated with 58.3% of all violence-related fatalities. Overall, only 1.2% of violence-related injuries resulted in a fatality.

Differences between ethnic groups

Differences were found between Jewish and non-Jewish children. Some 12.1%

of non-Jewish children were injured by firearms, compared with only 2.5% of Jewish children ($P < 0.0001$). This corresponds with the finding that non-Jewish children were more likely to sustain a severe injury (i.e. ISS > 16), at 14.2% versus 8.8% ($P < 0.0001$). On the other hand, Jewish children were much more likely to be injured as a result of unarmed brawling, at 42.0% versus 26.2% ($P < 0.0001$). No difference was found in injuries resulting from stabbing or other types of violence. However, there was a difference in the circumstances of the violence-related injury. Jewish children were more likely to be injured at school (18.1% versus 10.3%) or in a public place or leisure facility (13.8% versus 6.9%), while non-Jewish children usually sustained their injuries in the street, at 42.7% versus 30.2% ($P < 0.0001$).

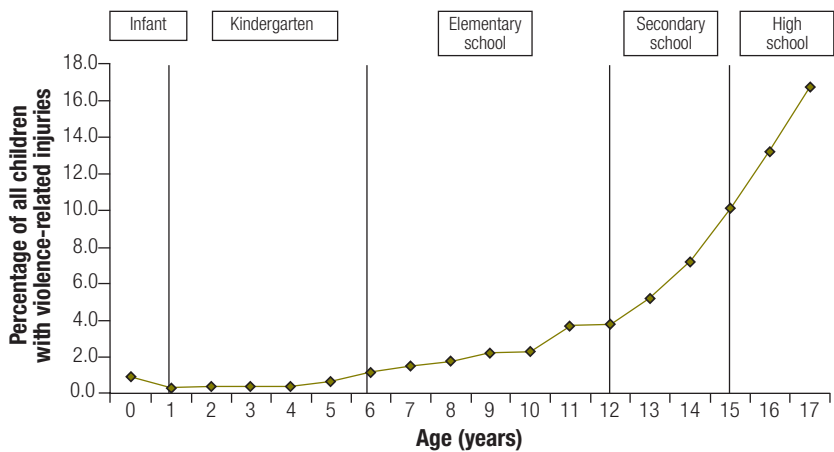
Despite the absence of a difference in the rate of stabbings between Jewish and non-Jewish children, the latter were much more likely to be stabbed at school (36% versus 10.2%, $P < 0.0001$). Most injuries to the region of the head and neck were caused by brawling (48.2%) or other violence (40.5%), and most injuries to the region of the spine and neck were caused by firearms (36.8%), while stabbing caused most wounds to the torso (61%) and the extremities (46.3%).

Differences between age groups

The age distribution of violence-related injuries (Fig. 1) generally corresponds to the different “institutional” stages of childhood as they are defined in Israel: kindergarten for ages 1–5 years, elementary school for ages 6–12 years, secondary school for ages 13–14 years and high school for ages 15–17 years. However, the actual boundaries may be less distinct and the secondary school organizational stage is omitted in minority populations.¹⁰

Nevertheless, the trend appears clear: the percentage of violence-related injuries experienced by children of a specific age drops significantly after the first year of life and remains stable and very low during the kindergarten years. Then it begins to rise slowly and nonsignificantly with each year of primary school. Thereafter, there is a sudden sharp rise that begins with entry into secondary school and that becomes even steeper during the high-school years. This varia-

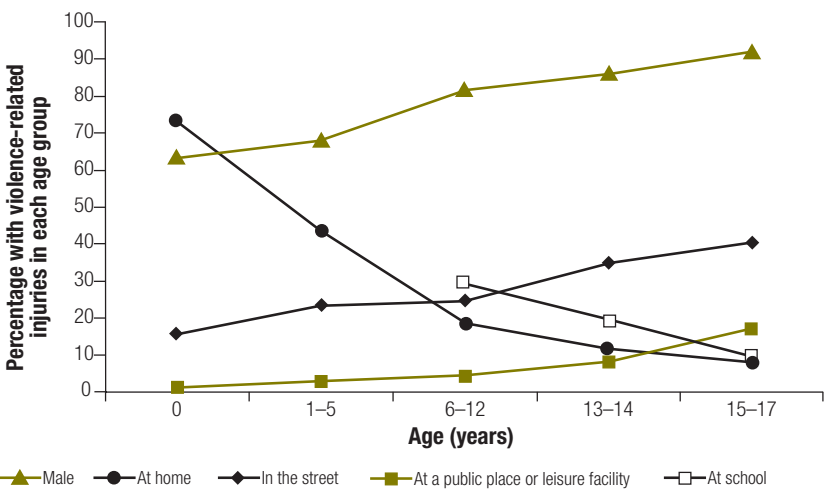
Fig. 1. Percentage of all children with violence-related injuries who were of a particular age, Israel, 1998–2006^{a,b}



^a The data were obtained from the Israeli National Trauma Registry.

^b Infant, kindergarten, elementary school, secondary school and high school correspond to the different “institutional” stages of childhood as defined in Israel.

Fig. 2. Percentage of all children with violence-related injuries in each age group who were male or who sustained the injury at home, in the street, at a public place or leisure facility or at school, Israel, 1998–2006^a



^a The data were obtained from the Israeli National Trauma Registry.

tion in the percentage of violence-related injuries with age led us to carry out an analysis of the demographic characteristics of the victims of violence and of the circumstances of the injuries in each individual age group.

Demographic characteristics of different age groups

No difference was found in the ethnic makeup of the different age groups of children with violence-related injuries; Jewish children comprised about two-thirds of each. On the other hand, the gender composition of the age groups

varied substantially. There was a steady increase in the percentage of victims of violence who were male in each consecutive age group: 63.5% in 0 year olds, 68.0% in 1–5 year olds, 81.8% in 6–12 year olds, 85.9% in 13–14 year olds and 92% in 15–17 year olds ($P < 0.0001$ for trend).

Violent event location and different age groups

The location of the violent event that resulted in the violence-related injury appeared to change with the victim’s age group (Fig. 2). The percentage of

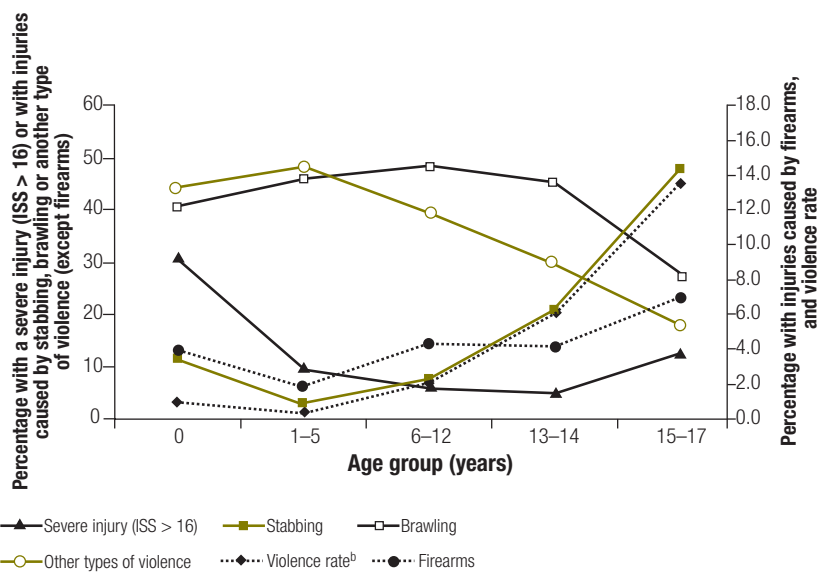
injuries sustained at home decreased continuously with age (< 1 year, 73.1%; 1–5 years, 43.7%; 6–12 years, 18.6%; 13–14 years, 11.6%; 15–17 years, 7.9%; $P < 0.0001$ for trend), as did the percentage sustained at school (6–12 years, 29.5%; 13–14 years, 19.2%; 15–17 years, 9.6%; $P < 0.0001$ for trend). The places that became more dangerous with age were public places and leisure facilities (< 1 year, 1.2%; 1–5 years, 2.9%; 6–12 years, 4.3%; 13–14 years, 8.2%; 15–17 years, 17.1%; $P < 0.0001$ for trend) and the street (< 1 year, 15.4%; 1–5 years, 23.3%; 6–12 years, 24.4%; 13–14 years, 34.9%; 15–17 years, 40.5%; $P < 0.0001$ for trend). These trends seem to correspond to the way in which the gender of the victims of violence varies with age, particularly given that, at the level of the study population, girls are much more likely than boys to be injured as a result of violence at home (38.8% versus 10.6%) and much less likely to be injured in the street (17.7% versus 37.2%) or in a public place or leisure facility (3.7% versus 12.5%); $P < 0.0001$ for all comparisons.

Fig. 3 shows how the percentage of violence-related injuries attributable to a particular type of violence and the percentage of injuries classified as severe (i.e. ISS > 16) varied across the age groups. The percentage of all injuries that were violence-related in each age group is shown for reference. It can be seen that the percentages of injuries attributable to stabbing and firearms in infants < 1 year old were relatively high, in keeping with a higher percentage of injuries classified as severe and a raised percentage of violence-related injuries in that age group. The percentage of injuries classified as severe declined up until the 13–14-year age group and then increased along with the general rate of violence and the greater use of stabbing and firearms. The increasing trend in firearm use appears to parallel the increasing trend in the percentage of severe injuries, while the use of stabbing and the general rate of violence also rise together.

Influence of demographic factors and type of violence on injury severity

Most (74.6%) violence-related injuries in children were of minor severity (ISS: 1–8), 14.2% were of moderate

Fig. 3. Variation in the percentage of violence-related injuries attributable to specific types of violence and in the percentage of injuries classified as severe across different age groups of children, Israel, 1998–2006^a



ISS, Injury Severity Score
^a The data were obtained from the Israeli National Trauma Registry.
^b Percentage of all injuries that were violence-related, in each age group.

severity (ISS: 9–14), 7.0% were severe (ISS: 16–24) and 3.8% were critical (ISS: 25–75). Consequently, 10.8% of children had a severe or worse injury (ISS > 16).

Table 2 lists the results of a multivariate logistic regression analysis carried out to identify factors associated with sustaining a severe injury. It shows that age and the type of violence had the greatest influence on the risk of sustaining a severe injury. Only infants aged less than 1 year had a greater risk than children 15–17 years old, while the risk was lowest in children 6–14 years old. Injuries caused by firearms were more likely to be severe than those caused by other means (OR: 1.9; 95% CI: 1.1–3.1). The injuries least likely to be severe were those caused by stabbing (OR: 0.3; 95% CI: 0.2–0.5) or unarmed brawling (OR: 0.4; 95% CI: 0.3–0.6). The probability of sustaining a severe injury at school was much lower than at other locations. Interestingly, after adjustment for other factors, ethnic group had no significant influence on the likelihood of a severe injury.

Discussion

Significant differences were found between cases of violence-related and non violence-related trauma in children reported to the Israeli Trauma

Registry. Almost half of those injured as a result of violence were adolescents aged 15–17 years, while injuries due to other causes usually occurred in much younger children. Consequently, adolescents should be regarded as a distinct target group when considering how to deal with the problem of violence. The male:female ratio was much higher for violence-related injuries than for other trauma. High rates of violence among boys are well-documented in the literature.^{5,11} However, our study also shows that the rate seems to increase with age, possibly as children adopt the gender roles appropriate to their culture.⁶ No difference in the risk of sustaining a severe injury was found between the sexes, which suggests that the frequency and intensity of violence are not necessarily related. No ethnic difference was found in the rate of injury due to non violence-related trauma or in the rate of injury in different age groups. These findings, plus the fact that the influence of ethnicity on injury severity was reduced by adjusting for age and other factors, make the difference between the main ethnic groups in Israel appear less fundamental than has been suggested,⁵ and age appears to be the key factor in understanding violence-related injury in children. In addition, violence-related injuries in children occur more often than other injuries in the street, at

school and in a public place or leisure facility but less often at home.

Differences do exist between Jewish and non-Jewish children in the type of violence used and in the location of the violent event. Jews were injured more often by brawling, while non-Jews sustained more casualties from firearms, which led to more severe injuries in this group. Non-Jews were injured more often in the street and Jews more often at school, though non-Jews were stabbed at school more often. Notwithstanding this fact, school seems to be the safest place for children as the risk of sustaining a severe violence-related injury was lower there than at other locations.

The observed variation in the rate of violence with age corresponds with the “institutional” stages of the Israeli educational system,¹⁰ which suggests that school may have a cultural or “community” influence.⁵ This finding could also help solve the well-known problem of age-group boundaries in child-centred research⁵ as it provides definite cut-points for setting those boundaries.

Adolescents aged 15–17 years had the highest risk of sustaining a severe injury and the highest rates of injury by knife or firearm. This finding is especially alarming due to the fact that firearm and knife injuries in Israel seem to have increased over the years.⁶ Surprisingly, the risk of sustaining a severe injury from stabbing was generally lower than the risk from other types of violence. Given that the practices of carrying and using knives are growing phenomena in Israel, this could be good news¹² but should not be used to reduce the need to fight the problem. WHO reports that more children are carrying knives to school even in developed countries in Europe.²

Newborn infants also seem to be at a high risk of becoming victims of violence and of sustaining a severe injury as a result. In Europe, the risk of abuse in children aged 0–4 years was found to be more than double the risk in children aged 5–14 years.² Research into infant maltreatment in the United States shows that neonates are susceptible to different kinds of violence, including severe violence, which suggests that prevention and intervention programmes should be directed at parents in this context.^{13,14}

The risk of sustaining a severe injury was most closely associated with

Table 2. Results of a multivariate logistic regression carried out to identify factors associated with severe violence-related injury in a child, Israel, 1998–2006^a

Variable	P-value	95% CI	Adjusted OR	Severe injury %	No.
Gender	0.17				
Male			1	11	1779
Female		0.4–1.1	0.7	10	271
Age group (years)	< 0.0001				
< 1	0.0002	0.9–4.3	2.1	30.8	52
1–5		0.2–1.1	0.6	9.7	103
6–12	0.005	0.2–0.6	0.4	6.2	465
13–14	0.002	0.2–0.6	0.3	5.1	317
15–17			1	12.6	1025
Ethnic group	0.08				
Jewish			1	8.8	1298
Non-Jewish		0.9–1.8	1.3	14.2	724
Type of violence	< 0.0001				
Stabbing	< 0.0001	0.2–0.5	0.3	7.3	122
Firearms	< 0.0001	1.1–3.1	1.9	33.6	642
Brawling	0.0007	0.3–0.6	0.4	7.1	744
Other			1	15.1	545
Violent event location	0.02				
Street		0.6–1.2	0.8	11.8	711
School	0.001	0.1–0.6	0.3	2.9	310
Home		0.7–1.9	1.1	13.6	294
Public place or leisure facility		0.7–1.9	1.1	11.1	234
Other			1	12.7	504

CI, confidence interval; OR, odds ratio.

^a The data were obtained from the Israeli National Trauma Registry.

the use of firearms. Literature on the subject supports this finding¹⁵ and underlines the urgent need to confiscate unlicensed firearms and to introduce compulsory behavioural training for licensed gun owners.^{16,17}

Study limitations

The study has two main limitations. First, despite the fact that the locations of the trauma centres that contributed data to the Israeli Trauma Registry generally match the geographical distribution of population, full coverage of the whole country was hard to achieve. Consequently, some regions may have been overrepresented, while others may not have been represented at all. The second limitation stems from the inclusion parameters of the registry: only patients who were hospitalized or who died in the emergency department were included. This limitation leads naturally to the overrepresentation of severe injuries in the registry because a minor injury rarely leads to hospitalization or death.

Conclusion

The age of the victim was found to be the principle factor that determined the risk of sustaining a severe violence-related injury and there was a connection with the “institutional” stage of the child in the Israeli educational system. This finding opens the way for further research into violence in specific kinds of institutions, such as kindergartens, elementary schools, secondary schools and high schools, while taking into account health factors (e.g. mortality and injury severity) and cultural and organizational factors, such as norms and regulations, gender roles and even budgetary levels. Accordingly, intervention and prevention programmes could be specified in terms of influencing these factors.

Another study finding was the importance of the type of violence in analysing violence-related injury. Further research should be carried out on this topic, as proposed by the Violence Research Group in the United Kingdom.¹⁸

Even though some ethnic differences in violence-related injury were found in our study, they appeared to be of little importance, which makes us believe that Israel may already be on the route

to closing the gap between its majority and minority ethnic groups. ■

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Résumé

Traumatismes liés à la violence chez les enfants israéliens : un schéma qui dépend de l'âge

Objectif Caractériser la population des enfants hospitalisés à la suite d'un acte de violence.

Méthodes Cette étude rétrospective a utilisé des données provenant du registre national israélien des traumatismes et concernant des patients de 0 à 17 ans, hospitalisés pour traumatisme entre 1998 et 2006. Sur 65 430 patients, 2060 (3,1 %) avaient été victimes de distribution des traumatismes liés à la violence. On a utilisé une analyse statistique descriptive et une analyse bivariée pour caractériser les schémas de distribution de traumatismes et une analyse multivariée pour identifier les facteurs associés aux traumatismes sévères.

Résultats La moitié des victimes de violence de moins de 18 ans avaient entre 15 et 17 ans. Il s'agissait dans la plupart des cas de garçons. Les traumatismes liés à la violence étaient plus fréquents que les autres formes de traumatismes dans la rue, à l'école et dans les lieux publics ou les installations de loisirs, mais étaient moins courants que ces autres formes à domicile. Les bagarres sans arme et les blessures à l'arme blanche étaient les types de violence les plus courants. Les enfants juifs étaient plus souvent victimes de bagarres, tandis que la fréquence des blessures par arme à

feu était plus élevée chez les enfants non juifs. Les limites des tranches d'âges concernées par les différents taux de traumatismes correspondaient aux stades de fonctionnement institutionnel du système d'éducation israélien : le taux de traumatismes liés à la violence chutait après la première année de vie, se maintenait à une valeur faible pendant le jardin d'enfants, progressait légèrement durant l'école primaire, puis augmentait en flèche au cours du cycle secondaire. Le pourcentage de garçons s'élevait à l'entrée de chaque nouvelle tranche d'âges. La dangerosité de la rue augmentait, alors que l'école et le domicile devenaient de plus en plus sûrs, à mesure que les enfants avançaient en âge. Le risque de traumatisme sévère était maximal pour les adolescents de 15 à 17 ans, pour les nouveaux-nés et pour les enfants blessés par des armes à feu.

Conclusions L'âge et le type de violence étaient les facteurs prédictifs les plus importants de la fréquence et de la gravité des violences. Après ajustement pour ces facteurs, le poids de l'origine ethnique devenait moindre. Il conviendrait d'étudier de manière plus approfondie l'influence de ces facteurs sur les traumatismes liés à la violence.

Resumen

Lesiones infantiles relacionadas con la violencia en Israel: distribución dependiente de la edad

Objetivo Caracterizar la población infantil hospitalizada a consecuencia de actos violentos.

Métodos En este estudio retrospectivo se utilizaron datos del Registro Nacional Israelí de Lesiones sobre pacientes de 0 a 17 años hospitalizados con lesiones en el periodo 1998-2006. De los 65 430 pacientes, 2060 (3,1%) presentaban lesiones relacionadas con la violencia. Se utilizaron estadísticos descriptivos y análisis bivariados para caracterizar la distribución de las lesiones, y análisis multivariados para identificar los factores asociados a las lesiones graves.

Resultados La mitad de la víctimas de violencia menores de 18 años tenían entre 15 y 17 años. La mayoría eran del sexo masculino. Las lesiones relacionadas con la violencia fueron más frecuentes que otras lesiones en la calle, la escuela, lugares públicos o centros de ocio, pero menos frecuentes en el hogar. Las peleas sin armas y con arma blanca fueron los tipos más frecuentes de violencia. Las peleas sin armas afectaron más a los niños judíos, mientras que las lesiones por arma de fuego fueron

más frecuentes en los niños no judíos. Los límites de los grupos de edad con diferentes tasas de lesiones se correspondieron con las etapas «institucionales» del sistema educativo israelí: la tasa de lesiones relacionadas con la violencia disminuyó después del primer año de vida, se mantuvo baja en la etapa preescolar, aumentó ligeramente durante la etapa de escolarización básica, y aumentó en la etapa de la educación secundaria. El porcentaje de varones fue aumentando en cada uno de esos grupos de edad. La calle se volvió más peligrosa al aumentar la edad, mientras que la escuela y el hogar se hicieron más seguros. Los adolescentes de 15 a 17 años, los recién nacidos y las víctimas de lesiones por armas de fuego fueron quienes presentaron mayor riesgo de sufrir lesiones graves.

Conclusiones La edad y el tipo de violencia fueron los factores más importantes para predecir la frecuencia y la gravedad de la violencia. El origen étnico perdió valor al ajustar los datos en función de estos factores, cuya influencia en las lesiones relacionadas con la violencia hay que seguir investigando.

ملخص

الإصابات المرتبطة بالعنف لدى الأطفال في إسرائيل: نمط يعتمد على العمر

الأطفال اليهود أكثر من غيرهم، فيما يصاب الأطفال غير اليهود أكثر من غيرهم بالأسلحة النارية. وترتبط حدود العمر للمجموعات المصابة بمعدلات مختلفة من الإصابات بالمراحل "المؤسسية" للطفولة ضمن نظام التعليم الإسرائيلي؛ إذ يهبط معدل الإصابات المرتبطة بالعنف بعد السنة الأولى من العمر، ويبقى منخفضاً طيلة مرحلة رياض الأطفال، ثم يرتفع قليلاً في مرحلة المدرسة الابتدائية ليرتفع بشكل حاد أثناء مرحلة المدرسة الثانوية والعلية. وتزداد النسبة المئوية للذكور في كل فئة عمرية، وتصيح الشوارع أكثر خطورة مع تقدم العمر، فيما تصيح المدارس والمنازل أكثر أمناً. وأكثر المتعرضين لخطر الإصابات الوخيمة هم المراهقون ما بين 15 و17 عاماً والرضع حديثو الولادة والمصابون بالأسلحة النارية.

الاستنتاج: كان العمر ونمط العنف أهم المنبئات عن تواتر العنف ووخامته. وتزول أهمية العرق عندما يُصحح بهذين العاملين. والحاجة قائمة للمزيد من البحوث حول تأثير هذين العاملين على الإصابات المرتبطة بالعنف.

الهدف: توصيف مجموعة سكانية من الأطفال الذين أدخلوا المستشفيات نتيجة العنف.

الطريقة: استخدم الباحثون في دراستهم الاستعادية معطيات مستمدة من السجل الوطني الإسرائيلي للإصابات لدى المرضى الذين تتراوح أعمارهم بين 0 – 17 عاماً ممن أدخلوا المستشفى بسبب إصابته برضوح في الفترة 1998 – 2006. ومن بين 65 430 مريضاً كان لدى 2060 منهم (3.1%) إصابات مرتبطة بالعنف. واستخدمت الطرق الإحصائية الوصفية والتحليل الثنائي المتغيرات لتوصيف نماذج الإصابات والتحليل المتعدد المتغيرات للتعرف على العوامل المصاحبة للإصابات الوخيمة.

الموجودات: كان نصف ضحايا العنف الذين تقل أعمارهم عن 18 عاماً في أعمار تتراوح بين 15 و17 عاماً. وكان معظمهم من الفتيان، وكانت الرضوح المرتبطة بالعنف هي الأكثر حدوثاً مقارنة بأشكال الرضوح الأخرى وذلك في الشوارع والمدارس والأماكن العامة ومرافق الترفيه، وأقل حدوثاً في المنازل. وكان الشجار غير المسلح والظعن أكثر أنواع العنف شيوعاً. ويصيب العراك

References

1. *World report on violence and health*. Geneva: World Health Organization; 2002.
2. *Public health and violence: European facts and trends* [Fact sheet 10/02]. Copenhagen: World Health Organization Regional Office for Europe; 2002. Available from: <http://www.euro.who.int/document/mediacentre/fs1002e.pdf> [accessed on 23 February 2009].
3. Shepherd J, Sivaraajasingam V. Injury research explains conflicting violence trends. *Inj Prev* 2005;11:324-5. PMID:16326761 doi:10.1136/ip.2005.009761
4. Sivaraajasingam V, Moore S, Shepherd J. *Violence in England and Wales 2006: an accident and emergency perspective*. Available from: http://www.cardiff.ac.uk/dentl/resources/Trends_violence_England_Wales_2006.pdf [accessed 23 February 2009].
5. Marie-Alsana W, Haj-Yahia MM, Greenbaum CW. Violence among Arab elementary school pupils in Israel. *J Interpers Violence* 2006;21:58-88. PMID:16399924 doi:10.1177/0886260505281604
6. Herzog S. Differential perceptions of the seriousness of male violence against female intimate partners among Jews and Arabs in Israel. *J Interpers Violence* 2004;19:891-900. PMID:15231028 doi:10.1177/0886260504266885
7. Medina AM, Margolin G, Gordis EB. *Children's exposure to violence: general effects*. Available from: <http://education.stateuniversity.com/pages/2531/Violence-Children-s-Exposure.html> [accessed on 23 February 2009].
8. Supplemental classification of external causes of injury and poisoning (E880-E999). In: Puckett CD, ed. *The educational annotation of ICD-9-CM*. 4th ed. Reno: Channel publishing; 1994. pp. 1061-1124.
9. *Demographics of Israel*. Wikipedia, The Free Encyclopedia. Available from: http://en.wikipedia.org/wiki/Demographics_of_Israel [accessed on 23 February 2009].
10. *Education in Israel*. Wikipedia, The Free Encyclopedia. Available from: http://en.wikipedia.org/wiki/Education_in_Israel [accessed on 23 February 2009].
11. Goral A, Aharonson-Daniel L, Olmer L, Giveon A, Moscovitch J, Peleg K. Injury as a result of violence in Israel. *Israeli J Emerg Med* 2006;6:29-36.
12. *Crime in Israel: yearly statistical report*. Jerusalem: Israeli Police; 2005. Available from: <http://www.police.gov.il> [accessed on 23 February 2009].
13. CDC. Variation in homicide during infancy, United States, 1989-1998. *MMWR Morb Mortal Wkly Rep* 2002;51:187-9. PMID:11900353
14. CDC. Variation in non-fatal maltreatment of infants, United States, October 2005-September 2006. *MMWR Morb Mortal Wkly Rep* 2008;57:336-9. PMID:18385640
15. Jandric S. Injury severity and functional outcome following pediatric trauma in war conditions. *Pediatr Rehabil* 2001;4:169-75. PMID:12160357 doi:10.1080/13638490210121711
16. *Promising strategies to reduce gun violence*. Washington, DC: Office of Juvenile Justice and Delinquency Prevention. Available from: http://ojjdp.ncjrs.org/pubs/gun_violence/contents.html [accessed on 23 February 2009].
17. Haley B. *Emerging strategies: gun violence prevention*. Michigan Partnership to Prevent Gun Violence; 2001.
18. Brennan IR, Moore SC, Shepherd JP. Non-firearm weapon use and injury severity: priorities for prevention. *Inj Prev* 2006;12:395-9. PMID:17170189 doi:10.1136/ip.2006.011858