ASSAULT RELATED INJURIES IN CHILDREN AND ADOLESCENTS PRESENTING TO THE EMERGENCY ROOM

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INTRODUCTION

Youth violence is a pervasive phenomenon in society. If the problem is not addressed, victims are more likely to persist in being victimised, may suffer from mood, anxiety and psychosomatic disorders and may eventually develop antisocial behaviour. Violence is likely a product of an interaction of biologic, familial, cultural and societal factors.

OBJECTIVE

To describe injuries related to physical aggression in youth 5 to 19 years old presenting to a tertiary emergency department, their tendencies over a ten year period, and identify the profile of victimisation to guide their prevention.

METHODS

Study design:
Observational study using retrospective data from the Canadian Hospitals Injury Reporting and Prevention Program (CHIRPP) available from one urban paediatric tertiary center (Centre Hospitalier Universitaire Sainte-Justine, in Montreal).

Patients:
Five to 19 years old presenting for intentional physical injuries inflicted by other youth over a period of ten years (1998 to 2007). Accidental injuries, self inflicted injuries, sexual abuse and injuries involving adults were excluded.

Measurements:
▪Age, gender, injury type, body part involved, place where the injury occurred, mechanism of injury and disposition of the patient.
▪Postal code was used as an imperfect proxy for socioeconomic status, using poverty maps available from the 'Comité de gestion de la taxe scolaire'.
▪Underprivilege indexes: weighted average of four variables (% families with low income, mothers without high school diploma, female lone-parent and neither parent working full time).
▪Indexes allocated based on 2006 Canada census data.

Statistical analysis:
Associations between demographic and injury characteristics were studied using Pearson chi-square tests and anova. Distribution of the index of underprivilege in the study sample was compared with the population of Montreal using a chi-square goodness-of-fit test. Statistical analysis was performed using SPSS version 15.0 with a signification level alpha of 0.05.

RESULTS

Demographics:
504 visits for non accidental physical injuries inflicted by other youth, 0.8% of all emergency department visits over the same period (1998 to 2007).

Table 1: Demographic characteristics

Age (years)	5-9	10-14	15-19	Total
Male: N (%)	24 (61.5)	195 (77.7)	176 (82.2)	395 (78.4)
Female: N (%)	15 (38.5)	56 (22.3)	38 (17.8)	109 (21.6)

▪With older age, the frequency of physical aggressions increased in boys and decreased in girls (p=0.014).

Table 2. Description of injuries

Type		N (%)
	Superficial	119 (23.6)
	Open wounds	107 (21.2)
	Head injuries	96 (19.0)
	Fractures	86 (17.1)
	Soft tissue injuries	36 (7.1)
	Sprains	8 (1.6)
	Other (eye, dental, bites)	37 (7.3)
	Left without being seen	10 (2)
	No injury	5 (1)
	Total	504 (100)
Body part		
	Head, neck and face	324 (64.3)
	Extremity	94 (18.7)
	Body	65(12.9)
	Other (multiple, systemic)	11 (2.2)
	Left without being seen	10 (2)
	Total	504 (100)
Place		
	School	157 (31.2)
	Station/Street/Other public places	98 (19.4)
	Park/recreational area	37 (7.3)
	House/apartment	13 (2.6)
	Unknown	199 (39.5)
	Total	504 (100)
Mechanism		
	Bodily force	327 (64.9)
	Knives/Bats	36 (7.1)
	Varied objects	74 (14.7)
	Unknown	67 (13.3)
	Total	504 (100)

Type of injury:
•96 closed head injuries: 76 minor (no neurological symptoms), 18 concussions of variable severity according to the Glasgow Coma Scale and only 2 involving intracranial hemorrhage.
•86 fractures: 60 maxillofacial (70%), 2 cranial, 1 clavicular and 1 coccyx. The rest involved the extremities (27%). Open wounds and fractures occurred more frequently in older children (p=0.019) and in boys (p<0.001).

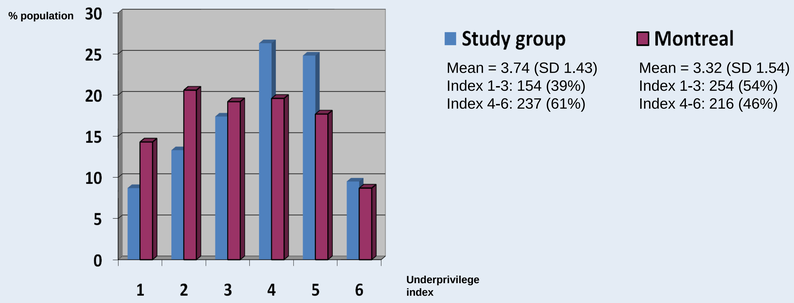
Place of injury:
•In older children, injuries occurred less frequently at school and more frequently in parks, recreational areas, stations, streets and other public areas (p<0.001).

Admitted patients:
• 25 (5%) were hospitalised, 42 (8%) were observed in the short stay unit, 383 (75%) were treated and discharged, 41 (8%) received advice only and 13 (2.6%) left without being seen. Among those admitted, 2 involved intracranial injury, 4 were concussions, 11 were open wounds and 8 were fractures, all of a severity requiring hospitalisation and/or surgery. There were no gun related injuries and no deaths.

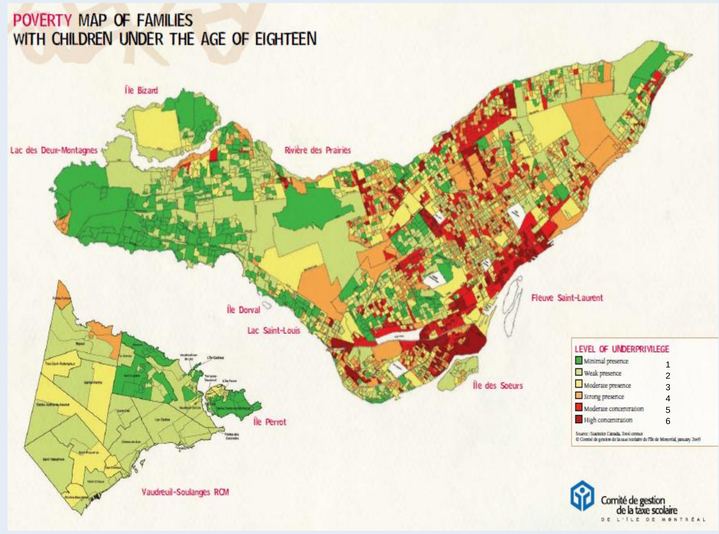
Tendencies over time:
•The age, gender, underprivilege score and the injury characteristics remained stable over the study period.

Underprivilege indexes:
•391 (77.5%) postal codes available for children living on the island of Montreal.

Figure 1: Comparison of underprivilege index distributions between study group and population of Montreal
(from 1=minimal presence of poverty to 6=strong presence of poverty)



•The population of children presenting to the emergency department for intentional physical injuries had a significantly higher underprivilege index than Montreal's population (p<0.001). There was no association between the underprivilege score and the other injury variables, including hospitalisation rates.



KEY POINTS

❑Most injuries related to physical aggression in youth occurred in 10 to 19 year old boys, were not severe, with very few resulting in hospital admission. There was an overrepresentation of poverty in our sample.

❑Youth that have already been assaulted should be targeted for possible intervention by physicians, and, if needed, by social workers and psychologists in order to manage the potential physical and psychological sequelae.

❑Follow-up and prevention of further injuries should include enhancing their empowerment, since repeated victimisation may have devastating consequences.

❑More educational interventions involving pediatricians should target this phenomenon.

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