School injuries in Athens: socioeconomic and family risk factors

Eleni Petridou, Nicoletta Kouri, Dimitrios Trichopoulos, Katharine Revinthi, Yannis Skalkidis, Donald Tong

Injuries are the main cause of morbidity and mortality in childhood, and there is increasing interest in injuries at school. There is a strong socioeconomic gradient for childhood injuries and deaths. We have undertaken a case-control study in Athens, Greece, to examine the importance of family and social risk factors for injuries at school—that is, an environment not directly related to home conditions and immediate family supervision. By matching cases and controls on the school we have controlled for the contribution of factors associated with the general school situation.

Methods: Between September 1992 and June 1993 one of us was present for a total of 80 non-consecutive days at the accident and emergency clinics of one of the two major University Children’s Hospitals in Athens. During this period, a total of 101 school children aged 5–14 years, resident in the Athens area, were brought to the clinics for an injury that had taken place at school and was sufficiently serious to require hospital contact. These children’s schools were identified and three controls, exactly matched for school, age (single year), and gender, were randomly selected for every injury case from the respective class rosters. A standardised interview form was completed for 404 children by their teachers in collaboration with the children’s families, and the variables shown in the table were assessed by modelling through conditional logistic regression.

Results: Of the 101 injuries, 49 took place in playground areas, 39 in classrooms and corridors (mostly during breaks), 10 during sporting activities, and three during transportation to or from schools. Among the injured children, three had predominantly cerebral concussion,

Multiple logistic regression-derived odds ratio estimates (and 95% confidence intervals) for school injury, associated with a series of family and socioeconomic variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Categories or ordinal units</th>
<th>Odds ratio (95% CI)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td>Matched variable</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td>Matched variable</td>
<td></td>
</tr>
<tr>
<td>Paternal schooling</td>
<td>3 years</td>
<td>0.66 (0.44, 0.99)</td>
<td>0.04</td>
</tr>
<tr>
<td>Family integrity</td>
<td>Both parents (87/202)*</td>
<td>5.11 (1.90, 13.71)</td>
<td>0.001</td>
</tr>
<tr>
<td>Birth order</td>
<td>One</td>
<td>1.09 (0.73, 1.60)</td>
<td>0.65</td>
</tr>
<tr>
<td>Birth order</td>
<td>One</td>
<td>0.88 (0.62, 1.25)</td>
<td>0.46</td>
</tr>
<tr>
<td>Height</td>
<td>One quartile</td>
<td>0.92 (0.76, 1.11)</td>
<td>0.36</td>
</tr>
<tr>
<td>Body mass index</td>
<td>5 kg/m²</td>
<td>1.00 (0.91, 1.10)</td>
<td>0.96</td>
</tr>
<tr>
<td>Corrective spectacles</td>
<td>No (83/237)</td>
<td>1.00 (0.91, 1.10)</td>
<td>0.96</td>
</tr>
<tr>
<td>School performance</td>
<td>Yes (18/66)</td>
<td>1.39 (0.96, 2.03)</td>
<td>0.08</td>
</tr>
<tr>
<td>Previous injury</td>
<td>One grade worse (0-93)</td>
<td>1.39 (0.96, 2.03)</td>
<td>0.08</td>
</tr>
<tr>
<td>(hospital outpatient contact)</td>
<td>Yes (59/128)</td>
<td>1.97 (1.18, 3.30)</td>
<td>0.01</td>
</tr>
</tbody>
</table>

* Number of cases/controls.

Financial support for the study was granted by the Swedish Medical Research Council (project No. 89-07X-07995-03), The Herman Jarnhards, Greta and Johan Koch, Alfred Osterlund Foundations; and the donation foundations of the Medical Faculty University of Lund.


Center for Research and Prevention of Injuries, Department of Hygiene and Epidemiology, Athens University, Medical School, 75, M Aias Str, Athens, 115 27, Greece
E Petridou
N Kouri
K Revinthi
Y Skalkidis

Department of Epidemiology, Harvard School of Public Health, 677 Huntington Avenue, Boston, MA 02115, USA
D Trichopoulos
D Tong

Correspondence to:
Dr D Trichopoulos.
Accepted for publication
February 1994

The distribution of information on fractures in responding urban and rural probands. Both sexes from each area are grouped together. The percentage of fractures from each source of information is given.

40% Urban

46% Recall

14% Rural

22% Recall

34%

44%
40 a bone fracture, 14 joint dislocation, nine had open wounds, and 35 had other injuries. The 101 children included in the study attended 99 different schools.

The table presents mutually adjusted odds ratio estimates for school injuries. These results indicate that paternal schooling is a statistically significant risk factor for school injuries; that history of a previous injury requiring medical attention is also a significant risk factor for a subsequent injury; that family disruption (single parenthood) is an important correlate of school injuries; and that relatively poor performance of the child at school may be associated with increased risk for school injuries. No substantial, significant, or suggestive associations of school injuries were found with any of the other variables studied.

Discussion: This was a hospital based case-control study. In Athens, almost all accident and emergency health care for children is provided by the two University Children's Hospitals, which accept emergency cases on alternating days throughout the year. Therefore, during the period of case ascertainment there was school population coverage of incident cases of childhood injuries seeking emergency hospital care. Furthermore, random selection of matched controls from the respective school population eliminates geography as a selection factor. All case-control studies of new cases evaluate the ratio of incidence density, rather than of cumulative incidence of a particular event. Therefore, in our study there was no need to exclude controls who may have had a school injury in the past, although there were very few such children among the controls.

Our results indicate that the socioeconomic status of the family, as reflected in paternal education, is an important risk factor for school injuries. The implication is that low socioeconomic status increases the risk of injuries, not only by creating adverse environmental conditions, but also through mechanisms related to behaviour and education that can operate even in the controlled school environment. A potentially important finding, that needs to be replicated elsewhere, is that children from single parent families are five times more likely than those from intact families to sustain a school injury. Furthermore, this study, as well as earlier ones, suggests that children with history of a previous injury are at increased risk for another injury. The overall conclusion of this study is that educational and behavioral correlates of low socioeconomic status and single parenthood are important risk factors for school injuries, at least in some societies.

This study was supported by a grant from the Central Health Council of the Hellenic Ministry of Health and Welfare and is part of the European Home and Leisure Activities Surveillance System (EHLASS) in Greece. We thank all teachers who participated for their help.

School injuries in Athens: socioeconomic and family risk factors.

E Petridou, N Kouri, D Trichopoulos, K Revinthi, Y Skalkidis and D Tong

*J Epidemiol Community Health* 1994 48: 490-491
doi: 10.1136/jech.48.5.490

Updated information and services can be found at:
http://jech.bmj.com/content/48/5/490.citation

**Email alerting service**

Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

**Notes**