

Bullying and symptoms among school-aged children: international comparative cross sectional study in 28 countries

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Background: There have been no large-scale international comparisons on bullying and health among adolescents. This study examined the association between bullying and physical and psychological symptoms among adolescents in 28 countries. **Methods:** This international cross-sectional survey included 123,227 students 11, 13 and 15 years of age from a nationally representative sample of schools in 28 countries in Europe and North America in 1997–98. The main outcome measures were physical and psychological symptoms. **Results:** The proportion of students being bullied varied enormously across countries. The lowest prevalence was observed among girls in Sweden (6.3%, 95% CI: 5.2–7.4), the highest among boys in Lithuania (41.4%, 95% CI 39.4–43.5). The risk of high symptom load increased with increasing exposure to bullying in all countries. In pooled analyses, with sex stratified multilevel logistic models adjusted for age, family affluence and country the odds ratios for symptoms among students who were bullied weekly ranged from 1.83 (95% CI 1.70–1.97) to 2.11 (95% CI 1.95–2.29) for physical symptoms (headache, stomach ache, backache, dizziness) and from 1.67 (95% CI 1.55–1.78) to 7.47 (95% CI 6.87–8.13) for psychological symptoms (bad temper, feeling nervous, feeling low, difficulties in getting to sleep, morning tiredness, feeling left out, loneliness, helplessness). **Conclusion:** There was a consistent, strong and graded association between bullying and each of 12 physical and psychological symptoms among adolescents in all 28 countries.

Keywords: Bullying, children, international survey, symptoms

Recent studies have suggested bullying is a precursor for health problems in childhood,^{1–8} and the few longitudinal studies in the field support this notion. For instance, Bond *et al.* found victimization to predict onset of emotional problems, while emotional problems were unrelated to future victimization.^{9,10}

Some of the major public health concerns for this age group are related to injuries and development of health-damaging behaviours. Also, tragic violent incidents in schools in several countries have pointed at violent behaviour as an important issue of concern among school children. Studies show that bullying behaviour and victimization tracks over time^{9,11} leaving many children exposed to bullying for years.

The available studies have considered only a few selected psychological health complaints such as depressive symptoms, psychological disturbance and suicidal ideation, or cover just one locality or nation, e.g. England,^{1,2} Finland,^{3,4} Australia,^{5,6} Denmark⁷ and the USA.⁸ Whether these findings can be generalized to a broad range of physical and psychological symptoms and across cultural settings, especially beyond Western countries, is still unknown.

Experience of symptoms in childhood may be related to factors that track into adulthood.¹² For instance, studies have shown that children with headache are at an increased risk of recurring headache, multiple physical symptoms and psychiatric morbidity in adulthood.^{13,14}

Bullying is defined as a deliberate, repeated or long-term exposure to negative acts performed by a person or group of persons regarded of higher status or greater strength than the victim.¹⁵ Bullying might be verbal acts such as threats, insults or nicknames or physical acts such as assault or theft. Also social acts such as exclusion from the peer group are considered bullying.

This study examined the prevalence of bullying in representative school samples of 11, 13 and 15 year olds from 28 countries and the associations between levels of bullying and twelve physical and psychological symptoms.

Methods

Health Behaviour in School-aged Children (HBSC) is a standardized, international WHO collaborative study with repeated cross-sectional surveys among 11, 13 and 15 year old students in representative samples of schools in the participating countries.^{16,17} The present paper reports data from the 28

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participating countries in the 1997/1998 survey. Each national study included students in the relevant age groups (11, 13 and 15 years olds) from a random sample of schools. In total, the study comprised 123,227 students (sample sizes ranged from 1,648 in Greenland (all 11, 13 and 15 years old Greenlanders) to 6,567 in Canada). The students answered a standardized questionnaire during a school lesson after instruction from an adult.¹⁸

Bullying was measured by the item: 'During this term, how often have you been bullied at school?'¹⁹ The responses were recoded into three levels: (1) never/once or twice, (2) sometimes, and (3) about every week/all the time.

Health status was measured by self-reported frequency of twelve symptoms. For eight symptoms (headache, stomach ache, backache, feeling low, bad temper, nervousness, difficulties in getting to sleep, and dizziness) the reported frequency was dichotomized into every day/more than once a week/about every week versus about every month/rarely/never. 'Loneliness' was dichotomized into very often/ rather often versus sometimes/ never. 'Tired in the morning' was dichotomized into once a week or more versus less. The two remaining symptoms, 'feeling left out of things' and 'feeling helpless' were dichotomized into always/often versus sometimes /rarely/never.

Family affluence was measured by a summary index of three items: does your family own a car, van or truck? (0–2 points). Do you have your own bedroom for yourself? (0–1 points). During the past twelve months, how many times did you travel away on holiday (vacation) with your family? (0–2 points).

Sensitivity analyses were conducted and the results were robust to changes in the definition of exposure categories for bullying and for the symptom outcomes. We used multilevel logistic regression (MLwiN 1.2) to examine sex-specific associations between bullying and each symptom. The analyses used three levels (individual, school, country) and we adjusted for three confounders at the individual level: age, family affluence and country. The analyses present only the fixed effects, but there was considerable variance in the effect of bullying on symptoms (i.e. for boys: 0.224 (SE = 0.073) for five or more symptoms) The analyses excluded 1,525 students (1.2%) with missing information on the frequency of being bullied and between 1,013 and 3,218 students (0.8% and 2.6%) with missing information on experience of each symptom.

Results

The proportion of students who reported being bullied at least sometimes during the term showed large variations across countries (table 1). The lowest prevalence was observed in Sweden (5.1% (95% CI 4.1–6.1) for girls and 6.3% (95% CI 5.2–7.4) for boys) and the highest in Lithuania (38.2% (95% CI 36.3–40.2) for girls and 41.4% (95% CI 39.4–43.5) for boys). The prevalence of bullying decreased with age in all countries, except Scotland (data not shown). In all countries except Hungary and Russia more boys than girls were victims of bullying, but in most countries sex differences were small. The combined prevalence of five or more weekly symptoms also showed marked international differences, ranging from 11.0% (95% CI 9.6–12.3) among Austrian boys to 52.5% (95% CI 50.5–54.5) among Israeli girls. The prevalence of symptoms and the prevalence of bullying across countries were uncorrelated (r for boys = -0.03 , $n = 28$, $p = 0.0624$; r for girls = -0.08 , $n = 28$, $p = 0.6800$).

Table 2 shows for both boys and girls a graded association between experience of bullying and the prevalence of each of the twelve symptoms measured. The gradient was steeper for psychological symptoms such as feeling left out (boys: OR 2.68 (95% CI 2.48–2.90) for bullied sometimes and 5.81 (95% CI 5.34–6.32) for bullied weekly) and feeling helpless (boys: OR 2.00 (95% CI 1.83–2.20) for bullied sometimes and 4.07 (95%

CI 3.70–4.48) for bullied weekly) than for physical symptoms like: headache (boys: OR 1.43 (95% CI 1.35–1.51) for bullied sometimes and 1.83 (95% CI 1.70–1.97) for bullied weekly) and stomach ache (boys: OR 1.51 (95% CI 1.42–1.61) for bullied sometimes and 1.93 (95% CI 1.79–2.08) for bullied weekly). Though the prevalence of symptoms was very different among boys and girls the gradient of ORs were almost identical.

Previous to these analyses multivariate analyses were performed on data from each country separately. In models controlled for confounding by sex and age the graded association between bullying and each symptom was found in every country (data not shown). The prevalence of each of the symptoms increased by frequency of bullying with only one exception: among adolescents in Greenland, the sex- and age-adjusted odds ratio for stomach ache were 1.10 (95% CI 0.74–1.62) for bullied sometimes and 0.90 (95% CI 0.47–1.72) for bullied weekly. The relative associations measured by the OR tended to be strongest in countries with lower absolute levels of bullying. For instance, in Sweden adolescents who were bullied weekly had a three- to four-fold increased risk of having five or more weekly symptoms (OR_{boys} = 3.10(2.21–4.63), OR_{girls} = 4.03(2.59–6.26)), while Lithuanian adolescents bullied weekly had a lower risk of multiple symptoms (OR_{boys} = 1.69(1.36–2.10), OR_{girls} = 1.95(1.64–2.33).

Discussion

Our results showed great variation in bullying and symptom prevalence across countries, but between-country differences in the prevalence of bullying were unrelated to international variation in the prevalence of symptom load. Despite this, within all countries, we found a remarkably consistent pattern of graded associations of symptoms with bullying. Thus, bullying is importantly associated with adolescent symptoms within all the countries examined, but average levels of bullying do not explain between-country differences in symptom prevalence. This is not unexpected as average levels of self-reported bullying and symptoms may reflect cultural differences in reporting patterns that make between-country comparisons problematic. Nevertheless, for 12 different physical and psychological symptoms, and in all of the 28 countries there was a graded association between bullying and each symptom separately and high total symptom load for both boys and girls. This pattern was found across countries of great cultural diversity—from the Inuit culture in Greenland in the North to Israel in the South and from Russia in the East to USA in the West. Our findings are consistent with other studies which covered single localities and one or a few health problems.^{1–8} While a recent longitudinal study found a clearer effect of bullying on mental health among girls,⁹ we found smaller gender differences.

While scientific evidence is still being gathered, we find the proposition that exposure to bullying may cause poorer physical and psychological health in adolescents both consistent with common-sense and scientifically plausible. The choice of a weekly symptom burden of five or more is based on the assumption that this amount of symptoms will influence not only the well-being of the adolescent, but possibly also their school attendance and subsequently their academic and social development.

Adolescence is a period of changes and challenges especially concerning control over behaviour, psychological orientation and social interaction. This period of development is strongly influenced by relations to parents and family, and as they grow older to an increasing extent by peer relationships and their acceptance and positive feedback.^{20,21} Adolescents may therefore be especially susceptible to the health effects of negative social interactions.²²

Table 1 Basic information about study population and age adjusted prevalence (95%CI) of bullying and five or more weekly symptoms among 11, 13 and 15 year olds (%).

Country (principal investigator)	N	Bullied ^a		Five+symptoms ^b	
		Boys	Girls	Boys	Girls
Austria (W. Dür)	4,316	19.8 (18.1–21.5)	14.7 (13.2–16.2)	11.0 (9.6–12.3)	20.3 (18.6–22.0)
Belgium Fl (L. Maes)	4,824	22.7 (21.1–24.4)	18.8 (17.3–20.4)	14.0 (12.6–15.4)	21.0 (19.3–22.6)
Canada (A. King)	6,567	17.0 (15.7–18.3)	12.3 (11.1–13.4)	24.5 (23.0–26.0)	35.2 (33.6–36.8)
Czech Republic (Z. Kucera)	3,703	15.2 (13.6–16.9)	13.2 (11.7–14.8)	20.3 (18.4–22.1)	31.2 (29.1–33.3)
Denmark (P. Due/B. Holstein)	5,066	26.0 (24.3–27.7)	24.2 (22.6–25.9)	16.8 (15.3–18.3)	27.3 (25.6–29.0)
England (M. Hickman)	6,373	9.1 (8.1–10.0)	7.2 (6.3–8.1)	24.5 (23.0–26.0)	30.7 (29.1–32.3)
Estonia (M. Maser)	1,897	24.6 (21.6–27.5)	21.5 (19.0–24.1)	25.3 (22.3–28.3)	34.7 (31.8–37.7)
Finland (L. Kannas)	4,864	12.5 (11.2–13.9)	9.2 (8.1–10.3)	22.0 (20.4–23.7)	34.5 (32.6–36.4)
France (C. Dressen) *	4,133	17.5 (15.8–19.1)	16.2 (14.6–17.7)	21.8 (20.0–23.7)	39.7 (37.6–41.7)
Germany (A. Klocke) *	4,792	31.3 (29.4–33.0)	26.0 (24.3–27.8)	18.5 (16.9–20.0)	24.0 (22.3–25.8)
Greece (A. Kokkevi)	4,299	12.4 (11.0–13.8)	8.1 (6.9–9.2)	23.7 (21.9–25.6)	34.9 (33.0–36.9)
Greenland (M. Pedersen) **	1,648	34.3 (31.1–37.5)	33.8 (30.6–37.0)	27.2 (24.1–30.3)	29.5 (26.4–32.6)
Hungary (A. Aszmann)	3,609	16.7 (15.0–18.5)	13.7 (12.2–15.2)	24.1 (22.0–26.2)	33.6 (31.4–35.8)
Israel (Y. Harel)	5,054	25.9 (24.2–27.6)	16.3 (14.9–17.7)	49.8 (47.8–51.9)	52.5 (50.5–54.5)
Latvia (I. Ranka)	3,775	29.9 (27.7–32.0)	28.4 (26.4–30.3)	19.3 (17.4–21.2)	32.4 (30.4–34.5)
Lithuania (A. Zaborskis)	4,513	41.4 (39.4–43.5)	38.2 (36.3–40.2)	19.7 (18.0–21.4)	35.0 (33.1–36.9)
Northern Ireland (G. McGuinness)	3,346	10.7 (9.3–12.1)	8.7 (7.3–10.1)	26.9 (24.8–28.9)	33.0 (30.7–35.4)
Norway (B. Wold)	5,026	15.3 (13.9–16.7)	10.6 (9.4–11.8)	16.8 (15.4–18.3)	24.5 (22.8–26.2)
Poland (B. Woynarowska)	4,861	15.6 (14.1–17.1)	12.3 (11.0–13.5)	16.8 (15.3–18.3)	29.9 (28.1–31.7)
Portugal (M.G.de Matos)	3,721	23.8 (21.8–25.8)	13.7 (12.2–15.2)	17.9 (16.1–19.8)	28.6 (26.7–30.5)
Rep. of Ireland (S.N. Gabhain)	4,394	11.0 (9.7–12.4)	7.4 (6.3–8.4)	19.5 (17.9–21.2)	24.4 (22.6–26.2)
Russian Federation (A. Komkov) *	3,997	25.3 (23.4–27.2)	24.2 (22.3–26.0)	20.9 (19.1–22.7)	32.4 (30.3–34.4)
Scotland (C. Currie)	5,632	9.3 (8.2–10.3)	9.5 (8.5–10.6)	20.2 (18.7–21.7)	30.2 (28.5–31.9)
Slovak Republic (M. Bronis)	3,789	9.4 (8.1–10.7)	5.5 (4.5–6.5)	25.1 (23.1–27.1)	38.9 (36.6–41.3)
Sweden (U. Marklund)	3,802	6.3 (5.2–7.4)	5.1 (4.1–6.1)	23.0 (21.1–24.8)	35.2 (33.1–37.4)
Switzerland (B.J. Jacquat)	5,520	22.1 (20.6–23.7)	19.6 (18.2–21.1)	15.9 (14.5–17.3)	30.5 (28.8–32.2)
USA (P. Scheidt)	5,168	16.0 (14.6–17.5)	11.3 (10.1–12.5)	38.0 (36.1–40.0)	48.5 (46.7–50.4)
Wales (C. Tudor-Smith/C. Roberts)	4,537	12.0 (10.7–13.4)	11.3 (10.0–12.6)	26.8 (24.9–28.6)	35.8 (33.8–37.7)
Entire study (C. Currie)	123,227	18.4 (18.1–18.7)	15.2 (14.9–15.5)	22.4 (22.0–22.7)	32.5 (32.1–32.9)

a: Bullied sometimes + weekly.

b: Five or more symptoms weekly.

*France, Germany and the Russian Federation are represented by regions.

**The sample from Greenland includes all students in the relevant age groups.

Exposure to bullying at this stage of the life course may influence health through a variety of pathways. Bullying may be an indicator of social exclusion. Social exclusion may result in a lack of social participation and attachment and delayed and possibly weakened development of social competencies, which may harm future social and work prospects. Finally, studies show tracking of symptoms over time and later mental health effects of symptoms in childhood.^{13,14} This combined with results showing that victimisation tracks over time^{9,11} suggests that bullying has not only wide contemporary effects for the victims, but may also have serious long-term effects on health and well-being later in life.

The strengths of this study are the large random school samples taken from a wide variety of cultural settings. Each participating

research team had to comply with the standardized procedures for sampling, measurements and data collection. These procedures have contributed to the cross-national comparability of the data. Students with many health problems were probably over-represented among the non-participants. Selection bias due to non-participation will, therefore, most likely result in an under-estimation of the odds ratios. The translation of questions concerning bullying and symptoms into more than 20 different languages may result in information bias. The notion and severity of the concept of bullying may vary by cultural setting and is probably evidenced in some of the variability observed across countries, but will nevertheless in all countries, represent some sort of negative social interaction. Given the likely reporting variability in both bullying and symptoms it is even more

Table 2 Prevalence of five or more weekly symptoms and adjusted* Odds Ratios (95% CI) for symptoms by frequency of bullying

Symptom (prevalence)	Not bullied OR	Bullied sometimes OR (95% CI)	Bullied weekly OR (95% CI)
Boys			
Headache (24%)	1.00	1.39 (1.30–1.47)	1.91 (1.78–2.05)
Stomach ache (15%)	1.00	1.45 (1.35–1.56)	1.96 (1.82–2.12)
Backache (18%)	1.00	1.44 (1.35–1.55)	1.97 (1.82–2.12)
Sleeping difficulties (28%)	1.00	1.42 (1.34–1.51)	1.97 (1.84–2.11)
Tired in the morning (24%)	1.00	1.26 (1.19–1.34)	1.67 (1.55–1.78)
Dizziness (14%)	1.00	1.44 (1.33–1.55)	2.11 (1.95–2.29)
Feeling low (21%)	1.00	1.79 (1.69–1.91)	3.32 (3.09–3.56)
Irritable / bad temper (43%)	1.00	1.59 (1.51–1.68)	2.27 (2.12–2.43)
Feeling nervous (35%)	1.00	1.50 (1.41–1.58)	2.21 (2.07–2.37)
Feel lonely (12%)	1.00	2.05 (1.89–2.22)	4.27 (3.93–4.63)
Feel left out of things (9%)	1.00	2.62 (2.39–2.86)	7.47 (6.87–8.13)
Feel helpless (7%)	1.00	2.36 (2.12–2.63)	5.58 (5.05–6.17)
5+ weekly symptoms (23%)	1.00	1.94 (1.82–2.07)	3.99 (3.72–4.27)
Girls			
Headache (38%)	1.00	1.43 (1.35–1.51)	1.83 (1.70–1.97)
Stomach ache (25%)	1.00	1.51 (1.42–1.61)	1.93 (1.79–2.08)
Backache (19%)	1.00	1.44 (1.35–1.54)	1.88 (1.73–2.03)
Sleeping difficulties (32%)	1.00	1.44 (1.36–1.53)	1.93 (1.79–2.07)
Tired in the morning (20%)	1.00	1.21 (1.13–1.28)	1.78 (1.65–1.92)
Dizziness (20%)	1.00	1.46 (1.37–1.56)	1.89 (1.74–2.05)
Feeling low (33%)	1.00	1.76 (1.66–1.87)	3.02 (2.81–3.26)
Irritable / bad temper (49%)	1.00	1.59 (1.51–1.69)	2.26 (2.10–2.44)
Feeling nervous (43%)	1.00	1.64 (1.55–1.74)	2.18 (2.03–2.35)
Feel lonely (19%)	1.00	2.12 (1.98–2.27)	4.06 (3.74–4.39)
Feel left out of things (12%)	1.00	2.68 (2.48–2.90)	5.81 (5.34–6.32)
Feel helpless (9%)	1.00	2.00 (1.83–2.20)	4.07 (3.70–4.48)
5+ weekly symptoms (32%)	1.00	2.03 (1.91–2.15)	3.51 (3.27–3.78)

The multilevel analyses is based on the complete sample ($n = 60,291$ boys and $62,936$ girls) and performed including three levels (individual, school, country). Analyses are adjusted for age, family affluence at the individual level and country. Reference group: bullied never/only once or twice this term.

remarkable that such stable associations between them were found across all 28 countries.

As stated above the international differences in bullying level may be based partly on cultural differences in reporting. Also the bullying concept may be perceived to cover more severe interaction in the translation into some national languages than others. This, however, is not likely to explain all international variations. For instance in the Nordic countries the term bullying is translated into the same word and regardless we find very large discrepancies between these countries in the level of bullying. The national differences in policies, in school systems and school environment may account for another part of the differences.

In Sweden where a law protects the psychosocial work environment of schoolchildren, bullying is rare, while in Denmark, no official policies addressed bullying in 1998, and bullying was frequent and attributed to a large extent to the high symptom level of this age group.⁷

Intervention programmes have demonstrated an effect on diminishing bullying within the school environment.^{23–25} The most comprehensive work in this area has been performed by Olweus,¹⁵ who has pointed out the importance of intervening at different levels to successfully diminish the level of bullying in the school environment. Interest and engagement at the school level is a predisposition for any successful intervention, and knowledge of the actual level of bullying at the school is an important motivational factor. The most important tool for diminishing bullying is addressing the school environment. It is recommended that the problem be highlighted for teachers and pupils by special work sessions and that it be made harder to actually perform the behaviour by increasing inspection in breaks and at other occasions, when bullying is likely to occur. At the class level Olweus highlights the importance of creating mutual behavioural norms among the group of children, for instance by letting the pupils themselves define rules for acceptable social behaviour in the group. Regular discussions

in the group on how these rules are observed are essential, as are discussions at parent meetings to assure support from the home environment of the children. Olweus recommends effective interventions be directed first and foremost at the environmental level. However, for the individual involved both as victim, offender or both he recommends talks and coaching with the children as well as their parents.

Sweden was the first country to explicitly prohibit all types of corporal punishment of children. They have been highly successful in this effort²⁶ and were followed by an increasing number of countries. It is our hope that Sweden is once again the pioneer in creating an important policy for the health and well-being of children and adolescents.

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Key points

- This school-based study examined the association between bullying and physical and psychological symptoms among adolescents in 28 countries.
- There is great variation in the prevalence of bullying across countries
- Bullying shows consistent, strong and graded association with each of 12 different physical and psychological symptoms in all countries
- Effective bullying prevention is needed in many countries and may have important influence on lowering symptom-load among adolescents

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