Trends in social inequality in exposure to bullying at school 1994-2018

Abstract

Aims: To examine social inequality in exposure to bullying at school among adolescents and changes in social inequality over time. We applied data from seven nationally representative school surveys in 1994, 1998, 2002, 2006, 2010, 2014 and 2018 in Denmark, the Health Behaviour in School-aged Children (HBSC) study.

Methodology: The study population was 11-, 13- and 15-year-olds, response rate 87.9%, N=33,460 with comparable data about exposure to bullying and socioeconomic status. The analyses included 1) absolute social inequality, i.e. percent difference in exposure to bullying between low and high socioeconomic groups and 2) relative social inequality based on logistic regression analyses with odds ratios for exposure to bullying by socioeconomic background.

Results: The prevalence of exposure to bullying decreased from 24.4% in 1994 to 4.9% in 2018. Bullying was significantly most prevalent among schoolchildren from lower socioeconomic groups. The absolute social inequality decreased from 10.7% in 1994 to 3.9% in 2018. The relative social inequality was 1.30 (1.19-1.43) in middle and 1.77 (1.59-1.96) in low socioeconomic group, compared to high. There was no significant change in relative social inequality from 1994 to 2018.

Conclusion: In the period 1994 to 2018 with substantial reduction in exposure to bullying at school there was a decrease in the absolute social inequality and an unchanged relative social inequality in exposure to bullying.

1 Introduction

Exposure to bullying at school is common among adolescents [1-3] and associated with a range of health problems [2, 4], risk behaviours [5], suicidal ideation [6], and negative school experiences [7-8]. Qualitative studies show that students exposed to bullying reported a wide range of negative emotional experiences: sadness, decreased self-esteem, embarrassment, fear, suicidal thinking, anger, feeling hurt, loneliness, powerlessness, helplessness, and confusion [9]. Longitudinal studies show that exposure to bullying predicts psychosocial and mental health problems in adulthood [10-13] and suicide ideation and self-injurious behaviour in adolescence [14] as well as crime and social problems in adulthood [13].

There is a social inequality in exposure to bullying in many countries, i.e. higher prevalence among adolescent from less affluent families [15-16] and a higher prevalence among adolescents exposed to high income inequality at school- and national level [15, 17]. It is important to monitor bullying because it is so harmful and it is possible to intervene [18]. It is also important to monitor social inequalities in exposure to bullying because adolescents from lower socioeconomic groups may be more vulnerable to the harmful effects of bullying [19].

Exposure to bullying has decreased over the past two decades in many countries in Europe and North America [1]. We have not been able to identify studies which show whether this decrease resulted in changing social inequality in bullying. This paper examined social inequality in exposure to bullying in comparable and representative populations of 11-15-year-olds in Denmark from 1994 to 2018. The analyses focus on both absolute and relative social inequalities in exposure to bullying.

2 Methods

2.1 Design and study population: The paper reports data from the Danish contribution to the international cross-national Health Behaviour in School-aged Children (HBSC) study [3]. The overall aim is to enhance the understanding of young people's health and health behaviours in their social

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settings. The study design was repeated cross-sectional surveys of representative samples of three age groups, 11-, 13-, and 15-year-old schoolchildren with a four year interval. In Denmark, we collected data from random samples of schools, drawn from complete lists of private and public schools in 1994, 1998, 2002, 2006, 2010, 2014 and 2018. The analysis included data from these seven comparable cross-sectional and representative surveys. The response rate (number of participants as percentage of schoolchildren enrolled in the participating classes) was 87.9%, N=33,460.

2.2 Data collection and measurements: The participants answered the internationally standardised HBSC questionnaire in the classroom [20]. Exposure to bullying was measured by the item "How often have you been bullied at school in the past couple of months?" We dichotomised the responses into exposed ("Several times a week" + "About once a week" + "2-3 times a month") vs. not exposed ("I have not been bullied at school in the past couple of months" + "it has only happened once or twice"). Kyriakides et al. [21] showed that students' report about victimization to bullying at school is trustworthy.

Data on socioeconomic position build upon the schoolchildren's information about their father's and mother's occupation, coded by the research group into occupational social class (OSC) from I (high) to V (low). We added OSC VI which includes economically inactive parents who receive unemployment benefits, disability pension or other kinds of transfer income. The coding procedure was identical in all surveys. Schoolchildren in these age categories are able to report their parents' occupation with a fair validity [22-23] and OSC is an appropriate indicator of socioeconomic position in studies of adolescents [24]. Each schoolchild was categorised by the highest ranking parent and sorted into high (I-II), middle (III-IV) and low (V-VI) OSC.

2.3 Statistical analyses: After exclusion of participants with missing information on exposure to bullying and OSC, the final N was 28,810 (Table 1). We calculated sex- and age standardized prevalence with 95% exact confidence limits, applied chi^2-test for homogeneity and Cochran-Armitage test for trends over time. The analyses included two measures of social inequality: 1) Prevalence difference (%) in exposure to bullying between low and high OSC as an absolute

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measure of social inequality; 2) odds ratio (OR) for exposure to bullying as a relative measure of social inequality. The OR estimates were derived from multilevel multivariate logistic regression analysis with sex, age group and survey year as control variables. In order to estimate changes in relative social inequality over time we also included an interaction term (OSC * year) in the final models. We also performed the analyses with the cut-point "Several times a week" + "About once a week" vs. other response categories to see if results were sensitive to cut-point.

2.4 Ethical issues: There is no formal agency for approval of questionnaire surveys in Denmark. Therefore, we asked the school board as the parents' representatives, the headmaster, and the schoolchildren's council in each of the participating schools to approve the study. The participants received oral and written information that participation was voluntary and anonymous. The data file does not comprise data about the identity of the individual participants. The study complies with national standards for data protection. The Danish Data Protection Authority has granted acceptance (Case No. 2013-54-0576).

3 Results

3.1 Trends in absolute social inequality: In the entire study population, 12.3% (95% CI 12.0-12.72) of the schoolchildren were exposed to bullying at school (Table 1). The prevalence varied by year with a decreasing tendency, from approx. 25% in the two first surveys to approx. 6% in the last three surveys (P < .01).

The proportion of children who were bullied was 9.1% (8.5-9.7) in high OSC, 12.8% (12.2-13.3) in middle OSC, 16.9% (15.9-17.9) in low OSC (P < .01). The proportion was 15.0% (13.8-16.2) among schoolchildren with missing information about OSC (not shown in table, not included in the analyses). Figure 1 shows that there is a decreasing prevalence in all three occupational social classes, all P-values < 0.01. The absolute social inequality, i.e. the difference in prevalence between low and high OSC showed a decreasing tendency across the seven waves of data collection: 10.7%, 11.4%, 6.0%, 4.9%, 3.3%, 5.5% and 3.9%.

Table 1 Study population by survey year, sex, age group, occupational social class (OSC), and exposure to bullying at school

	Survey year							
	1994	1998	2002	2006	2010	2014	2018	Total
Response rate [a]	89.5%	89.9%	89.3%	88.8%	86.3%	85.7%	84.8%	87.9%
N	4046	5205	4824	6269	4922	4534	3660	33,460
N included in this study	3656	4783	4278	5014	4151	3927	3001	28,810
Pct. boys	49.4	49.6	48.0	48.5	48.9	47.9	50.1	48.2
Pct. girls	50.6	50.4	52.0	515	51.1	51.1	49.9	51.8
Pct. 11-year-olds	30.6	33.6	35.4	36.3	35.4	30.5	40.5	35.8
Pct. 13-year-olds	34.6	35.4	33.2	35.9	34.5	35.4	33.4	34.9
Pct. 15-year-olds	34.8	31.0	31.4	27.8	31.1	34.2	26.1	29.3
Pct. high OSC [b]	32.8	28.0	24.9	27.6	38.7	42.1	43.1	33.1
Pct. middle OSC [b]	48.7	49.7	54.2	49.7	42.2	41.5	44.7	47.5
Pct. low OSC [b]	18.4	22.3	20.9	22.7	19.0	16.4	12.3	19.4
Pct. exposed to bullying [b]	24.4	24.7	10.8	7.7	6.1	6.0	4.9	12.3

[a] Number of participants as percentage of schoolchildren enrolled in the participating classes
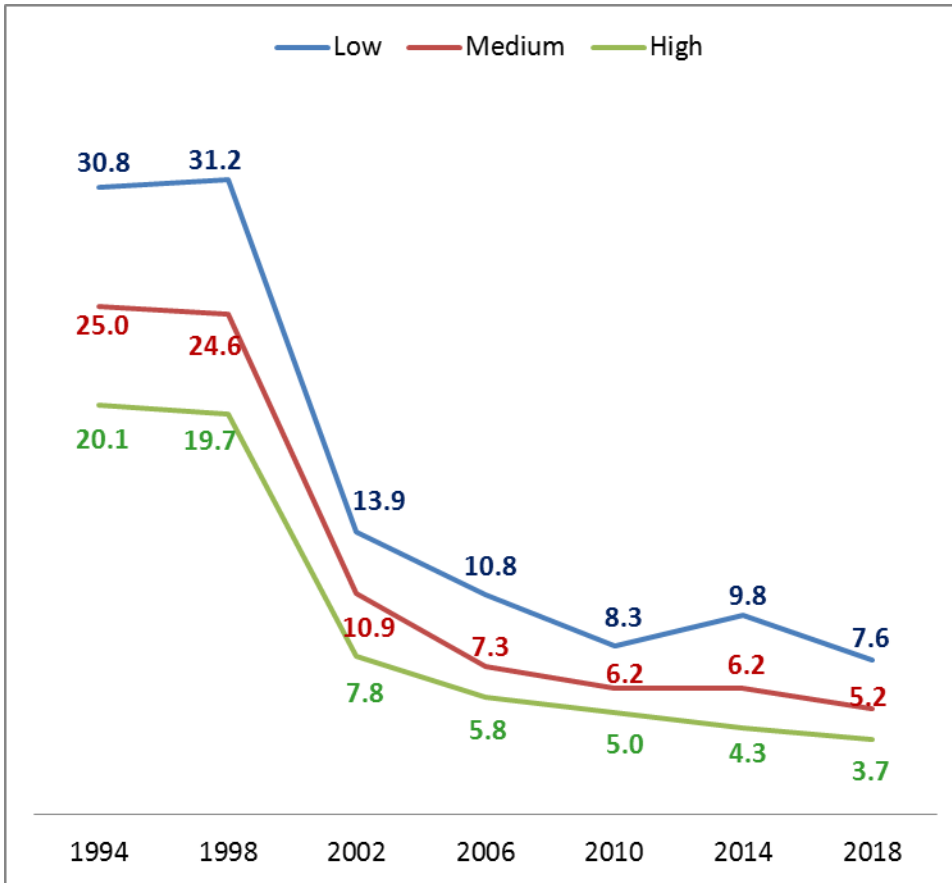
[b] Sex and age standardized figures

Figure 1 Pct. exposed to bullying at school by year and occupational social class

3.2 Trends in relative social inequality: Table 2 shows the relative social inequality, i.e. the OR (95% CI) for exposure to bullying by OSC. The unadjusted analysis showed a significant and graded increase in age- and sex-adjusted OR for exposure to bullying by decreasing OSC in the entire study population, OR (95% CI) 1.30 (1.19-1.43) in middle OSC and 1.77 (1.59-1.96) in low OSC. These estimates did not change much when adjusted for sex, age group and survey year (Table 2, model 2 and 3) and the association remained graded and significant. The significant and graded association between OSC and exposure to bullying was fairly similar in all survey years. Assessed by the OR-values, there was not much change in relative social inequality in exposure to bullying from 1994 to 2014. The statistical interaction between OSC and year was insignificant (P = .33) which also indicates that there was no change in relative social inequality.

Analyses with the more restrictive cut-point "Several times a week" + "About once a week" vs. other response categories showed similar patterns of association considering social inequality in exposure to bullying and how this inequality changes over time (data not shown).

Table 2 OR (95% CI) [a] for exposure to bullying at school among 11-15-year old schoolchildren by parents' occupational social class (OSC)

	High OSC	Middle OSC	Low OSC
Total (n=28,810)			
Model 1 [b]	1	**1.30 (1.19-1.43)**	**1.77 (1.59-1.96)**
Model 2 [c]	1	**1.29 (1.18-1.42)**	**1.70 (1.53-1.90)**
Model 3 [d]	1	**1.31 (1.10-1.43)**	**1.75 (1.57-1.94)**
1994 (n=3656)	1	**1.28(1.07-1.54)**	**1.71 (1.36-2.14)**
1998 (n=4783)	1	**1.31 (1.11-1.54)**	**1.78 (1.48-2.16)**
2002 (n=4278)	1	**1.38 (1.06-1.78)**	**1.79 (1.33-2.41)**
2006 (n=5014)	1	1.24 (0.95-1.63)	**1.87 (1.39-2.52)**
2010 (n=4151)	1	1.24 (0.93-1.67)	**1.68 (1.20-2.35)**
2014 (n=3927)	1	**1.41 (1.04-1.94)**	**2.25 (1.57-3.22)**
2018 (n=3001)	1	**1.14 (1.03-1.94)**	**2.29 (1.60-3.29)**

[a] Multilevel modelling to account for the cluster sampling, i.e. sampling of schools, [b] unadjusted, [c] adjusted for sex and age group, [d] adjusted for sex, age group and survey year. Estimates in bold are statistically significant.

4 Discussion

4.1 Interpretation: This is the first study to report changes in social inequality in exposure to bullying among adolescents. There was a substantial decrease in exposure to bullying during the 24-year observation period. Since 1999, there has been a strong national awareness about the high prevalence of bullying in Denmark, followed by national as well as local initiatives to fight bullying. The decreasing prevalence of bullying is probably a result of this conscious effort which now covers almost all schools in Denmark. The finding of a decreasing prevalence corresponds to findings from many other countries [1].

There was a graded and significant increase in exposure to bullying with decreasing socioeconomic position. This finding corresponds with an international study which showed a similar social gradient in most of the included 35 countries [15] and with a recent meta-analysis [16]. The study does not include data for a proper explanation of this social inequality.

The absolute social inequality diminished over time while the relative social inequality remained almost unchanged. From a public health point of view, the large change in absolute social inequality of bullying benefitting children from low social class is the most important result of this study. However, the consistent relative social inequality in bullying points at important mechanisms at stake which still needs to be addressed. Studies of change in social inequality should apply both absolute and relative measures of social inequality. The two approaches each reflect important but different knowledge on the development of inequality and as shown in this study the changes over time may result in different conclusions regarding the change in inequality.

4.2 Methodological issues: The main merits of the study are the comparability of the seven nationally representative surveys, the use of a standard protocol for sampling and measurement, and the long observation time. Available studies about the validity of the two main variables, exposure to bullying and OSC, suggest that these measurements are appropriate and have acceptable validity [21-24].

The overall response rate was high (87.9%) which reduces the likelihood of serious selection bias. The participants with missing information about OSC may constitute a problem because the prevalence of exposure to bullying in this group was high. This does probably result in an underestimation of the prevalence of bullying but is unlikely to affect the finding of a social inequality in bullying.

4.3 Implications: Intervention against bullying at school is an important public health issue because of the serious long term consequences for health [2, 6, 8, 10-13] and behavioural and

social problems [13-14]. Bullying prevention programs can be effective in reducing bullying and victimization among school-aged youth [18].

We need similar studies about possible social inequality in cyberbullying which is common in these age groups, related to socioeconomic factors [25], and strongly associated with mental health problems [26]. We also need studies which can reveal the processes behind the social inequality in bullying victimization. Studies of change in social inequality are important within public health because they may guide efforts to reduce social inequality. Social inequality in exposure to bullying may contribute to social inequalities in health in adulthood [10-12, 27] which makes it an even more important target for intervention. The positive development in the prevalence of bullying in Denmark has benefitted children from all social backgrounds, although relative social differences still exist.

4.4 Conclusions: In a period (1994-2018) with substantial reduction in exposure to bullying at school there was a decrease in the absolute social inequality and an unchanged relative social inequality in exposure to bullying.

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