

Why are children with asthma bullied? A risk factor analysis

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ABSTRACT

The links between bullying and asthma have not been explored in children. We wanted to determine the child/parent factors and attitudes associated with asthma-related bullying. Individual child/parent responses of children with asthma (N=943) from the Room to Breathe survey were analysed. 1 in 10 children reported asthma-related bullying/teasing (n=93). Children with well-controlled asthma were less likely to report being a victim of asthma-related bullying/teasing (OR 0.51, 95% CI 0.23 to 0.84, p=0.006). Being a victim of bullying/teasing was more common in children reporting activity restriction (OR 1.74, 95% CI 1.11 to 2.75, p=0.010), who described their asthma as 'bad' (OR 3.02, 95% CI 1.86 to 4.85, p<0.001) and those whose parents reported ongoing asthma-related health worries (OR 1.64, 95% CI 1.04 to 2.58, p=0.024). Asthma consultations should incorporate specific questions about bullying and be child-focused in order to gain a representative appreciation of asthma control and its impact on the child's life.

INTRODUCTION

Bullying is a challenge faced by many young people, but disproportionately affects those with chronic disease.¹ In the UK, 17% of children aged 10–15 years are bullied (see <https://www.gov.uk/government/publications/bullying-in-england-april-2013-to-march-2018>) and almost 10% of young people have asthma. Despite this, there is a paucity of research into asthma-related bullying.

We undertook a literature review to establish the current evidence base regarding bullying and asthma.² This review showed a consistent association between asthma and bullying victimisation. However, there was a lack of evidence to explain why this relationship exists and a reliance on parent-reported data. We used data from the Room to Breathe survey³ to explore whether child-reported and parent-perceived asthma control was associated with risk of bullying, and how parental worries about their child's asthma were related to bullying risk.

METHODS

We analysed unpublished data from the Room to Breathe study conducted between 2008 and 2009.³ The questionnaire used in this study elicited parent and child behaviours and beliefs in families with a child with asthma. A total of 943 children with asthma aged 8–15 years and their parent/caregivers were interviewed.

What is already known on this topic?

- Children with chronic diseases, including asthma, are at increased risk of reporting bullying.
- Bullying during childhood is common and has important long-term consequences.
- Around 1 in 10 children with asthma report bullying/teasing due to their condition.

What this study adds?

- Children with better asthma control were less likely to report asthma-related bullying or teasing.
- Children, but not parents, were more likely to report worse overall asthma control if they were bullied/teased because of their asthma.
- Children who report bullying/teasing were more likely to report activity restriction and have parents who report ongoing 'worry' about their child's asthma.

Choice of questions

To avoid multiple hypothesis testing, we preselected question items for analysis based on our literature review.² Specifically, we tested whether asthma-related bullying risk was reduced in children with well-controlled asthma, according to perceived control and validated control score. We tested whether activity restriction and parental worry affected the risk of bullying. Bullying/teasing was determined according to the response to the question 'Have you ever been made fun of, or been bullied as a result of your asthma?'

Defining asthma control

Our primary measure of asthma symptom control was defined according to the most recent GINA (Global Initiative for Asthma) guideline (www.ginasthma.org). Raw data from the following questions were used: in the past 4 weeks has the patient had daytime asthma symptoms more than twice a week? Night-time waking due to asthma? Short-acting β -2 agonist (SABA) reliever for symptoms more than twice a week? Any activity limitation due to asthma? GINA symptom control scores were grouped into well controlled (score 0), partly controlled (score 1–2) or uncontrolled (score 3–4).



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Short report

Individuals were excluded (n=13) if complete data were not available for calculation of GINA symptom control score. For statistical analysis of the association with bullying, scores were dichotomised into well controlled (score 0) versus not well controlled (score ≥ 1).

Control according to the Childhood-Asthma Control Test (C-ACT) was also calculated.⁴ A score of ≤ 19 was considered uncontrolled and ≥ 20 indicated controlled asthma.⁴ Children with incomplete questionnaire data for C-ACT calculation were excluded from the analysis (n=229) (see online supplemental appendix 1).

Overall assessment of asthma by parents and children

Children were asked to choose from four options to describe the overall assessment of their asthma: I only get it every now and then, not too bad, quite bad or very bad. Similarly, parents were asked to describe their child's asthma, choosing from intermittent, mild (not too bad), moderate (quite bad) or severe (very bad). We dichotomised both overall assessments into not bad (1 or 2) versus bad (3 or 4).

Parental anxiety

Parents had been asked to describe their level of worry about their child's health at different time points and in different situations. For analysis, we dichotomised the answers to these questions into those who reported being worried (very worried or quite worried) versus other responses.

Data entry and analysis

Data were analysed using STATA statistical software (V8.0). To ensure accuracy, C-ACT and GINA scores were separately calculated by two researchers and the results compared manually. For non-parametric continuous variables two-sample Wilcoxon rank-sum test was applied. For categorical variables χ^2 test and Fisher's exact test were used. For small samples we used the Cornfield approximation. $P < 0.05$ was taken as statistically significant. ORs were calculated using the STATA case-control OR calculator.

RESULTS

Nine hundred and forty-three children from six countries participated in the Room to Breathe survey. Demographic characteristics and bullying data are presented in table 1. Thirteen individuals with incomplete data were excluded from analysis.

Asthma control

Only 358 of 930 (38.5%) children were well controlled according to the current GINA symptom control criteria. Of 714 children, 312 (43.7%) were controlled according to C-ACT score.

Bullying

Ninety-three children (9.9%) reported being bullied/teased as a result of their asthma. Of these, 34 (36.6%) were aged 8–10 years, 27 (29.0%) 11–13 years and 32 (34.4%) 14–15 years. The relationship between being bullied and asthma-related factors is presented in table 2. We did not ask whether children were bullied for other reasons so this will be an underestimate of the proportion bullied or teased.

Bullying and asthma control

Children with well-controlled asthma symptoms (GINA-defined) were less likely to report being a victim of asthma-related bullying/teasing (OR 0.51, 95% CI 0.30 to 0.85, $p=0.006$).

Table 1 Demographics of the group, including bullying rate, asthma control, sex, age and country (N=943 unless stated)

		n	%
Have you ever been made fun of or been bullied as a result of your asthma?	No	850	90.1
	Yes	93	9.9
Asthma control score using GINA criteria (n=930) (≥ 1 not fully controlled, 0 controlled)	0	358	38.5
	1	315	33.9
	2	167	18.0
	3	65	7.0
	4	25	2.7
Asthma control using C-ACT scores (n=714) (≤ 19 uncontrolled, ≥ 20 controlled)	Controlled	312	43.7
	Uncontrolled	402	56.3
Sex	Female	380	40.3
	Male	563	59.7
Age (years)	8–10	332	35.2
	11–13	332	35.2
	14–15	279	29.6
Country	South Africa	150	15.9
	Greece	175	18.6
	The Netherlands	153	16.2
	Hungary	175	18.6
	Canada	159	16.8
	UK	131	13.9

C-ACT, Childhood-Asthma Control Test.

There was a highly significant association ($p < 0.0001$) between C-ACT score and reported bullying/teasing, with children who reported bullying (n=81) having lower scores (median C-ACT score 18, IQR 15–21) than those who did not (n=633) (median C-ACT score 20, IQR 17–23). C-ACT-defined controlled asthma (score ≥ 20) was significantly associated with a lower risk of bullying (OR 0.46, 95% CI 0.28 to 0.76, $p=0.001$).

Child and parent overall assessment of asthma

Children who reported 'bad' asthma were more likely to experience asthma-related teasing/bullying (OR 3.02, 95% CI 1.86 to 4.85, $p < 0.001$). In contrast, parental overall assessment of their child's asthma was not significantly associated with asthma-related bullying (OR 1.5, 95% CI 0.92 to 2.41, $p=0.079$).

Bullying and parental worry

Current parental worry concerning their child's health was significantly associated with child-reported bullying (OR 1.64, 95% CI 1.04 to 2.58, $p=0.024$). Parental worry at diagnosis (OR 1.69, 95% CI 0.94 to 3.22, $p=0.070$) and parental worry regarding steroid use (n=612 responses) (OR 1.21, 95% CI 0.67 to 2.21, $p=0.506$) were not.

Bullying and activity restriction

Three hundred and seventy families reported the child with asthma had restricted their daily activities due to asthma. Being a victim of bullying/teasing was more common in children who reported activity restriction (OR 1.75, 95% CI 1.11 to 2.75, $p=0.010$).

Bullying and spacer use

Reported use of spacers in public (for reliever medication) was not associated with asthma-related bullying (OR 1.44, 95% CI 0.89 to 2.32 $p=0.114$).

Table 2 Relationship between being bullied and asthma-related factors

Variable	Not bullied n (%)	Bullied n (%)	OR	95% CI	P value
Asthma control (GINA)			0.51	0.30 to 0.85	0.006
Controlled	335 (93.6)	23 (6.4)			
Uncontrolled	504 (88.1)	68 (11.9)			
Asthma control (C-ACT)			0.46	0.28 to 0.76	0.001
Controlled (C-ACT ≥ 20)	263 (84.3)	49 (15.7)			
Uncontrolled (C-ACT < 20)	370 (92.0)	32 (8.0)			
Child's overall assessment			3.02	1.86 to 4.85	<0.001
Not bad	703 (92.5)	57 (7.5)			
Bad	147 (80.3)	36 (19.7)			
Parent's overall assessment			1.50	0.92 to 2.41	0.079
Not bad	629 (91.2)	61 (8.8)			
Bad	220 (87.3)	32 (12.7)			
Parental worry now			1.64	1.04 to 2.58	0.024
Not worried	549 (91.8)	49 (8.2)			
Worried	301 (87.2)	44 (12.8)			
Parental worry at diagnosis			1.69	0.94 to 3.22	0.069
Not worried	190 (92.7)	15 (7.3)			
Worried	660 (88.2)	88 (11.8)			
Parental worry about steroid use			1.21	0.67 to 2.21	0.506
Not worried	231 (91.3)	22 (8.7)			
Worried	322 (89.7)	37 (10.3)			
Activity restriction			1.75	1.11 to 2.75	0.010
Not restricted	527 (92.1)	45 (7.9)			
Restricted	322 (87.0)	48 (13.0)			
Spacer use for bronchodilator inhaler			1.44	0.89 to 2.32	0.114
No	459 (92.0)	40 (8.0)			
Yes	343 (88.9)	43 (11.1)			

C-ACT, Childhood-Asthma Control Test.

DISCUSSION

Bullying is a recognised but under-appreciated complication of asthma. Asthma-related bullying was significantly associated with poorer asthma control, activity restriction and ongoing parental worry regarding their child's asthma. These are inter-related. Children with poorly controlled asthma were found to have higher levels of parental worry and activity restriction. Although the child's overall assessment of their asthma control was associated with bullying, the parent's overall assessment of asthma severity was not.

Bullying has important, measurable long-term consequences and yet children are hardly ever asked about peer relationships by health professionals.⁵ In order to identify bullying and bullying risk, clinicians must direct specific questions about asthma control and bullying/teasing to children themselves.

We acknowledge survey research is inherently limited by lack of qualitative responses and by non-response. To an extent this reduced the power of analysis. Additionally, the cross-sectional nature of this study and the exclusion of children without asthma preclude causal inference. We recommend that future research focus on child-reported experiences and interventions that reduce the risk of bullying of children and young people with asthma.

Contributors PLPB, WC and JW conducted the Room to Breathe study. WC, FJG and RC conceived the hypothesis-driven design of this study based on a review of the literature. RC and WC jointly undertook the data analysis. All authors contributed to the preparation of the final manuscript.

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Competing interests WC reports personal fees from GlaxoSmithKline, personal fees from Novartis and personal fees from Trudell Medical International, outside the submitted work.

Patient consent for publication Not required.

Ethics approval Prior to the conduct of the initial survey, the UK National Research Ethics Service were contacted and they advised that ethical review by a research ethics committee was not required.

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Appendix 1. Missing data for C-ACT Scores [4]

Item No.	Question	Responses	Missing data items
B0	How is your asthma today?	940	3
B0i	Which of the following describes how much of a problem your asthma is when you run, exercise or play sports?	943	0
B0ii	Do you cough because of your asthma?	943	0
B0iii	Do you wake up during the night because of your asthma?	943	0
S10a	During the last four weeks, how many days did your child have any daytime asthma symptoms?	884	59
S10b	During the last four weeks, how many days did your child wheeze during the day because of asthma?	849	94
S10c	During the last four weeks, how many days did your child wake up during the night because of asthma?	747	196
			352**

**116 individuals had 1 missing item response; 102 individuals had 2 missing item responses; 11 individuals had 3 missing item responses.