**Introductory title**

Is there an association between having asthma and being bullied?

**Scenario**

A 12-year-old boy, John, is seen with his mother. He has asthma which is currently being treated with regular low dose inhaled corticosteroids and as required short-acting bronchodilator. At his outpatients review he initially reports his symptoms are well controlled. However, he is found to have a higher FeNO (100 ppb compared to 20 ppm) and a lower FEV1 (85% of predicted compared to 105% of predicted) than at his review 12 months ago. When challenged, his mother is unsure as to the cause of this deterioration. John explains that he does not like being different from his friends, and it emerges that John has been bullied and teased as school ‘because of his asthma’. His mother is shocked by this revelation.

**Structured clinical question**

Is there an association between having asthma and being bullied?

**Search**

In order to be selected, the studies were required to meet the following inclusion criteria: asthma-specific data relating to bullying in children and adolescents. Studies with data relating to ‘chronic illness/disease’ only were excluded. Other reasons for exclusion were no bullying data or adult-only data, or data relating to other named chronic diseases, such as food allergy, but not asthma.

Cochrane Library: No relevant literature found

An initial HDAS search was performed, which searches the following databases: AMED, BNI, CINAHL, EMBASE, EMCARE, HMIC, Medline, PsycINFO, PubMed*.* Thisproduced 36 articles. The following search terms were used *((bullying AND (children OR childhood OR paediatrics OR child OR teenage OR adolescent)) AND asthma).ti,ab.* Following review, 29 articles were excluded leaving seven1,4,5,6,7,8,9,.

The search was subsequently widened and a repeat HDAS search using the following search criteria was performed; *((bullying AND (children OR childhood OR paediatrics OR child OR teenage OR adolescent)) AND (chronic disease OR chronic illness OR asthma)).ti,ab.* This search revealed 72 articles, of which a further two were considered relevant and not duplicates of the previous search12,13.

A repeat search using PubMed with both search criteria did not yield any additional studies.

The two searches combined produced a total of seven relevant original articles that reported bullying rates in children and adolescents with asthma1,4,5,6,7,8,9, and two systematic reveiws12,13. After careful review of all the papers a further two additional relevant studies were identified2,3.

**Commentary**

Bullying is a well-recognised phenomenon in childhood and adolescence. It is defined as a repeated behaviour intended to cause harm either physically or emotionally. It can take many forms including physical assault, verbal bullying or cyberbullying14. In England and Wales, it is estimated that 17% of children aged 10 to 15 years are bullied15. It is also estimated that 1 in 11 children in the UK have a diagnosis of asthma16. Despite the relatively high incidence of both asthma and bullying, few studies have addressed bullying in the context of asthma.

Of the nine identified articles which considered original data, only two specifically addressed the relationship between asthma and bullying4,5. The others considered asthma as part of a larger analysis of health-related risk factors for bullying. The Room to Breathe Survey revealed that almost 1 in 10 individuals with asthma report being ‘bullied or teased because of your asthma’ (93 out of 943 respondents). The survey included data from children over 8-years old from Canada, Hungary, The Netherlands, Greece, South Africa and the UK but the results were consistent across countries. Children who reported being bullied had worse asthma control scores4.

Whilst it might be surprising to some that 10% of children with asthma are specifically teased or bullied *because* of their illness, increased bullying has been reported in other groups with health problems. Children with a chronic health condition report a 1.5-fold increased risk of bullying10 and in children with food allergy a staggering 32% of the children and 25% of the parents reported bullying specifically due to their food allergy11.

Three studies conducted in the United States of America, including data from a total of 33,461 respondents, used data from different cohorts within the Youth Risk Behavioural Survey (YRBS)5-7. All of these showed a statistically significant but relatively modest increase in the risk of bullying in children with asthma. Gibson-Young et al. found a statistically significant but weak relationship between asthma and bullying (p<0.01, r=-0.059) in 6212 children using the results from 2011 Florida YRBS. The bullying rate in adolescents with asthma was 16% compared with 10% non-asthmatic individuals5. Data from 13,583 participants in the 2013 national YRBS was analysed by Merrill et al. Again, asthma was found to be a significant risk factor for being a victim of bullying (OR 1.27; 95% CI 1.21-1.34)7. The overall bullying rate was 19%, but was 24% for individuals with asthma. Hertz et al. analysed responses from a further 13,846 respondents in the 2011 YRBS survey and again found statistically significant increases in bullying risk in children who report asthma (OR 1.4 for boys and 1.6 for girls)6. These results from the USA seem remarkably consistent. A further recent US study from 2018 which included responses from 64,670 children showed an increased risk of bullying in children with asthma (OR 1.4 (1.2-1.7))9.

Only one large US study failed to demonstrate an association between asthma and bullying risk. However, there was a very strong statistical association between bullying and asthma severity (p<0.001)3. Children and young people with more severe asthma were much more likely to be bullied.

Globally, the results are broadly similar, albeit less consistent in their findings. Two early studies from Scandinavian countries had apparently contradictory findings with one from Norway including 7392 children reporting no increased risk of bullying in children with asthma OR 1.0 (0.8-1.3)1; the other from five Nordic countries in the 1980s and 1990s included 9021 children showing a modest increased risk OR 1.4 (1.1-1.9)2. Findings from a study of 6233 fourth grade students in Taiwan identified current asthma as a health-related risk factor for bullying. Children with asthma reported slightly higher frequencies of verbal (60% versus 54%) and physical (31% versus 26%) bullying8.

Our search strategy also identified two previous systematic reviews from 2011 and 2017 that attempted to address this question12,13. Somewhat surprisingly, both concluded that there was no increased risk of bullying in children with asthma. Whilst the first systematic review included only two studies12, the 2017 meta-analysis included data on 14,390 children with asthma drawn from 7 studies. It concluded that there was no association between asthma and bullying (OR 1.2; 95% CI 0.91, 1.59)13. These results seem at odds with our narrative review and the findings of most published studies. The authors did not include two large studies we identified which showed a positive association between asthma and bullying risk6,9.

These studies utilised self-reported or parental-reported bullying, which is unlikely to identify all episodes of bullying in children with asthma. It is widely recognised that bullying can take many forms14, and some individuals may experience ‘teasing’ or are ‘made fun of’ because of their asthma, but do not consider it ‘bullying’. It is also possible that parents are not aware of their child being bullied. This is likely to lead to underreporting of bullying in children with asthma and underrepresentation of bullying risk in research studies.

As it stands, the literature in this area has several important gaps. We identified no study with data to suggest why there is an increased risk of bullying in children and adolescents with asthma, or indeed what can be done to address this. The observation that children with more severe asthma or worse asthma control may be at particular risk is likely to be important as asthma control can be improved by educating patients and ensuring regular reviews of treatment. However, we do not currently know whether children with poorly controlled asthma are more likely to be bullied as a result of non-participation or health limitation, or whether children who are bullied have lower levels of self-care and poorer adherence to treatment.

**Clinical bottom line**

1. **Children and adolescents with asthma are at slightly higher risk of being a victim of bullying or peer victimisation than their non-asthmatic peers.**
2. **Asthma-related bullying occurs around the world and all clinicians should be aware of the potential for their patients to be a victim of bullying.**
3. **Where studies have looked at asthma severity, bullying risk is higher in those with poorer control and/or increased severity.**

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**Table 1. Studies identified highlighting bullying risk in children and young people with asthma using original data (systematic reviews not included).**

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| **Citation** | **Study Group** | **Outcome** | **Key Result** | **Comments**  |
| Haavet et al. (2004)1 | All lower secondary schools in Oslo 2000/2001. n=7329. | Association between illness and “negative life experience” | Bullied rate 15%. Asthma rate 13%. OR 1.0 (95% CI 0.8-1.3) for asthma and bullying.  | Self-reported survey responses.  |
| Nordhagen et al. (2005)2 | Postal survey (1984 and 1996). 2-17 years. n=9021 total\*n=1639 children with asthma. | Prevalence of bullying across 5 Nordic countries and risk factors for bullying.  | Bullied/bullying risk in asthma OR 1.4 (95% CI 1.1-1.9)  | Parental reported. No raw numbers presented. Data relates to children with asthma “involved in bullying”.  |
| Blackman et al. (2007)3 | National Survey of Children’s Health 2003/2004. Randomly selected 0-17 year olds. n=102,353  | Association between asthma and developmental and behavioural issues.  | Children with asthma (any severity) were not significantly more likely to be bullied, 14.3% versus 13.8% p=0.55. | Parental reported survey. Current asthma *severity* was strongly associated with and bullying, p = 0.0001. |
| Wildhaber et al. (2012)4 | n=943 8-15 year olds with asthma from Canada, Greece, Hungary, The Netherlands, UK, South Africa. | Asthma symptoms, impact on activities and quality of life (including bullying). | 1 in 10 reported suffering from asthma-related bullying.  | Child and adolescent reported (not by proxy). No control group.  |
| Gibson-Young et al. (2012)5.  | n=6212 adolescents completing the National Youth Risk Behaviour Survey in 2011 in Florida. | Association between asthma and bullying.  | Significant but weak relationship between current asthma and bullying (p<0.01, r=-0.059). Bullied rate: Asthma 15.6%, Non-asthma 10.2%.  | Only high school students involved.  |
| Hertz et al. (2015)6. | n=13,486 adolescents completing the national 2011 Youth Risk Behaviour Survey.  | Association between bullying and health behaviour.  | Female: 18.7% asthma; OR of being bullied 1.6 (CI 95% 1.3-2.0). Male: 12.8% asthma; OR 1.4 (CI 95% 1.1-1.9) p<0.01.  | 71% response rate overall. YRBS demonstrates good test-retest reliability.  |
| Merrill et al. (2016)7.  | n=13,583 adolescents in Grades 9-12 completing the national Youth Risk Behaviour Survey in 2013. | Identification of risk and protective factors for bullying.  | 22% had asthma diagnosis. Bullying rate 23.9% for asthma vs 18.8% for non-asthma. OR for bullying risk with asthma 1.3 (95% CI 1.2-1.3) | 66% response rate overall.  |
| Wei et al. (2017)8.  | 4th grade students from 314 elementary schools in Taiwan.n=6233 | Health-related risk factors for bullying. | Children with asthma reported higher frequency of verbal and physical bullying. Asthma/No asthma: Verbal bullying: 60.1%/54.3% (p<0.05).Physical: 31.2%/25.9% (p<0.05). | Direct comparison between asthma and non-asthma groups.  |
| Waasdorp et al. (2018)9.  | Adolescents from 107 middle and high schools in Maryland. n=64,670. | Association between bullying and health conditions/health-related behaviours.  | All victims of bullying n=9156 (14.7%).CYP with asthma bullying risk OR 1.4 (1.2-1.7) p<0.001. | Only middle and high school aged participants.  |

\*Estimated n values have been calculated using percentages given to 1 decimal place therefore small rounding errors may have occurred. No raw data presented so n calculated from odds ratios.

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