

ORIGINAL RESEARCH

The Association between Neighborhood Factors and Bullying among Adolescents with Asthma

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Abstract

Introduction: Neighborhood factors may be associated with bully victimization, a serious health concern for adolescents with asthma. **Objective:** The purpose of this study was to examine associations between neighborhood factors and past year bullying in adolescents with asthma as reported by adult household respondents. **Methods:** Using data from the adolescent 2019 National Survey of Children's Health, we included in our analyses responses from adults of adolescents with asthma who replied to whether or not the adolescent was bullied over the past year and to the neighborhood factors of interest. These adults included 473 adult respondents of adolescent females with asthma and 551 adult respondents of adolescent males with asthma. Neighborhood variables included whether the adolescent's neighborhood had sidewalks or walking paths, a park or playground, a recreation center or a boys' or girls' club, and vandalism exposure. The complex samples module in IBM SPSS 27 with equal probability sampling without replacement was used to conduct the analyses. Descriptive statistics and chi-square analyses were also used. **Results:** Statistically significant differences were found in the proportion of adolescent females with asthma ever bullied compared to the proportion never bullied who had access to a park or playground (70.0% vs. 83.7%, respectively; $p=.038$) and were exposed to neighborhood vandalism (2.8% vs. 10.8%, respectively; $p=.028$). A significantly smaller proportion of adolescent males with asthma ever bullied than the proportion never bullied were exposed to neighborhood vandalism (4.9% vs. 14%, respectively; $p=.032$). **Conclusion:** It is important to examine the influence of neighborhood factors further to better understand their association with bully victimization in adolescents with asthma.

Keywords: Adolescent, Asthma, Bullying, Neighborhood

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The Association between Neighborhood Factors and Bullying among Adolescents with Asthma

Bully victimization, the unwanted, repeated, aggressive behavior by one or more persons that tends to target those who are or appear unable to defend themselves (Gladden et al., 2014; Olweus, 1997) is common among adolescents both internationally and within the United States (U.S.; Moreno et al., 2018; Currie et al., 2012). In fact, approximately 20% of adolescents in the U.S. reported being bullied at school in the past year (Kann et al., 2018). As the intention of bullying is often to hurt another person and frequently involves a power imbalance (Gladden et al., 2014; Olweus, 1997), bully victimization has adverse effects on physical and psychosocial well-being (Hertz et al., 2015).

Research indicates that the prevalence of bullying in the general high school population is higher in females than in males (Kann et al., 2018; Pontes et al., 2018), and prior research has demonstrated various gender differences regarding bullying. For example, males tend to be bullied through physically and verbally aggressive methods, including threats, compared with females who are more likely to experience relational aggression, such as social isolation (Zhang et al., 2019). Accordingly, males often experience effects on both physical and mental health, whereas females frequently experience more severe mental health effects, such as anxiety and depression (Zhang et al., 2019).

Even though both male and female adolescents with and without a chronic condition may experience bullying, adolescents with asthma are particularly vulnerable (Gibson-Young et al., 2014; Merrill & Hanson, 2016; Muhammad et al., 2018). Prior research has found that adolescents with asthma are more likely to experience bully victimization than those without asthma (Gibson-Young et al., 2014), and among adolescents with asthma, females are more likely than males to be victimized (Hertz et al., 2015). As was the case in our past research (McCabe & Strauss, 2020), many of the studies concerning male and female adolescent bully victimization among those with and without chronic medical conditions have focused on individual-level factors related to bully victimization (Gibson-Young et al., 2014; Muhammad et al., 2018). We found an association between bully victimization and asthma in adolescent females (McCabe & Strauss, 2020), with some individual characteristics, such as age and grade in school, differentiating adolescent females with asthma who were victims of bullying from those who were not.

General Risk and Protective Neighborhood Factors

What remains unknown is the role of neighborhood factors in bully victimization among adolescents with asthma. What is known is that the physical characteristics of neighborhoods and perceived neighborhood safety have been associated with childhood asthma prevalence (Camacho-Rivera et al., 2014; Vangeepuram et al., 2012). In addition, community resources, such as recreational opportunities, can create a cohesive neighborhood atmosphere and may be related to less bully victimization in adolescents (Schumann et al., 2014). Neighborhood factors may also affect the imbalance of power between individuals, such as friendships and social exclusion, thereby influencing the likelihood of being bullied and experiencing other victimization. One set of such

factors has been termed “community disorder,” describing a neighborhood environment in which residents may perceive that social control is weak and that there is little desire or ability to maintain a safe and orderly physical environment (Turner et al., 2013). Such neighborhoods may contain litter on the streets and experience vandalism (Kim & Conley, 2011). Research has demonstrated associations between community disadvantage and disorder and youth’s impaired mental health (Dawson et al., 2019) and the direct impact of neighborhood structural disadvantages on bully victimization (Choi et al., 2020). On the other hand, opportunities for recreation in the community may decrease the likelihood of bully victimization among adolescents with asthma. In fact, decreased bully victimization was found to be the case among adolescents who indicated that there were good places to spend their free time in the community (e.g., recreation centers, parks, shopping centers; Schumann et al., 2014).

Because the impact of neighborhood characteristics on bullying of adolescents with asthma has not been examined, the study’s specific aim is to examine relationships among risk and protective neighborhood factors and bullying in adolescents with asthma. To achieve this aim, we use data collected from adult household respondents (hereafter referred to as adult respondents) of adolescents with asthma in the 2019 National Survey of Children’s Health (NSCH) directed by the U.S. Census Bureau (U. S. Census Bureau, 2019) and funded and directed by the U.S. Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Bureau. It is hypothesized that (a) adult respondents of adolescents with asthma who report access to protective neighborhood resources will report less bullying of the adolescent than those without such resources; and (b) adult respondents of adolescents with asthma who report exposure to neighborhood risk factors will report more bullying of the adolescent than those without such exposure. Findings will be generalized to adolescents with asthma in the U.S. and aim to highlight neighborhood factors associated with bullying in this group of adolescents. This will inform practitioners, researchers, and clinicians with implications for primary care, psychology, social work, and education concerning the role of neighborhood factors related to bullying among vulnerable adolescents.

Methods

Sampling Procedures

The 2019 NSCH was administered online and by mail. Randomly chosen household addresses from across the U.S. were mailed directions to access the online screener survey; some households also received a paper version of the screener survey (U.S. Census Bureau, 2020). All adult respondents completed an initial screener questionnaire (U.S. Census Bureau, 2020). If adult respondents indicated on the screener questionnaire that a child aged 0-17 did not live in the household, they did not complete an additional topical questionnaire. If adult respondents indicated on the screener questionnaire that a child aged 0-17 did live in the household, they completed the initial screener questionnaire and then replied to a topical questionnaire (U.S. Census Bureau,

2020). A single child from the household was randomly chosen to be the subject of this topical questionnaire. Three separate topical questionnaire versions were created to capture data for children ages 0-5, 6-11, and 12-17 (U.S. Census Bureau, 2020). This study will use data from the questionnaire for children 12-17 years old, specifically focusing on adolescents with asthma aged 15-17 years, consistent with our prior research involving female adolescents with asthma (McCabe & Strauss, 2020). We subsequently refer to adolescents aged 15-17 years as adolescents.

Data Collection

NSCH gathers data related to the well-being of children, including access to and quality of health care, household relations, parental well-being, school and after-school events, and neighborhood features (U.S. Census Bureau, 2020). A comprehensive description of the 2019 NSCH questionnaires can be found at <https://www.childhealthdata.org/learn-about-the-nsch/survey-instruments> (Data Resource Center for Child & Adolescent Health, n.d.).

The current analyses examined responses to several neighborhood and demographic questions. A total of 29,433 households were eligible for and completed the topical questionnaire, with a complete weighted response rate for the 2019 NSCH of 42.4 % (U.S. Census Bureau, 2020). Data from this study were extracted from a combination of screener and topical survey responses.

Study Measures

Study measures were derived from four queries from the topical questionnaire with “yes” or “no” responses regarding whether the child’s neighborhood had sidewalks or walking paths, a park or playground, a recreation center or a boys’ or girls’ club, and vandalism exposure, such as broken windows or graffiti. Adult respondents were also asked, “During the past 12 months, how often was this child bullied, picked on, or excluded by other children?” Adult respondents could choose “never,” “1-2 times in the past twelve months,” “1-2 times per month,” “1-2 times per week,” and “almost every day.” Our recoding compared children who were never bullied versus ever bullied in the past year. In addition, we incorporated adult respondents’ replies to the “yes” or “no” question, “Has a doctor or other health care provider ever told you that this child has asthma?”

Data Analysis

In view of sex differences in bullying among adolescents with asthma, analyses were conducted separately for adolescent males and females with asthma. Because of the intricate survey sampling design, the complex samples module in IBM SPSS 27 with equal probability sampling without replacement was used to conduct the analyses. This allowed the data to be weighted to produce correct confidence intervals, standard errors, valid point estimates, and testing of hypotheses. In addition, it enabled extrapolation of findings to all adolescent males and females with asthma in the U.S. and their exposure to bullying in the past year (West et al., 2018).

Descriptive statistics determined the proportion of adolescent males and females with asthma whose adult respondents reported

the child ever being bullied and never being bullied in the past year. Chi-square analyses were used to examine statistical relationships between adolescent males and females with asthma whose adult respondents did and did not report the adolescent ever being bullied in the past year with neighborhood factors (Table 1).

Results

The study sample consisted of 473 adult respondents of adolescent females with asthma and 551 adult respondents of adolescent males with asthma. This sample includes those who responded to the bullying query as well as the selected neighborhood factors (Table 1). Of the adolescent females with asthma, 46% of adult respondents reported their adolescent ever being bullied compared with 54% who reported the adolescent never being bullied in the past year. Concerning neighborhood factors, results demonstrate that a significantly smaller proportion of adult respondents of adolescent females with asthma reported these females ever being bullied in the past year than the proportion of adolescent females with asthma never bullied who had access to a playground or park (70.0% vs. 83.7%, respectively; $p=.038$). In contrast, a significantly greater proportion of adult respondents of these females reported the females being bullied (10.8%) than the proportion of adolescent females with asthma never bullied (2.8%) in the past year who reported exposure to vandalism in their neighborhoods ($p=.028$).

Table 1

Adult Household Responses Regarding Neighborhood Characteristics for Adolescent Females with Asthma: Chi-Square Analyses of Differences between Those Who Were Ever Bullied and Those Who Were Not in the Past Year (%)

Neighborhood factors	Total	Never bullied	Ever bullied	p-value
Sidewalk or walking paths	70.5	75.8	64.3	.129
Park or playground*	77.4	83.7	70.0	.038
Recreation center	47.3	54.3	39.1	.085
Exposure to vandalism*	6.5	2.8	10.8	.028

* $p<.05$

When extrapolated to the population of adolescent males with asthma in the U.S., 32.1% of adult respondents reported the males ever being bullied compared with 67.9% who reported the males never being bullied in the past year. As shown in Table 2, there was a statistically significant difference concerning vandalism exposure. A significantly smaller proportion of adult respondents of adolescent males with asthma reported the males ever bullied in the past year (4.9%) than the proportion of adolescent males with asthma never bullied (14%) in the past year who were exposed to neighborhood vandalism ($p=.032$).

Table 2
Adult Household Responses Regarding Neighborhood Characteristics for Adolescent Males with Asthma: Chi-Square Analyses of Differences between Those Who Were Ever Bullied and Those Who Were Not in the Past Year (%)

Neighborhood factors	Total	Never bullied	Ever bullied	p-value
Sidewalk or walking paths	76.3	76.4	76.0	.949
Park or playground	71.1	73.4	66.3	.455
Recreation center	53.2	56.2	46.8	.366
Exposure to vandalism*	11.0	14.0	4.9	.032

* $p < .05$

Discussion

Our exhaustive review of the literature indicates that this is the first study to examine relationships between neighborhood factors and bullying in U.S. adolescents with asthma. In the general adolescent population, there is growing attention to bullying (Eugene et al., 2021; Salmon et al., 2018) and interest in neighborhood influences on asthma control (DePriest et al., 2018). Prior research has examined individual factors associated with bullying in the general population (Hertz et al., 2015; Merrill & Hanson, 2016), adolescents with asthma (Gibson-Young et al., 2014), and adolescent females with asthma (McCabe & Strauss, 2020). Still, there is a lack of reporting on the influence of neighborhood factors in adolescents with asthma and bully victimization.

Adult respondents indicated that 46% of their household adolescent females with asthma reported ever being bullied compared with 54% who reported never being bullied over the prior year. The adult respondents reported that 32.1% of adolescent males with asthma were ever bullied over the past year compared with 67.9% who were never bullied. Merrill and Hanson (2016) found that the proportion of adolescents with asthma who reported bully victimization was 23.87%. This is considerably lower than the proportions of both adolescent males and adolescent females with asthma reported to have been bullied in the current study. Of note, prior research involving bullying of adolescents with asthma, including that of Merrill and Hanson (2016) and McCabe and Strauss (2020), analyzed data that surveyed the adolescents themselves and the current data from NSCH 2019 surveyed an adult household member.

This study found significance across two neighborhood factors in adolescent females with asthma. Adult respondents of adolescent females with asthma indicated that a significantly smaller proportion of those females ever bullied over the past year compared with the proportion of adolescent females with asthma never bullied in that time frame had access to a playground or park in their neighborhood. As anticipated, concerning exposure to neighborhood vandalism, a significantly greater proportion of adult respondents who reported adolescent females with asthma being bullied than the proportion of adolescent females with asthma never bullied in the past year reported such exposure. DePriest et al. (2018) found associations with neighborhood perceptions of feeling unsafe being associated with higher asthma

prevalence or poorer asthma control in children. In addition, Espelage (2014) hypothesized that an unsafe neighborhood environment could influence bullying due to limited supervision or negative peer influences. These examples suggest the importance of further examining the complex influences of the neighborhood environment to understand better its role in the experiences of these adolescents.

In the case of adolescent males, our hypothesis was not supported. Concerning adolescent males with asthma, there was statistical significance when examining exposure to vandalism, but in the opposite direction of what we expected. A significantly smaller proportion of adult respondents of adolescent males with asthma reported the males ever bullied in the past year than the proportion of adolescent males with asthma never bullied in the past year who were exposed to neighborhood vandalism. Perhaps this finding reflects a lack of communication of adolescent males in sharing information with adult household members regarding bully victimization.

Limitations

This study has several limitations. First, the use of cross-sectional data prevented the analysis of causal relationships between neighborhood influences and bullying. Because research involving neighborhood factors in adolescents with asthma who experience bullying is novel, the cross-sectional design offers a preliminary understanding of those relationships. A second limitation was that the data were reported by a household adult and not the adolescent. It is possible that the adult may interpret bullying victimization differently from the adolescent. In addition, this study did not focus on the gender of the adult respondent, and it is possible that female adults and male adults may have differed in their responses to the questions on bullying. Finally, this dataset asked about bullying in general and did not specify in-person bullying versus electronic. Nor did it offer definitions of the types of bullying that an adolescent might experience. These omissions may have caused adults to misreport bullying experiences in their household adolescents.

Conclusion

This study found that particular neighborhood factors were significantly associated with bullying in adolescents with asthma. There were relationships with access to parks and/or playgrounds and vandalism among adolescent females with asthma. There was also a relationship between vandalism and adolescent males with asthma, but this relationship was the converse of the expected outcome. Study findings go beyond prior research that focused on individual level factors related to bullying in adolescents with and without chronic health conditions (e.g., Gibson-Young et al., 2014; Muhammad et al., 2018; McCabe & Strauss, 2020) in highlighting the need to also examine neighborhood factors regarding the bullying of adolescents with asthma. Of high importance is to study these various factors and acquire data from the source, the adolescents themselves. Generally, adolescents can share rich data concerning medical and social-emotional conditions and are typically developmentally capable to respond to clinicians and researchers to explore the root causes of concerns and implement change.

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