

Peer Victimization Among School-aged Children With Chronic Conditions

Mariane Sentenac*, Catherine Arnaud, Aoife Gavin, Michal Molcho, Saoirse Nic Gabhainn, and Emmanuelle Godeau

* Correspondence to Mariane Sentenac, Hôpital Paule de Viguier, Inserm U1027, 330 Avenue de Grande Bretagne, TSA 70034, 31 059 Toulouse cedex 9, France (e-mail: mariane.sentenac@cict.fr).

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Peer victimization is a common problem among school-aged children, and those with chronic conditions are at an increased risk. A systematic review of the literature was carried out to explore the increased risk of peer victimization among children with chronic conditions compared with others, considering a variety of chronic conditions; and to assess intervention programs designed to reduce negative attitudes or peer victimization at school toward children with chronic conditions. Various data sources were used (PubMed, ERIC, PsycINFO, Web of Science), and 59 studies published between 1991 and 2011 and mainly carried out in North American and European countries were included in the review. A higher level of peer victimization among children with chronic conditions was shown for each type of condition explored in this review (psychiatric diagnoses, learning difficulties, physical and motor impairments, chronic illnesses, and overweight). Despite a substantial number of studies having shown a significant association between chronic conditions and peer victimization, intervention studies aiming to reduce bullying among these children were rarely evaluated. The findings of this review suggest a growing need to develop and implement specific interventions targeted at reducing peer victimization among children with chronic conditions.

adolescent; bullying; child; chronic disease; disabled children; health; overweight; review

Abbreviation: ADHD, attention deficit hyperactivity disorders.

INTRODUCTION

An increasing number of studies are focusing on bullying at school, with peer victimization known to be a prevalent behavior among children and adolescents in schools in most Western countries (1). Olweus provided a widely used and recognized definition of bullying at school: "A person is bullied when he or she is exposed, repeatedly and over time, to negative actions on the part of one or more other persons, and he or she has difficulty defending him or herself" (2, p. 152). According to this definition, bullying refers to negative physical, verbal, or relational hostile actions, causing distress to victims, being repeated, and involving a power differential between perpetrators and victims. Thus, 3 important elements define bullying—repetition, harm, and imbalance of power—providing a distinction from other forms of youth violence.

Bullying can exist in face-to-face relations (verbally or physically), through exclusion of the victim, or through electronic media (cyberbullying) (3). Victims of bullying who are also sometimes perpetrators are referred to as bully-victims, in con-

trast to passive victims who are weak and defenseless (4). Large variations in the prevalence of victimization among school-aged children have been previously reported between countries (1). This paper focuses on bullying victimization only; hence, from here on, the term "peer victimization" is used instead of the more general term "bullying."

Consequences of peer victimization on children's health and well-being have been widely explored. Victims of bullying experience anxiety, poor self-esteem, and depression (5), as well as frequent somatic complaints (6). In her review, Stassen Berger (3) reported more dramatic consequences, highlighting the relation between bully-victims and most childhood assaults, suicides, and homicides (7). Being bullied at school may be a contributing factor to the development of depression in adulthood (8). Moreover, some findings indicated that children with type 1 diabetes who were victims of bullying were more likely to report symptoms of depression, contributing to poorer treatment adherence (9). Chronic illness management, such as diet and glucose monitoring for children with diabetes, or medication use for those with asthma, may

be stigmatizing for children, leading to further victimization of these children, which may, in turn, disrupt self-management of their illness (9).

To date, external causes of peer victimization often seem to be linked to differences in appearance or in behavior, especially when children have difficulty developing relationships and social networks. This may lead to the hypothesis that children with disabilities or chronic illnesses are at a higher risk of being bullied by peers because of their mannerisms, difficulties with mobility, speech patterns, or special care needs.

Over the last 3 decades, most countries have officially supported inclusive education, encouraging the integration and acceptance of children with disabilities into the mainstream educational system (10). However, an increased number of disabled children included in mainstream schools does not necessarily coincide with changes in attitudes and behaviors, leading to questions about the quality of inclusion. A recent study suggested that the presence of a special education unit for children with psychological and cognitive impairments was associated with negative attitudes toward peers with disabilities (11); another study described the deterioration in the condition of children with physical disabilities in mainstream settings throughout their school years, with frequent exclusion and less acceptance from their peers (12).

While school-based antibullying programs have been shown to be effective in reducing the overall levels of peer victimization at school (13), little is known about the specific impact of these programs for children with chronic conditions. Modifications to existing bullying prevention programs have also been suggested to improve their outcomes for children with chronic conditions (14).

This review aims to provide an overview of the existing literature on peer victimization at school among children or adolescents with a disability or chronic illness (i.e., chronic conditions). We focus on 1) the increased risk of victimization for these children compared with others, 2) differences in the frequency and type of peer victimization with regard to the type and severity of their condition, and 3) a possible difference in this risk according to the type of school setting (4); we also review prevention programs designed to reduce negative attitudes or peer victimization at school toward children with chronic conditions.

METHODS

We carried out a systematic review of the literature to identify studies related to peer victimization among children or adolescents with disabilities or chronic illnesses (including intervention studies). Our search was restricted to original papers, published in peer-reviewed journals in the English language, reporting on school-aged children (aged 5–17 years). The review considered papers published between January 1990 and January 2011, focusing on researches carried out after Olweus (2) published in English his definition of bullying. Other inclusion criteria included 1) a well-defined assessment of peer victimization, 2) a well-established chronic condition status, and 3) papers that explicitly explored peer victimization among children or adolescents with chronic conditions. Exclusion criteria consisted of other types of peer victimization

that are not part of the definition of school bullying—for example, sexual abuse, posttraumatic stress disorders (described as a consequence of peer victimization (15))—as well as papers focusing solely on preschool children.

Studies were identified by using electronic databases in various research areas related to our topic: PubMed (biomedical), ERIC (educational), PsycINFO (psychological), and Web of Science (multidisciplinary). The search was performed combining (“AND” operator) 3 keyword sets (truncation keywords and MeSH term were used) related to peer victimization, chronic conditions, and population age group (in the abstract and keywords). Given the various terms related to chronic conditions in childhood, our choice of keywords for this set was based on those given in a recent review on the definition of chronic condition (16).

Our keyword sets were as follows:

- Peer victimization: (bull* OR bullying (MeSH term) OR victim* OR harassment)
- Chronic conditions: (chronic condition* OR disab* OR disease* OR disorder* OR morbidit* OR special need* OR illness* OR long-standing health problem* OR impairment* OR special educational need*)
- Population age group: (child OR children (MeSH term) OR adolesc* OR adolescent (MeSH term) OR teen* OR student* (MeSH term) OR pupil*)

The search yielded 150 abstracts that focused on peer victimization among children or adolescents with chronic conditions. A team of 4 authors (2 senior and 2 junior researchers) reviewed these abstracts and rejected 64 studies that did not meet the review objectives (45 were considered not relevant, 15 did not report original findings, 3 referred to adult students, 1 had not been published yet). Of the 86 remaining studies, full texts were reviewed; 33 more studies were rejected. The reasons for rejection at this second stage included the following: study not relevant ($n = 12$), weakness in the method (i.e., very small sample, lack of information on the methods used in the study, or an ill-identified type of chronic condition) ($n = 11$), no original results ($n = 9$), and adult students targeted ($n = 1$). At this stage, 53 studies were deemed relevant for inclusion in our review. Upon reviewing the reference lists of these 53 studies, we identified an additional 6 studies that met the criteria for the review. Therefore, a total of 59 studies were included in the current review.

Web Table 1 summarizes all these studies examining peer victimization among children with chronic conditions (i.e., information on the study design, characteristics of the population, peer victimization assessment, and main results). (This table is posted on the *Epidemiologic Reviews* Web site (<http://epirev.oxfordjournals.org/>.) Studies were grouped by type of chronic condition. Prevalence rates of peer victimization were given when available. Results regarding the association between chronic conditions and peer victimization were reported with odds ratios, illustrating the risk for those with chronic conditions to be victimized by peers at school compared with those without a severe chronic condition or with a less severe one; or with P values based on means comparisons. Results were given by gender and by victim groups (victims only and bully-victims) where available.

Given that only one intervention study describing the effect of a program on peer victimization at school among children with chronic conditions was found, a subsequent search was carried out to identify school-based interventions designed to improve students' attitudes toward their peers with chronic conditions. A similar search strategy was adopted, except that keywords were searched in titles; the keyword set related to peer victimization was replaced by the keyword "attitude*"; and a fourth set of keywords related to the design, based on a previous review published on school-based programs in a general population (13), was added ("intervention OR program OR outcome OR evaluation OR effect OR prevention"). Thus, this search led us to consider 29 citations, 20 of which were excluded for the following reasons: the target population was adult students ($n = 9$) or not relevant ($n = 4$), attitudes were not related to chronic conditions ($n = 5$), or it was not an intervention study ($n = 2$), leaving 9 full texts to review. After we excluded 2 studies with weak methodology (no pretest or a lack of information about the study design), 7 attitudinal intervention studies were included in the final review. All intervention studies are described in a separate section.

RESULTS

Study design

Of the 59 studies included in the review (Web Table 1), 22 were conducted in the United States, 12 in the United Kingdom, 8 in Canada, 6 in Nordic countries, 7 in other European countries, 1 in Australia, 1 in China, 1 in South Africa, and 1 in an unknown location. Studies were published between 1991 and 2010, with 90% ($n = 53/59$) published from 2000 onward. In 31 studies, participants were sampled in schools, whereas the other studies were based on population-based samples of children with specific conditions extracted from general, household, hospital, or more specific samples. Sample size ranged from 19 to 101,778 children.

Participants

Children aged 5–17 years were surveyed in the 59 studies included in our review. Both genders were considered in all studies except one, in which only boys were included (17). The school setting was not described in all studies, but, among those in which it was described, a range was represented: mainstream ($n = 23$), a special unit in a mainstream school ($n = 3$), and a special school ($n = 7$). Of the 59 studies reviewed, a large diversity of chronic conditions was represented: psychiatric diagnoses, learning difficulties, speech and language disorders, physical and motor impairments, chronic diseases, and weight status. Given the large number of studies hypothesizing that children who are overweight may be especially vulnerable to peer victimization because their physical appearance makes them different from others, we decided to include these studies in the review ($n = 9/59$). Six studies were based on a not-specified diagnosis assessment such as chronic conditions, disabilities, and special health care needs. Last, the severity of the chronic condition was assessed in 15 studies.

Assessment of peer victimization

Various methods for assessing levels of peer victimization were used. A definition of peer victimization was given to the respondent in 4 studies (18–21). Twenty-seven studies used 1 of the 14 validated questionnaires identified in this review; nonvalidated questions were used in 21 studies; peer victimization questions were taken from a nonspecific, existing questionnaire in another 6; while interviews were used in 5 studies. Peer victimization was explored without distinction between types ("generic" victimization) in 39 studies, whereas specific types of peer victimization were assessed in others: physical, verbal, relational/social, cyberbullying, assault/scare, or teasing. Variations were found in criteria regarding frequency (e.g., "at least once," "sometimes," "often," "2/3 times a month," or "up to 1–2 days per week") and duration ("in the past year," "for the last 3 months," "in the last couple of months," "the past 2 weeks," "in the previous week," or "during this week") of exposure. In the studies reviewed, peer victimization was primarily self-reported. In 18 studies, information was provided by peers/classmates, parents, or teachers. Bully-victims groups were identified as a separate group in 6 studies (22–27).

Peer victimization for children with chronic conditions

In this review, results are presented by type of chronic condition. Refer to Table 1 for a summary of the results and Web Table 1 for a more detailed breakdown of the studies reviewed.

Psychiatric diagnoses. About one-third of the studies ($n = 19$) examined the relation between psychiatric diagnoses and peer victimization. Internalizing disorders were investigated in 5 studies, which consistently showed a higher frequency of peer victimization among children with these types of psychiatric symptoms (26, 28–31). Thus, a higher level of symptoms such as anxiety, depression, or affective disorders (30) was significantly associated with a higher level of peer victimization in analyses adjusted for age and gender (29). However, major depressive disorder and generalized anxiety disorder among primary school children were not found to be associated with verbal victimization (defined as "scared but not assaulted" by authors) (30).

Of the 12 studies exploring externalizing disorders, 9 investigated peer victimization among children with attention deficit hyperactivity disorders (ADHD), 7 of which found a positive correlation (30, 32–37). Children with ADHD aged 6–18 years reported a higher rate of overall victimization (33–36); cyberbullying via cell phone (32); and physical, verbal, and relational victimization (37). According to the latter study, the association between ADHD and peer victimization was similar for all 3 types of victimization studied (37).

Additionally, children with ADHD along with other externalizing diagnoses were found to experience a higher prevalence of peer victimization than children with ADHD and an internalizing diagnosis (29). A higher prevalence of victimization was found among children with ADHD without any associated comorbidity, compared with those with ADHD and a comorbidity (learning disability, behavioral or

Table 1. Results of the 59 Studies Exploring the Association Between Chronic Conditions and Peer Victimization^a

Type of Chronic Condition	Risk of Peer Victimization Related to Chronic Condition	
	Significant Higher Risk ^b (Reference No.)	No Significant Association (Reference No.)
Psychiatric diagnoses	ADHD (18, 32–34, 36, 37); psychiatric diagnoses (83); comorbid psychiatric diagnosis among children with ADHD (29); autism spectrum disorders (38); oppositional defiant disorder (25); internalizing disorders (26); psychopathology (30); mental health problem (31); special health care needs (35)	Intellectual disability (32); conduct disorder (25); externalizing disorders (26)
Learning difficulties, speech and language disorders	Stutter (17); specific language impairment (45); learning difficulties (40); mild/moderate learning difficulties (41–43); Tourette syndrome and chronic tic disorders (48)	Severity of stammering (44); language difficulties (19); specific speech and language difficulties (47)
Physical and motor impairments	Cerebral palsy (motor impairment) (52); very low birth weight (84); common visual defects (55); extremely preterm (hemiplegia/diplegia) (76); cerebral palsy (hemiplegia/diplegia) (50); premature children and cerebral palsy (51)	Physical and visible disabilities (53); developmental coordination disorder (54); hemiplegia (49)
Chronic diseases	AIDS-related stigma (58); eczema (56); epilepsy (23); type 1 diabetes (57)	Asthma severity (59); hay fever and asthma (56)
Generic approach	Chronic conditions (20, 21, 60); disabilities (68); special health care needs (27)	
Underweight, overweight, and obesity	Overweight (24, 61–64, 67); obesity (22, 24, 61–63, 65–67); underweight (67)	Overweight (22, 65, 66)

Abbreviations: ADHD, attention deficit hyperactivity disorders; AIDS, acquired immune deficiency syndrome.

^a Results of 6 studies reporting only prevalence rates of peer victimization among children with chronic conditions were not shown. Results of the 59 studies are given in Web Table 1, which is posted on the *Epidemiologic Reviews* Web site (www.epirev.oxfordjournals.org).

^b A chronic condition was considered significantly associated with peer victimization when at least one significant result was found in a subgroup of the population with chronic conditions studied (i.e., boys/girls, victims/bully-victims, type of victimization). More details are given in Web Table 1.

emotional diagnosis) (34). Only one study examined other types of externalizing disorders, and it reported more victimization among secondary school children with oppositional defiant disorder but no association with conduct disorder (25). Lastly, children with autism spectrum disorder, as well as children with Asperger syndrome, were also described as being at an increased risk of peer victimization in all studies reviewed (35, 38, 39).

Learning difficulties, speech and language disorders. Learning disabilities were assessed in 5 studies (19, 40–43), and 4 studies reported that children with learning difficulties were at an increased risk of peer victimization (40–43). Peer victimization was found to be significantly associated with mild (41) and moderate (42, 43) learning difficulties according to peer, classmate, and self-reports. Some findings suggested that the influence of receptive vocabulary skills on peer victimization was more important than that of reading ability (40). Six studies focused on victimization among children with speech and language difficulties (17, 44–48), showing that children with specific language impairment (45) or who stuttered (17) reported a higher rate of victimization compared with their peers without such conditions. Among children with Tourette syndrome, peer victimization was positively associated with phonic tics but not with motor tics (48). However, one study (47) did not find any association between specific language impairment and physical or verbal victimization.

Physical and motor impairment. A significantly higher prevalence of peer victimization (physical and verbal) was demonstrated among children with hemiplegia (49) and among children diagnosed with mild cerebral palsy (i.e., hemiplegia

or diplegia and characterized by a mild motor impairment but no severe visual, auditory, or intellectual impairment) (50) compared with controls. Likewise, children born prematurely with or without cerebral palsy were assessed by their peers as experiencing more victimization (verbal victimization for those with cerebral palsy and physical victimization for those without cerebral palsy) than children born at term without cerebral palsy (51). The severity of the motor impairment among children with cerebral palsy was found to be associated with victimization (52). However, the 2 studies that focused on physical and visible disabilities (53, 54) and on motor coordination problems (54) did not report differences in the prevalence of peer victimization compared with healthy children. Additionally, preadolescents who wore glasses frequently or who reported a history of wearing eye patches were predisposed to being victims of verbal or physical bullying, but not relational bullying, at school (55).

Chronic diseases. A significantly higher level of peer victimization was found among children with some types of chronic diseases compared with healthy children, such as eczema among boys aged 15 years (56), type 1 diabetes regarding relational victimization (57), epilepsy (in the subgroup of victims only) (23), and stigma related to acquired immune deficiency syndrome among children in southern Africa (58). In other cases, the association between chronic diseases and peer victimization was not found to be significant. Children with asthma were not more likely to be victimized on the basis of either self-report assessment (59) or adult proxy (parent or guardian) report (56), nor were girls with eczema (56).

Lastly, children with type 1 diabetes did not report higher rates of overt victimization (57).

Generic approach. Studies assessing children with chronic conditions (20, 21, 60) identified these children to be at increased risk of being bullied compared with their healthy peers according to parents (20) and children themselves (21, 60). Thus, children with chronic conditions older than age 16 years reported being victimized with greater frequency than the control group (60); another study (21) found that this risk was higher for children who reported that their condition restricted their participation at school compared with those who did not report such a restriction. Regarding children with special health care needs (defined by authors as those who were prescribed medication; received medical or mental health care or educational services; were limited in doing things; needed physical, occupational, or speech therapy; and had an emotional, developmental, or behavioral problem for which treatment or counseling is needed) (27), a significant but weaker risk of peer victimization was estimated.

Underweight, overweight, and obesity. Nine publications (22, 24, 61–67) selected for inclusion in the present review aimed to examine the relation between weight status and peer victimization in mainstream schools. All studies but 2 were conducted in North America, with the other 2 conducted in the United Kingdom (61) and in China (63). Overall, children who were overweight were more likely to be victimized by peers (24, 61, 63, 65–67). Verbal victimization appeared the most frequent form of peer victimization associated with overweight and obesity (61, 63, 67). However, studies regarding differences in the association with peer victimization among overweight children and obese children were less consistent. Some findings showed a higher risk of peer victimization among overweight children compared with those who were obese (63, 67); others reported the contrary (65, 67). In 1 study (67), it was shown that underweight boys were more likely to be physical victims, whereas underweight girls were more likely to be relational victims.

Intervention studies

One intervention study (68) that described the impact of a program on peer victimization at school among children with chronic conditions was found. In addition, 7 additional studies (69–75) that aimed to improve attitudes among children toward their disabled peers at school were further considered.

The Peer EXPRESS (Experiences to Promote Recreation, Exposure, and Social Skills) US program (68) was designed to bring peers with (severe developmental delays or disabilities, autism, mental retardation, cerebral palsy, Down syndrome, ADHD, severe allergies, learning difficulties, emotional/behavioral diagnoses, hearing or visual impairment, speech or language disorders) and without disabilities together for shared activities in the school and community setting. Participants spent between 24 and 27 weeks in weekly (at least) shared activities during the school day. Both preintervention and postintervention measures showed significantly higher rates of peer victimization among those with disabilities compared with those without disabilities, but a significant reduction in the number of children with disabilities reporting

peer victimization was shown after an average of 25 weeks of program involvement.

The influence of direct contact between students with and without disabilities on attitudes of these latter students was specifically explored in 3 studies (69, 73, 75). Findings from 1 study (75) revealed no significant improvement over the year in classmates' attitudes toward disability when students with special needs (autism, hearing and physical impairment) were in their classroom. Among those who reported a change in their attitudes in the past year, 47% attributed the change to the influence of TV programs, 28% to educational programs in school, and 24% to newspapers/magazines, and 23% considered that the source of influence was contact at school with students with disabilities. In another program (73), children were matched to a specific disabled child they met at least weekly during a 3-month period to share school activities (classroom games or gym activities). At the end of the program, 67% of children showed an improvement in their attitudes compared with 37% of controls ($P = 0.001$). An additional finding illustrated that children taking part in the program knew a significantly greater number of children with disabilities in the school after the intervention.

An improvement in attitudes was also found in another study (69), in which students with moderate to severe intellectual disabilities and volunteer peers from high schools met 2 or 3 times a week over one semester to plan and create a community garden together on campus. Subsequently, other nonvolunteer peers were asked to assist the students with moderate-to-severe intellectual disabilities with 2 days of Special Olympics events; no change in attitudes was reported in this second group.

In 5 studies (70, 71, 73–75), an educational program was proposed to improve attitudes among children toward disability. The Kids-on-the-Block program was conducted for 10 weeks in Canadian schools (73) and consisted of 4 puppet shows about disability (cerebral palsy, mental retardation, blindness, and deafness), followed by a participative session discussing the issues targeted during the puppet shows. With an improvement in attitudes toward disabled children observed among 38% of children attending the Kids-on-the-Block program compared with 37% of those from the control group, no significant effect was found. In a study carried out in France (70), teachers and other educational members of the school were invited to watch a film on inclusive education, to debate with members of the research team, and then to give a presentation on disability and inclusion to children. An improvement in attitudes was shown among children who took part in the presentation and the discussion and those who did not, with no significant difference between the groups.

In the 2 following studies, interventions were based on a video presentation providing specific information on the disability studied. The first (74) examined the impact of information about autism on children's rating of attitudes and behavioral intentions toward a peer presented with or without autistic behaviors. Neither children's attitudes nor their behavioral intentions were influenced among those (grades 3 and 6) who received the information on autism. The second video (71) included an explanation of Tourette syndrome, and an overview of tics was presented to children aged 7–15 years. Significant increases in knowledge about Tourette syndrome,

as well as in positive attitudes and behavioral intentions toward children with disabilities, were shown in the experimental group compared with the control group.

In the last study (72), the effectiveness of a 4-component training program (10 weekly 1-hour mental health educational programs, a school mental health promotion day, talks and exhibitions on mental health, and direct contact with psychiatric patients in mental hospitals) on voluntary students' attitudes toward mental illness was not demonstrated. However, students who attended the program were able to perceive mental illness as less shameful than they did before taking part in the training program.

DISCUSSION

In this systematic review, we identified 59 studies that examined peer victimization among children and adolescents with various types of chronic conditions. A majority of the studies were published after 2000, and most were conducted in Western countries. A higher level of peer victimization for children with chronic conditions was shown for each type of condition explored in this review, with only a small number of studies finding no difference in peer victimization between students with and without chronic conditions. Differences in the frequency and kind of peer victimization were not investigated because of the variety of assessment methods, which did not ensure reliable comparisons. Additionally, the lack of information about school type did not enable us to meet our third objective (i.e., to explore a possible difference in this risk of peer victimization among children with chronic conditions according to type of school setting). Despite a substantial number of studies having shown a significant association between chronic conditions and peer victimization, interventions aiming to reduce bullying of these children were rarely evaluated.

Regarding type of condition, a significant association with peer victimization was found more often among children with psychiatric diagnoses or learning disabilities than among those with motor impairments or chronic diseases. There was a relative lack of data regarding peer victimization among children with intellectual disabilities. The presence in the school of a special class for children with cognitive impairments has previously been described as being associated with more negative attitudes from peers (11). Conversely, some authors have reported that children with cerebral palsy and a lower IQ were not at higher risk of having poor quality of life in terms of social acceptance and bullying (52). Additionally, children with language disorders seem to be at an increased risk of peer victimization compared with those with other non-language-based learning difficulties (17, 40, 48).

Considering that peer victimization is related to the interaction between individual characteristics and the environmental context of the child, 2 different hypotheses are commonly proposed to explain why children and adolescents with a chronic condition are victimized more often than others without such health challenges. First, some authors have suggested external causes of peer victimization, arguing that students with chronic conditions may be more likely to be victims of bullying because of a difference in their appearance or in

behaviors (i.e., speech impairment, motor impairment, learning difficulties, or overweight) (3). In the papers reviewed, authors hypothesized that children with a deviation in their physical appearance may be stigmatized and misunderstood by peers and may therefore be picked on by peers and victimized. Thus, children who wore glasses or eye patches (55), had a chronic-disease-associated stigma (56, 58), or were overweight (22, 24, 61–67) were more likely to be victims of bullying. However, children with physical and visible disabilities (53) or with a developmental coordination disorder (54) were not found to be more at risk of peer victimization.

Second, it was also stated that psychosocial adjustment may moderate the relation between chronic conditions and victimization. Because of concerns that they may be rejected by peers, these children may decide to stay in the shade of the group; loneliness and fear of rejection or social exclusion may lead them to feel like victims. Nadeau et al. (76) suggested that parents of extremely preterm children remained more protective and that these children have more difficulty learning social behaviors. However, a study (65) carried out among obese children found a significant association between obesity and peer victimization, even after considering the child's social skills. Besides, it was suggested that depressive symptoms, social anxiety, and loneliness may mediate the relation between severe chronic illnesses and peer victimization (57). It was also demonstrated that victims of bullying were at a higher risk of further developing psychosomatic and psychosocial problems (33, 77). When taking into consideration all of the evidence that shows the association between chronic conditions and peer victimization, it is important that intervention strategies addressing this issue be prioritized.

Only one study was identified that evaluated the effectiveness of a program on bullying behaviors. Although prevention and antibullying programs have been implemented for many years, especially in Scandinavian and Anglo-Saxon countries, there is a lack of information on their impact on levels of peer victimization of children with chronic conditions. Characteristics of effective school-based interventions evaluated in the general population have been described by Vreeman and Carroll (78). In their review, different categories of interventions were identified, including curriculum interventions (e.g., videotapes, lectures, and written curriculum), whole-school interventions using a multidisciplinary approach, and targeted social and behavioral skills groups. Whole-school interventions, implicating different components of the children's environment such as family, peer group, classroom, teachers, and administration, have more often shown a reduction in victimization than the others implemented at a classroom level. In addition to the nature of the intervention, differences in implementing the same program across settings may alter the effectiveness (78). Farrington and Ttofi (13) stated that program elements found to be associated with a decrease in peer victimization were parent training/meeting (suggesting the importance of sensitizing parents about this issue), disciplinary methods (or firm sanctions), and the intensity and duration of the program for children and teachers.

These programs aimed to improve youth's beliefs and knowledge about chronic conditions to improve their attitudes and behaviors. Review of attitudinal intervention studies should help reveal additional elements to promote more

positive attitudes of students toward their peers with disabilities.

Direct contact with children with disabilities may lead to favorable changes in attitudes when the meeting is structured (i.e., participation in an activity, learning project) (69, 73), when it is repeated over time (69, 73), and when children with and without disabilities are involved at the same level (69). Another study stated that increasing peer knowledge about disability should create more positive attitudes and thus positively influence behaviors (71). Similarly, other studies have proposed educational programs consisting of video presentation (71, 74), puppet shows (73), teacher training and debate with children (70), and a combination of different programs (72). The effectiveness of most of these programs was not demonstrated. Given the inconsistent findings regarding both studies based on a video presentation (71, 74), the type of the condition considered may be a determinant in the success of a program, with attitudes regarding psychiatric diagnoses more difficult to change than those for other conditions. The difficulty of such a challenge was illustrated by Godeau et al. (70) and further commented on by Rosenbaum (79), who found a mild effect on attitude changes after an educational intervention, while they showed that information on disability was associated with more positive attitudes (11).

This systematic review has several limitations. First, only studies published in English were included. Some studies may have been missed because articles were identified through a keyword search, and the keywords used related to chronic conditions did not include any specific diagnosis. Although we did not set a geographic inclusion criterion apart from 2, all studies considered were conducted in Europe and North America, excluding any generalization to other countries such as low-income countries. In 6 of the studies, there was no comparison group, but prevalence rates of peer victimization among children with chronic conditions were shown. Because of the diversity of the studies' methods, especially regarding peer victimization assessment, we could not conduct a meta-analysis to estimate an effect size of different types of chronic conditions on the risk of peer victimization.

Additionally, results reported by the studies reviewed are susceptible to being influenced by methodological issues such as small sample size or selection sample biases (e.g., sample source). To our knowledge, ours is the only systematic review that provides a complete overview of this topic. However, we discovered a nonsystematic review on bullying among youth with "exceptionalities" (without any other specification but including some disabilities) (80). This review also indicated the lack of intervention studies especially designed to reduce peer victimization among children with chronic conditions. However, some initiatives (unpublished) were identified through an Internet search, showing the existence of such programs. Although intervention studies aimed at peer victimization are lacking, the extension of our review to intervention studies on attitudes toward chronic conditions enhanced knowledge on the topic for a better understanding of negative behaviors.

In conclusion, the findings of our review suggest that, because of evidence of higher levels of peer victimization among students with chronic conditions, there is a growing need to implement specific interventions targeted at improving

shared knowledge, acceptance, and positive interactions between children with chronic conditions and their peers to lower the level of victimization toward disabled children and those with chronic conditions. Future research should focus on evaluating the efficacy of such programs. Whole antibullying programs should be developed, including a specific component on chronic conditions such as structured contacts with children with chronic conditions, and should be evaluated. By further developing a body of literature on that topic, it will be possible to improve the effect of such programs and, moreover, the quality of inclusion and overall quality of life of children with chronic conditions. By doing so, countries will not only be following the international principles regarding inclusive education (United Nations Education, Scientific and Cultural Organization (UNESCO) (81), United Nation (82)) but will also guarantee the quality of the education of all children, which would represent a first step toward their full inclusion into our societies.

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Author affiliations: Research Unit on Perinatal Epidemiology and Childhood Disabilities, Adolescent Health, INSERM, UMR U1027, Toulouse, France (Mariane Sentenac, Catherine Arnaud, Emmanuelle Godeau); Research Unit on Perinatal Epidemiology and Childhood Disabilities, Adolescent Health, Paul Sabatier University, UMR U1027, Toulouse, France (Mariane Sentenac, Catherine Arnaud, Emmanuelle Godeau); Health Promotion Research Centre, School of Health Sciences, National University of Ireland, Galway, Ireland (Aoife Gavin, Michal Molcho, Saoirse Nic Gabhainn); and Service Médical du Rectorat, Toulouse, France (Emmanuelle Godeau).

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