

How can bullying affect body image? A systematic review to understand the relationship between bullying, body image and eating disorders

¿Cómo afecta el acoso escolar a la imagen corporal? Una revisión sistemática para comprender la relación entre el bullying, la imagen corporal y los trastornos de conducta alimenticia

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Abstract. Nowadays bullying has become one of the biggest challenges faced by teachers all around the world due to the consequences it has on the victims in the long and short term. The most common consequences expressed by bullying victims are anxiety, depression, socialization problems, lower self-esteem, and a negative perception of their body image. The negative perception of body image has a very strong relationship with the development of eating disorders. Due to this fact, it is crucial to study the relationship that bullying and eating disorders might have. By using PRISMA model (Page et al., 2021) a systematic review to prove this relationship has been developed. After searching and analyzing different articles, the included sample and the instruments used, it was possible to conclude that being a victim of bullying is related with developing an eating disorder. For this reason, it is crucial to create prevention programs at schools that help teachers, parents and the different professionals to face both problems as it is essential to keep students safe inside and outside the classroom.

Keywords: Bullying; eating disorders; body image; systematic review; physical education; prevention.

Resumen. Hoy en día el acoso escolar se ha convertido en uno de los mayores retos a los que se enfrentan los profesores de todo el mundo debido a las consecuencias que tiene sobre las víctimas a corto y largo plazo. Las consecuencias más comunes expresadas por las víctimas de *bullying* son ansiedad, depresión, problemas de socialización, baja autoestima y una percepción negativa de su imagen corporal. La perfección negativa de la imagen corporal tiene una relación muy fuerte con el desarrollo de trastornos de conducta alimenticia (TCA). Debido a este hecho, es crucial estudiar la relación que pueden tener el acoso y los trastornos alimentarios. Utilizando el modelo PRISMA (Page et al., 2021) se ha desarrollado una revisión sistemática para probar esta relación. Tras la búsqueda y análisis de diferentes artículos, la muestra incluida y los instrumentos utilizados, se pudo concluir que ser víctima de *bullying* está relacionado con desarrollar un trastorno de conducta alimenticia. Por esta razón, es esencial crear programas de prevención en las escuelas que ayuden a profesores, padres y a los diferentes profesionales a enfrentarse a ambos problemas para mantener a los estudiantes seguros dentro y fuera de las aulas.

Palabras clave: acoso escolar; trastornos de conducta alimenticia; imagen corporal; revisión sistemática; educación física; prevención.

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Introduction and theoretical framework

Bullying has been for decades, and even nowadays, one of the biggest problems that teachers must face at schools inside and outside the classrooms. It does not matter if the stage students are early childhood education, primary education, high school and even at higher educational levels; bullying can occur at any stage (Cañas-Pardo, 2017). Before starting with the development of the systematic review, defining bullying is such an important requisite. Volk et al., (2014) highlighted different definitions of bullying but the most outstanding definition was the one made by Olweus (1993) *'It is a negative action when someone intentionally inflicts injury or discomfort upon another, basically what is implied in the definition of aggressive behavior. Negative actions can be carried out by physical contact, by words, or in other ways, such as making faces or mean gestures, and intentional exclusion from a group. In order to use the term bullying, there should also be an imbalance in strength (an asymmetric power relationship): the student who is exposed to the negative actions has difficulty defending him-/herself and is somewhat helpless against the student or students who harass. In my definition, the phenomenon of bullying is thus characterized by the following criteria: it is aggressive behavior or intentional 'harm doing' (Olweus, 1993 as cited in Volk et al., 2014). This definition served as the base for further research developed during the last decades. Bullying is considered a*

worldwide issue because it affects 30% of students between the ages of 10 and 14 years old (Lee and Vaillancourt, 2019). This figure increases even more in research developed by Kennedy (2020) which states that, at least 35% of students worldwide suffer from bullying at least once per week. Bullying can be manifested in many ways inside the classroom: verbal, physical and even relational harassment. The last type is manifested through social isolation (Cañas-Pardo, 2017). Unfortunately, the appearance of *cyberbullying* has perpetuated bullying outside the classrooms due to the continuous use of mobile devices and social networks; so, it is a real challenge to stop it even when victims are out of school (Evangelio et al., 2022).

Bullying does not follow any type of pattern: *any student is susceptible of suffering it and becoming a victim* (Cañas-Pardo, 2017). For this reason, bullying is influenced by a wide range of variables such as: the school, the classmates, having any type of diversity, special needs, family factors, socioeconomic factors, social abilities, etc. so it is very difficult to label who can suffer it (Mischel and Anastasia, 2020).

The most common labels for bullying at schools are *direct* and *indirect bullying*. The actual bullying perspective also shows a clear difference between the types of bullying suffered by gender. Kennedy (2020) affirmed a distinction in the type of bullying suffered by boys and girls. While

what is known as '*traditional bullying*' has remained at similar figures for boys, it has increased for girls -25% for girls versus 16% for boys- (Kennedy, 2020). In addition, there is a difference in relation to its typology. While boys suffer '*direct bullying*', which consists of physical aggression, girls are victims of what is known as '*indirect bullying*' centered on insults, rumors, and social isolation (Kennedy, 2020).

The perception of victims and bullies inside the classroom is an important factor, especially for relational bullying. It should be noted that students who perpetrate this harassment are perceived by their peers as powerful and often popular and attractive among their peers (Lee and Vailancourt, 2019). Authors such as Pouwels et al., (2018) explained how popularity is a determinant factor related to bullying. This is due to the importance that students give to being a relevant person inside the classroom. This factor is not as relevant in primary education but, unfortunately, it is in high school because violence and aggressions allow most of the time an increase in popularity for the bullies during their adolescence (Pouwels et al., 2018). Sometimes the detection of bullying can be done through the appearance of different symptoms in students. As explained by Serrano-Parra and Jiménez (2019), victims of bullying tend to somaticize their problems through various symptoms shown both inside and outside the classroom. These symptoms include general malaise, feelings of dizziness, headache or abdominal pain, and lack of appetite (Fuentes-Chacón et al., 2019).

Şen and Doğan (2021) also add concentration problems, sleeping problems and eating problems to all the symptoms mentioned above. Regarding the psychological effects derived from bullying it is possible to highlight the following: loneliness, social anxiety, lower self-esteem, post-traumatic stress syndrome and suicidal thoughts (Şen and Doğan, 2021). De Lara (2019) confirmed in different studies that long-term consequences derived from bullying are related to health and psychological problems and to relationship problems. These consequences are not only short-term but long-term (Longobardi et al., 2022). In her research, de Lara (2019) affirmed that some aspects of the adulthood of the people she worked with were deeply affected by bullying: anxiety, depression, a low self-esteem, the development of eating disorders (ED) and even suicidal thoughts were related to what suffered at a young age. Some of the victims confirmed that they often had flashbacks to the traumatic situations they had experienced and, in some cases, went so far as to self-medicate to endure the pain caused by the continuous harassment they had received from their bullies.

Not only the use of medication; drug use, large food intake and self-harm are part of the long-term consequences of bullying (de Lara, 2019). After evaluation of her study, she concluded that 22% of adults suffered from anxiety derived from bullying and 37% developed it since childhood. Anorexia and bulimia were pointed out by de Lara (2019) as consequences.

Physical appearance is one of the central axes of the bullying suffered by victims within the classroom (Puhl and Latner et al., 2013, as cited by De Lara, 2019). The victims explained that teasing, insults and even aggressions were provoked by different characteristics of their body image with which they felt dissatisfied.

For these reasons, it is crucial to understand the value of body image. Mendo-Lázaro, Polo-del-Río, Amado-Alonso, Iglesias-Gallego and León-del-Barco (2017) explained in their research how important body image is and how it can affect body perception leading into satisfaction or dissatisfaction from an early age. Practicing sports is stated as a 'key protection factor' because its practice can lead to reinforce not only their physical appearance but their self-esteem and the perception of their body image (Mendo-Lázaro et al., 2017). Smolak, L. (2004) established the bases of body image and how it is affected by external factors such as their perception, trends and sometimes even people's opinion can reflect on how they perceive their image. That is why it is crucial to work to have a positive perception of their body image and using exercise and physical activity is crucial.

Valverde-Sánchez et al., (2023) emphasizes on the emerging problem that is going to be studied deeply in this research: how a negative body image can lead into an eating disorder at an early age because of the influence of the 'standards' created in social networks that, most times are impossible to reach and lead into frustration and sadness to students. As explained by Lagos-Hernández et al., (2021) body image plays a clear role in the practice of physical activity. The research confirmed that there is an existing relationship between the practice of physical activity and a more positive body image perception. This relationship is shown especially at physical education lessons, when the increase of physical activity affects positively the body image of students, the better they perform at physical education lessons (Lagos-Hernández et al., 2021). All the authors mentioned below, especially Valverde-Sánchez et al., (2023) and Lagos-Hernández et al., (2021), refer to the importance of creating a safe space at schools and particularly, in the physical education lessons to develop a positive body image where diversity is shown as well as the importance of practicing physical activity and maintaining a healthy lifestyle; explaining what eating disorders are and how we can prevent or detect some of them. Martín-Sánchez, Caracuel-Cáliz, Fernández, Torres-Campos, and Cepero-González (2023) valued positively in their research the importance of physical education, physical activity and exercise in general in body image so, it is important to value physical activity as a key factor to prevent bullying due to the positive side effects it has on self-esteem and can lead to increase social interaction.

Ressett and Caino (2020) explained that, in some bullying cases, victims start to self-harm themselves and have suicidal thoughts with the aim of finishing with the bullying they are suffering. Mykelstad and Straiton (2021) explained that some of the self-harm techniques used were cuts, wounds, bruises, bumps, pinches and even burns on areas

of the body that cause them insecurities or are the focus of ridicule. These self-injuries allow victims to 'set free' all the pain and anxiety derived from bullying (Mykelstad and Straiton, 2021). Suicide is the leading cause of unnatural death in Spain (Merino-Mirones, 2022). In 2020, there were 14 suicides among children under 15 years of age, data that doubled the figure for 2019. Bullying is a risk factor since the risk of suicide increases by 2.10% in children who are victims of bullying (Salado-Noriega, 2021). For this reason and considering the irreversible consequences of bullying explained before, it is necessary to create prevention mechanisms that allow students to protect and defend themselves. In addition, the role of teachers and classmates will be essential since they should be the key to prevention and detection of symptoms or behaviors derived from bullying.

The relationship between bullying and the development of eating disorders

After the development of the introduction that includes a theoretical framework, it is possible to conclude that one of the most repeated consequences of bullying are the development of anxiety disorders, depression, and ED (Fuentes-Chacón, 2019). There is also an important consequence that must be highlighted: Body Dysmorphic Disorder (BDD); this disorder can be developed due to the victimization suffered by boys and girls when they suffer insults, humiliation, name-calling, jokes about their physical appearance and physical aggressions for the same reason. BDD influences the body image of the victims and causes an excessive preoccupation with their body image, defects and even physical deformities that are natural and sometimes non-existent (Longobardi et al. 2022). Idini et al. (2021) explained the relationship between having an eating disorder (ED) and suffering bullying. These types of disorders appear more frequently and at younger ages; they are psychiatric illnesses ranging from anorexia nervosa to binge eating disorder (American Psychiatric Association, 2014, as cited by Idini et al., 2021).

In the creation of body image there are different factors involved such as desires, needs, emotions, cognitions and even relationships with other people (Idini et al., 2021). For this reason, bullying can directly influence the victims' body image, an image that is distorted by insults, teasing and physical aggression. Authors such as Quintero-Jurado et al. (2022) state that some of the indicators of these disorders are the control of food intake, significant weight loss in less than three months and the appearance of anxiety. As the different authors explain, these are symptoms that can be detected quickly in the classroom, but which require professional intervention to intervene as soon as possible and avoid even worse consequences for the victims. As Idini et al. (2021) explained, body image distortion in the primary education stage is directly related to bullying. To carry out this statement, different developed studies have found a relationship between bullying and eating disorders.

Lie et al. (2021) developed this idea and showed the relationship between having suffered bullying and the development of one of the behavioral disorders previously explained; this type of disorder was sometimes aggravated by the development of anxiety disorders that sometimes acted as a trigger for these disorders (Lie et al., 2021).

The reason of the research: a systematic review to check the relationship between bullying and eating disorders

Objectives and justification of the systematic review

The main objectives are to know and research the existing relationship between being a victim of bullying and developing an ED by means of a systematic review. The specific objectives of this review are the following:

- To verify the relationship between being a victim of bullying and developing an eating disorder.
- To know the different consequences derived from the disorders associated with bullying.
- To know the available instruments to measure or check the existence of eating disorders that can be used by teachers at schools or high schools.
- To create a prevention program based on the results of this systematic review.

Method

The following systematic review has been developed by using PRISMA model (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) that allow researchers to achieve a transparent review, explaining why this review is being conducted, what the different parties are doing, what researchers are doing in their different studies and which results they obtained after the research (Page et al., 2021). The PRISMA method makes it possible to identify the systematic review by means of a series of items that identify it from any other type of literature review. Some of the items that can be found in this type of review are the inclusion and exclusion criteria of different articles; databases; search strategy and selection process, among others (Page et al., 2021).

As explained in the last article by Page et al. (2021) on the basis and instructions for conducting this type of review, it is necessary to register this type of review in databases such as PROSPERO and DARE. In addition, before starting this review, a search was conducted in both databases on systematic reviews on bullying and eating disorders; no content related to this review and the population included in it was found. After this research, it is possible to demonstrate the need for this review. In relation to the population included in this systematic review, we will include models, studies and articles that encompass a population of boys and girls aged between 6 and 15 years, as previously explained, no studies have been found including this population range. It includes all students in Primary Education and Compulsory Secondary Education. For this reason, the age range has been selected and it allows us to reach one of the crucial

stages in the development of students: their entry into puberty and subsequent development. All the Primary Education stage is selected because prevention must start in schools as soon as possible.

Procedure of the systematic review

The selected databases for developing this systematic review are *Scopus* and *Web of Science*. These databases have been chosen for their recognized academic rigor, the quality of their articles and the variety of access to different databases they contain. In addition, the ease and accessibility of their online platforms allow a fast and effective search for anyone who needs to use them for any type of research related to the social sciences. Once the databases for the review have been selected, a series of inclusion and exclusion criteria have been established for the articles to be included in the review. To carry out the review as accurately as possible, it is necessary that the established criteria be limited to the needs of the search. To this end, it is necessary to limit the search to the following criteria:

a) The target population for the studies belongs to Primary or Secondary Education, i.e., children between 6 and 15 years of age. As previously explained in the justification, this age range will allow us to have a global vision of the student body of both educational stages.

b) The selected texts are scientific articles, publications in books or scientific journals. With the aim of performing a rigorous and exact searching process, only articles or book chapters from scientific journals with academic rigor will be selected. Editorials or opinion pieces will not be accepted. Systematic reviews, qualitative studies and quantitative studies will be selected.

c) The articles explain the relationship between bullying and ED. Only articles containing both contents will be selected, since the purpose of this review is to study the relationship between these concepts, and it is necessary to understand them together.

d) The articles are published between January 2017 and May 2022 to ensure that the review contains information that is not obsolete or outdated. This temporal criterion has been selected to be able to find articles that allow us to have a global view of the problem from a current temporalization.

e) Articles that do not belong to Open Access Source journals.

f) Any paper published in a language other than English, Spanish or Portuguese will be immediately excluded from this review.

All texts that did not comply with these guidelines were excluded from the review. Once the inclusion and exclusion criteria had been established, the search for articles for the systematic review began.

Risk of bias

To avoid the risk of bias in this review, different professionals in physical education, psychology and pedagogy have evaluated the different articles included in the review to

verify that there was no type of bias and thus ensure the objectivity of the study.

Searching criteria

The search criteria introduced in both databases were the following: *TITLE-ABS-KEY* (*(bullying or {acosos escolar}) and ({trastornos de la conducta alimentaria} or {trastornos alimenticios} or {eating disorders})*). After introducing these descriptors 283 results were found; after a first screening of this search, duplicated articles and corrections of them were discarded (n= 3) so the research was reduced to 280 articles. Most of the articles and papers met criteria a, b, d and e. The following list shows the number of articles discarded based on each criterion:

- The target population does not belong to the 6 to 15 years age range (n = 28).
- Scientific articles and publications that are not published in books or scientific journals (n= 1)
- The article does not contain information on bullying and its relationship with eating disorders (n= 61)
- Articles not published between January 2017 and May 2022 (n= 133).
- Articles not belonging to Open Access Source journals (n= 5).
- Unpublished articles in English, Spanish and Portuguese (n= 2).

Figure 1 shows an explanatory flow diagram of how this systematic review was performed following the PRISMA model (Page et al., 2021). This diagram shows the review process explained in a visual and simplified way that allows the reader to grasp the information quickly.

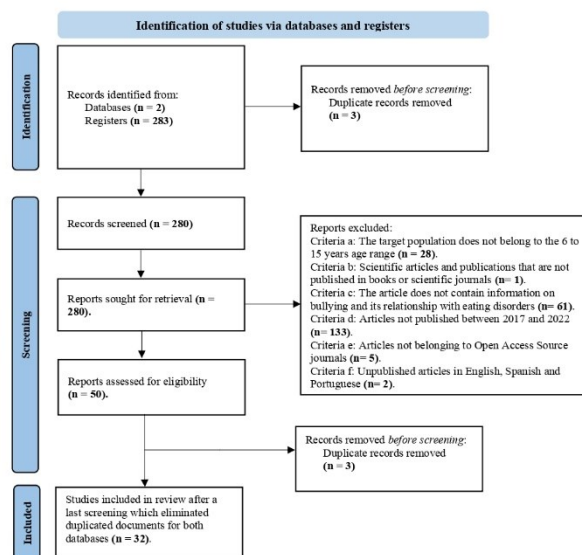


Figure 1. Diagram as a summary of the systematic review

Results of the review

After the completion of this comprehensive systematic review, it is possible to observe how the different studies selected show a close relationship between bullying and

the development of ED. There are many different types of ED such as anorexia, bulimia, binge eating disorder and even the different purgative behaviors such as the consumption of laxatives, diet products or the consumption of drugs at very early ages. The previously mentioned ED can be detected by teachers inside the classrooms and by parents, tutors, friends and relatives outside of them due to the relevant symptoms manifested while suffering the harassment. For this reason, awareness and the creation of safe environments are essential elements not only for prevention, but also intervention programs to be more effective when implemented.

It is also plausible to observe how included the studies and their results are of a very varied character. With the aim of creating a visual summary to compile the most important areas of each article, a table of contents has been prepared that includes the name of the authors, the place of origin of the article, the objective, the total sample of participants, the study carried out and the results (ANNEX 1).

In the case of the systematic reviews included in this research, the table shows the objectives, and the sample refers to the included articles. After evaluating the results of this review, it is necessary to express from three different spheres such as location, instruments used, and population sample studied in them.

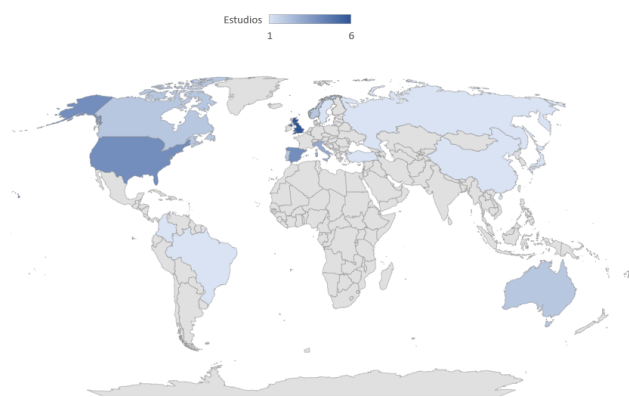


Figure 2. Map with the location of the studies found at the systematic review

Systematic review results according to their location: a problem of global dimensions

For constructing this review, a very exhaustive search has been carried out, resulting in a wide range of results from all over the world. To illustrate these results, a map has been created using the Excel tool that allows us to indicate where the different studies we have selected have been carried out. As previously explained, thanks to the inclusion and exclusion criteria in previous sections, it has been possible to carry out an exhaustive systematic review focused on the main topic of analysis by reading and searching the different articles. Finally, this review included 32 studies distributed over different continents. In the distribution of research that directly relate school bullying to ED, the United Kingdom stands out as the country with the highest number of studies on this subject (6); the United States follows with 4 studies.

Regarding the European Union context, Spain leads the number of studies with 4, followed by Italy and Portugal, 3 and 2 studies respectively. It is striking that Norway and Sweden have only one study on bullying and eating disorders together, since, in addition to Finland, the Scandinavian countries have a great relevance in the educational field due to their different prevention programs against bullying. One of the most remarkable methods is the Kiva Method, created and developed in Finland with huge commitment levels in schools all around the country (Salmivalli et al., 2011).

Through the elaboration and interpretation of this map it is possible to conclude how bullying is a problem of great dimensions that affects students all over the world, no matter their country, race or ethnicity. Unluckily, not all countries have the same degree of awareness in these topics. For this reason, prevention and awareness are essential elements to tackle this problem from the root.

Results of the systematic review in terms of its instruments: new paths in research

– Annex 1 of this study shows a table which summarizes the results obtained in the systematic review. One of its sections shows the instruments used in prevention programs. In this section not all of them will be developed deeply because, as one of the objectives is to create a prevention program for schools, the instruments explained can be used for teachers to detect both bullying and ED in their groups. For the reasons stated above, these are the instruments found through the systematic review that can be easily used by teachers to detect the first symptoms or behaviors related to ED. *The Body Image Victimization Experiences Scale* (BIVES; Duarte and Pinto-Gouveia, 2016), this questionnaire was used by Chen et al., 2020: it contains 12 different items that measure by a Likert Scale the different experiences that relate bullying with ED in adolescents.

– *Eating Disorder Examination Questionnaire* (EDE-Q; Fairburn and Beglin, 1994), used by Duarte et al., 2017: this questionnaire has different adaptations for parents, teachers and professionals. In addition, two adaptations focused on youth and adolescents *Eating Disorder Examination for Adolescents* (EDE-A) and *Youth Eating Disorder Examination Questionnaire* (YEDE-Q) have been created subsequently. This instrument, despite being old, is very useful for building the basis of a more current questionnaire since it consists of 28 questions that are evaluated from 0 to 6 on a Likert scale in correspondence to the last 28 days, being able to evaluate and even self-evaluate if there are symptoms typical of ED.

– *SCOFF* (*Sick/Control/One Stone/ Fat/ Food* (*Sick/Control/One stone/Fat/Food*) questionnaire (Morgan, Reid, and Lacey, 1999). SCOFF questionnaire shows a basic instrument which is practical as a theoretical base. It contains 5 easy questions for detecting the first symptoms of behaviors typical from people suffering from anorexia or bulimia.

– *Body-Esteem Scale for Adolescents and Adults*

(BESAA) developed by Mendelson et al., (2001) and used by Gattario et al., (2020). This questionnaire consists of 23 questions centered in body image and appearance evaluated by a 5 points Likert scale which are subdivided into three subscales: Appearance, Weight and Attribution.

- Eating Disorder Examination Questionnaire (EDE-Q; Fairburn and Beglin 1994) used in the research made by Duarte et al., (2017). This questionnaire measures the frequency of ED behaviors such as vomiting, food intake restrictions and excessive weight controlling.

- Eating Attitudes Test (EAT-40; Garner and Garfinkel, 1979) utilized by Marco and Tormo-Irun, 2018. This instrument might not be the most appropriate for teachers but, it is one of the best questionnaires to measure ED. The questionnaire contains 40 questions to measure not only the quantity of symptoms related to ED but even which one is the remanent one: anorexia, bulimia, etc. and make quick decisions between symptomatic and asymptomatic.

Although some of these instruments might be considered old or out of date, it is important to use them as reference elements for designing and creating an assessing instrument in the future to know whether students present some type of symptomatology typical of ED.

In relation to the instruments that allow assessing whether students are victims or not of bullying, these are the ones that can be easily applied by teachers that have been found in the systematic review:

- *The European Cyberbullying Intervention Project Questionnaire* (ECIPQ; Del Rey et al., 2015) instrument used by Marco and Tormo-Irun, 2018 to measure cyberbullying received by participants. This questionnaire is the most recent instrument and measures new concepts and features of what is considered cyberbullying.

- *Peers Relations Questionnaire* (PRQ; Rigby and Slee, 1993) used by Duarte and Pinto-Gouveia, (2017) provides a 12 items questionnaire divided in three subscales. These three subscales allow teachers to know the behavioral tendency of students related to bullying: their tendency to bully other peers, if they feel victimized by others and how pro-active they are with the rest of their classmates.

- *Forms of Self-Criticizing / Attacking and Self-Reassuring Scale—Adolescents Version* (FSCRS-A; Gilbert et al. 2004) used by Duarte and Pinto-Gouveia (2017) shows a questionnaire composed by 22 questions that measure the children self-esteem, how they react to criticism, their relationship with other peers and evidence that might be related to violent behaviors.

- *The revised Olweus bully/victim questionnaire* created by Olweus in 1996; translated by Menesini and Giannetti (1997) was used by Castellini et al., (2021) for developing their research. This questionnaire includes both perspective: the victim and the bully in 28 questions.

- Victim Scale (Rigby, 1999) used by Gattario et al., (2020) focuses on victimization by analyzing suicidal ideation and the relationship between the victim and the bully

while analyzing the relationship with the rest of the peers too to check the correlations and the importance of peers' support.

- Early Memories of Warmth and Safeness Scale (EMWSS; Richter et al. 2009) used in the research of Duarte and Pinto-Gouveia, (2017) consists of a 21 items questionnaire evaluated through a Likert scale (0 to 5). These 21 items are focused on how children feel regarding security, self-perception and warmth in their families; if they feel happy or unhappy when they are around their families and if they feel supported and protected by them.

Furthermore, the results shown by using these different instruments reveal the existing relationship between bullying and EDs because, most of the victims interviewed or measured through these instruments suffered EDs after being victims of bullying for years. It is also crucial to highlight that most of the bullying suffered by the victims was mostly focused on their body image.

Systematic review results based on their sample: increasingly early harassment

Regarding the population samples used in the studies included in this review, it is important to bear in mind that most of the studies focus on samples of adolescents between 11 and 19 years of age. These samples are of great value in this review because they allow us to confirm that pre-adolescence and adolescence are critical periods for the development of EDs and their corresponding symptoms. It is essential to know them in depth to be able to detect them in the classroom through the symptoms.

The fact that the population sample with the fewest studies related to ACTs and bullying includes children under 12 years old shows the need to study how bullying and ACTs affect children at such early ages. This population sample corresponds to Primary Education; a stage in which it is crucial to maintain healthy lifestyle habits for the physical, psychological, and social development of students and also to create the bases for respecting others and preventing violence at schools.

Discussion

The development of this systematic review has allowed to check the existing relationship between being a victim of bullying and developing an ED. This relationship is reinforced by the strong influence of body image because, as authors such as Ruiz-Lázaro et al., (2022) and Nolan et al., (2022) explained, the low self-esteem of bullying victims directly influence the development of an ED. After developing this research and checking the previous theoretical argumentation, it is possible to conclude that, although there are several bullying prevention programs such as the Kiva method (Garandea et al., 2021), it is necessary to adapt prevention programs to the Spanish educational context and to the peculiarities or special needs that students may have. Smolak (2004) claimed how body image is a really wide concept influenced by different areas such as self-esteem,

external perception and personal perception.

Another conclusion that was raised after the development of this systematic review is the importance of renovating the questionnaires used for measuring bullying at schools. Most of them have been used during decades but it is important to renew them by adding new questions and dimensions to make a complete and more accurate measurement of bullying and ED. This topic is highly related to understand the importance of not only using well-known instruments to develop new tools, but to make a critical use of them by understanding that, sometimes, these instruments might show clues of the need of making a renewal. When talking about renewing some instruments, it does not mean to change the whole content or functioning but to adapt to the new needs that society might need. In terms related to bullying or body image, it is crucial to add new sections that include cyberbullying, the use of social networks and how the content shown in social media might affect their body image, their way of training or even their relationship with food leading to ED.

Conclusions, limitations, and further research

It is impossible to ignore the different limitations of this study. The fact that there are no broader studies in this field and this range of population uniting the two problems: bullying and ED. For this reason, even though both topics are discussed separately, it is necessary to study them together to see the existing relationship and to merge them into new fields of study in order to create prevention programs, instruments or event to detect both issues together to facilitate certain diagnoses. Another limitation, not only of the study, but of this area is the lack of renewed measurement instruments. For developing further studies or proposals to research the relationship between ED and bullying, it might be important to update the instruments and questionnaires to adapt them to the current trends, needs and methodologies.

It is important to bear in mind how difficult it is to talk or to approach these topics not only to children but to their parents and teachers, especially for the victims, that might be triggering due to the trauma as authors such as Şen and Doğan (2021). However, professionals in the field of education and health must be aware of the importance of approaching both topics to avoid silence and to create a safe space for the victims to talk and explain their experience when they are ready to do so. Thanks to the conclusions explained above, the first objective of the review is confirmed: to know the relationship between bullying and the development of eating disorders. By confirming the relationship between bullying and ED, the detection of symptoms indicating that a student is a victim of bullying makes it possible to meet the second objective: to know the symptoms and consequences of disorders associated with bullying. The confirmation of the objectives allows us to open new horizons in further research, in this case, the design and

implementation of a program that allows us to prevent bullying from a perspective to raise awareness among students about EDs and their consequences both inside and outside the classroom. But the limitation that might appear from the objectives explained before, is that bullying and eating disorders are considered an uncomfortable topic to talk about. Especially at schools due to the negative connotations and consequences they have. But it is crucial to approach these topics and their consequences for schools, teachers, students and families so we can promote a real prevention for trying to eradicate one of the biggest problems faced at schools. That is why, prevention programs must be created and developed to ensure the security and well-being of the students as well as they are easy to develop and to implement by teachers providing them with results which musty to interpret for teachers, parents and professionals. It is important to remember that, as teachers, is not possible to make a clear diagnose but with easy tools and instruments ED and bullying can be detected in the classroom. And, after that, the teachers can carry out specific procedures to help not only students but also their families by creating safer spaces and providing the treatment or prevention measures indicated by health professionals.

For that reason, working for a positive body image is also crucial. The subject of Physical Education is a great ally to work body image with children at the same time they are practicing and having a good time together. As stated by Lagos-Hernández et al., (2021) the relationship between body image and sport practice has been confirmed and it is necessary to use this relationship in our favor increase the quantity of time they spend practicing and the quality of the contents taught.

For decades, victims of bullying have been silenced by their peers, teachers and in the worst cases by the school centers but thankfully this has changed enormously due to the knowledge and tools available to detect and to stop bullying. However, protecting children from violence and searching for their well-being is not something that can be done in a rush, it requires time, patience, comprehension and a lot of empathy to make classes a safer and friendly environment for all no matter their age, gender, ethnicity or any other condition that might them feel different.

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ANNEX 1

Results of the systematic review.

Study	Name of the study	Country	Objective	Sample	Data gathering instruments	Results
Albano et al., 2019	<i>Interpersonal difficulties in obesity: A systematic review and meta-analysis to inform a rejection sensitivity-based model.</i>	United Kingdom	To know the relationship between obesity and being a victim of bullying.	32 studies	Systematic review.	In the different articles analyzed, there is a correlation between being obese and being bullied, as well as greater harassment due to physical appearance.
Castellini et al., 2021	<i>Body weight trends in adolescents of Central Italy across 13 years: social, behavioral, and psychological correlates.</i>	Italy	To know the relationship between weight, bullying, family and socioeconomic factors in adolescents.	25.174 participants	A mixed questionnaire to measure age, weight, socioeconomic status and whether they suffered any type of violence.	An increase in the prevalence of both overweight and underweight was observed over time in students with economic problems and victims of violence.
Chen et al., 2020	<i>Body Image Victimization Experiences and Disordered Eating Behaviors among Chinese Female Adolescents: The Role of Body Dissatisfaction and Depression.</i>	China	To know the relationship between being a victim of BIV (Body Image Victimization), eating disorders and depression.	1.399 participants	The Body Image Victimization Experiences Scale (BIVES; Duarte and Pinto-Gouveia, 2016).	Results show an increase in eating disorders among participants suffering from IVB. There is also a relationship between depression and BIV.
Chimpén-López and Arriazu-Muñoz, 2021	<i>Narrative therapy for anorexia nervosa: using documents of resistance.</i>	Spain	To know different therapeutic strategies to treat anorexia.	Review.	In this therapy, qualitative questions are asked that allow patients to explain their healing process, relapses and even the origins of the disorder itself.	Thanks to the use of this narrative therapy, it would be possible to collect information from other patients and create a possible database to work on the prevention of anorexia.
Chisuwa-Hayami and Haruki 2017	<i>Associations of body-related teasing with weight status, body image, and dieting behavior among Japanese adolescents</i>	Japan	To know the relationship between bullying, weight and the development of ED.	1.172 participants	Questionnaire of a mixed nature expressed through an anonymous survey that included weight and height to classify students into different categories and thus study the relationship between bullying and weight. In addition, it includes questions about the bullying received, about the bullies, about their self-image and behaviors that may show ED.	16.4% of the boys acknowledged being bullied because of their body compared to 32.5% of the girls. In addition, participants who considered themselves to be fat had a higher risk of being bullied. In addition, bullied participants were at greater risk of eating disorders to lose weight and change their physical appearance.
D'Anna et al., 2021	<i>Risk of eating disorders in a representative sample of Italian adolescents: prevalence and association with self-reported interpersonal factors.</i>	Italy	To be aware of the risk of ED due to family problems, abuse or bullying.	6.551 participants	Quantitative questionnaire that allows to know the relationship between eating disorders and the context of the students.	It was found in 31.0% of the participants (boys: 19.4%; girls: 44.6%), with a higher prevalence among higher BMI categories. Poor family relationships, bullying, having first sexual intercourse before age 14 years and age 14 years, and experiencing high distress were associated with this risk condition.

Day et al., 2022	<i>The Impact of Teasing and Bullying Victimization on Disordered Eating and Body Image Disturbance Among Adolescents: A Systematic Review.</i>	Australia	To know the relationship between bullying, substance abuse, depression and the development of ED.	57 studies	There are no instruments in this literature review.	The results of different studies reveal a relationship between being a victim of bullying and the development of depression or eating disorders. In addition, a higher consumption of substances is revealed in victims than in people who have not been bullied.
Day et al., 2021	<i>Associations of weight- or shape-related bullying with diverse disordered eating behaviors in adolescents.</i>	Australia	To examine the relationship between WSB and disordered eating behaviors in Australian adolescents, and whether this relationship was moderated by body image attitudes.	573 participants	Mixed survey on body image perception and eating disorders.	Results indicated that the frequency of WSB was positively associated with dietary purging, and muscle-oriented behavior and excessive exercise (MOB).
Duarte and Pinto-Gouveia, 2017.	<i>Can Self-Reassurance Buffer against the Impact of Bullying? Effects on Body Shame and Disordered Eating in Adolescence.</i>	Portugal	To examine using a trajectory model the association between emotional memories of warmth and safety and the impact of bullying.	609 participants	<i>Early Memories of Warmth and Safeness Scale</i> (EMWSS; Richter et al. 2009). <i>Peers Relations Questionnaire</i> (PRQ; Rigby and Slee 1993). <i>Body Image Shame Scale—Adolescents Version</i> (BISSA; Duarte and Pinto-Gouveia 2014). <i>Forms of Self-Criticizing/Attacking and Self-Reassuring Scale—Adolescents Version</i> (FSCRS-A; Gilbert et al. 2004). Eating Disorder Examination Questionnaire (EDE-Q; Fairburn and Beglin 1994)	Memories of warmth and security are positively related to body image, reinforcing participants' confidence. In addition, they were negatively related to eating disorders and bullying; therefore, the study concludes that positive emotions and memories have a direct impact on reinforcing the participants' confidence, proving that self-confidence was negatively correlated with bullying and behaviors related to eating disorders.
Duarte et al., 2017.	<i>The prospective associations between bullying experiences, body image shame and disordered eating in a sample of adolescent girls.</i>	Portugal	To determine the effects of bullying on body image and ED symptomatology.	290 participants	<i>Peers Relations Questionnaire</i> (PRQ; Rigby and Slee, 1993). <i>Body Image Shame Scale – Adolescents Version</i> (BISS-A; Duarte and Pinto-Gouveia, 1822014; Duarte, Pinto-Gouveia, Ferreira, and Batista, 2015). <i>Eating Disorder Examination Questionnaire</i> (EDE-Q; Fairburn and Beglin, 1994).	Regarding the results of this study, it can be observed that, although BMI was not directly related to bullying, it was found to be related to body image and behaviors related to ED. However, being a victim of bullying did have a direct positive correlation with patients' body image and ED symptoms and behaviors.
Dunn et al., 2022	<i>Factors Associated With Disordered Eating Behavior Among Adolescent Girls: Screening and</i>	United States	To describe ED among adolescent girls, as well as associated characteristics and health behaviors.	915 participants	Questionnaire on multidimensional risks of eating disorders. Mixed nature.	Of the N = 915 women who reported an ED, 6.2% had had any symptoms of disordered eating behavior

Education						in the past 12 months. Disordered eating was significantly associated ($P < 0.001$) with having been bullied in class in the past 30 days.
Ersotelos et al., 2020	<i>Blockchain and IoMT against Physical Abuse: Bullying in Schools as a Case Study.</i>	United Kingdom	Using computers to prevent bullying in the classroom.	No sample used	Computer model to collect information about bullying in the classroom.	The use of computer applications can promote the prevention of bullying and help detect cases through the detection of symptoms.
Galvão et al., 2021.	<i>Being bullied and using drugs are associate with eating disorder symptoms in Brazilian students.</i>	Brazil	To know the relationship between being a victim of bullying, drug use and ED.	5213 participants	European questionnaire for the prevention of drug use adapted by Prado et al., 2016. <i>SCOFF (Sick / Control / One stone / Fat / Food) questionnaire</i> (Morgan, Reid, and Lacey, 1999).	Results show very similar results between boys and girls who are bullied and their relationship with alcohol consumption (about 44% consume alcohol). The authors also highlight that most of the bullied girls present at least one symptom of ED, while boys do not show this type of symptomatology when bullied. In addition, the consumption of drugs such as tobacco and hard drugs is higher in girls because they think it will help to lose weight.
Gattario et al., 2020.	<i>Life after childhood bullying: Body image development and disordered eating in adulthood.</i>	Sweden	To find out through a longitudinal study the long-term consequences of bullying on the body image of the victims.	960 participants	<i>Victim Scale</i> (Rigby, 1999). <i>Body-Esteem Scale for Adolescents and Adults</i> (BESAA; Mendelson et al., 2001 translated to Swedish by Erling and Hwang, 2004).	After conducting this longitudinal study, the researchers found a close relationship between bullying and perceived self-image at both 10 and 21 years of age. In girls, a stronger correlation was also found between bullying and the development of ED in adulthood. In addition, participants who had been bullied developed a better perspective of their body image in adulthood while those who had been victims showed a negative development of their body image.
Gordon et al., 2021.	<i>Gender expression, peer victimization, and disordered weight-control behaviors among US high school students.</i>	United States	To examine the association between gender expression, peer bullying, and disordered weight control behaviors.	5.488 participants	A mixed questionnaire in which participants could express their weight control methods, their gender expression and to what extent and what type of bullying they suffered.	23% of the participants reported different weight control behaviors such as purging, taking weight control pills and fasting.
Idini et al., 2021.	<i>Trastornos de la con-</i>	Spain	To know the correlation between adverse life experiences and the	16 studies		Although there are still few studies on this sub-

	<i>ducta alimentaria, experiencias adversas vitales e imagen corporal: Una revisión sistemática.</i>		development of a negative body image that can trigger ED.		Literature review.	ject, the authors conclude that there is a relationship between adverse life experiences such as bullying, family violence and different types of abuse with the development of ED and a negative body image on the part of the victims.
de Lara, 2019	<i>Consequences of Childhood Bullying on Mental Health and Relationships for Young Adults</i>	United States	To investigate the consequences of childhood bullying for young adults in terms of their health, mental health, and relationship problems.	72 participants	Mixed method composed of a quantitative questionnaire and semi-structured interviews.	Results indicate the need for further research on childhood bullying as it affects the later development of adolescents and young adults. Understanding the consequences of childhood bullying is important to inform anti-bullying interventions and maintain focus on early prevention efforts.
Lee et al., 2017	<i>Does psychological functioning mediate the relationship between bullying involvement and weight loss preoccupation in adolescents? A two-stage cross-sectional study.</i>	United Kingdom	To know the relationship and preoccupation with weight and body image.	2.782 participants	Computer-based questionnaire of a mixed nature.	Bullies, victims, and bullied victims had a higher risk of weight loss concerns compared to adolescents not involved in bullying. The mechanism by which involvement in bullying is related to greater concern about weight loss varied by role.
Lee y Vaillancourt, 2018	<i>Longitudinal Associations Among Bullying by Peers, Disordered Eating Behavior, and Symptoms of Depression During Adolescence.</i>	Canada	To assess the concurrent and longitudinal associations between peer bullying, disordered eating behavior and depressive symptoms using a cascade model that controlled for associations over time and across time.	612 participants	Quantitative questionnaire divided into three blocks, carried out by electronic devices.	The 612 students included in the analytical sample had a mean (SD) age of 13.03 (0.38) years in the 7th grade; 331 (54.1%) were girls and 392 (71.1%) were white. Peer bullying was concurrently associated with disordered eating behavior and depressive symptoms at each time point during the 5-year period (range r [SE], 0.15-0.48 [0.04-0.08]; $P < .01$). Disordered eating behavior was longitudinally associated with depressive symptoms at each time point (range β [SE], 0.14-0.19 [0.06-0.08]; $P < 0.02$) and with peer

						bullying at 2 time points (range β [SE], 0.12-0.22 [0.06-0.07]; $P < 0.04$) in girls and boys.
Lee y Vaillancourt, 2019	<i>A four-year prospective study of bullying, anxiety, and disordered eating behavior across early adolescence.</i>	Canada	Explain the relationship between bullying and ED.	657 participants	During the four years of this study, participants completed quantitative questionnaires related to bullying.	All bivariate correlations between bullying perpetration, victimization, anxiety, and disordered eating behavior were positive and statistically significant (all $ps < 0.05$).
Lie et al., 2019	<i>Is bullying and teasing associated with eating disorders? A systematic review and meta-analysis.</i>	Norway	To examine the relationship between bullying and eating disorders.	Systematic review. 22 studies	Synthesis of quantitative data.	Compared with healthy controls, people with ED were significantly more likely to have been bullied. The evidence for this association was particularly strong for BN and ED, but was more mixed for AN. It was unclear whether such victimization was more common in BNs compared with psychiatric controls. The meta-analysis showed that, compared to healthy controls, those with ED were two to three times more likely to have been bullied about their appearance and to have been bullied prior to the onset of ED.
Lie et al., 2021	<i>The association between bullying and eating disorders: A case-control study.</i>	Norway	To know the association between bullying and ED.	890 participants	A mixed questionnaire containing questions about eating disorders and experiences related to bullying.	In the combined ED sample, individuals with a history of any ED were significantly more likely than controls to have been victims of bullying. Individuals with a history of bullying were significantly more likely than controls to have experienced victimization during childhood or adolescence (ORs = 1.99-3.30), especially verbal, indirect, and digital bullying. Bullying before the onset of erectile dysfunction was also significantly more common than bullying in the same time period for controls (ORs = 1.75-2.16).

Marco and Tormo-Irun, 2018.	<i>Cyber victimization is associated with eating disorder psychopathology in adolescents.</i>	Spain	To analyze whether there are differences between gender and being a victim of cyberbullying, to analyze whether cyberbullying is related to the development of eating disorders, and to analyze whether this association is moderated by the level obtained in Appearance Evaluation.	676 participants	<i>Multidimensional Body-Self Relations Questionnaire-Appearance Scales</i> ; (MBSRQ-AS; Cash, 2000). <i>Eating Attitudes Test</i> (EAT-40; Garner and Garfinkel, 1979). <i>European Cyberbullying Intervention Project Questionnaire</i> (ECIPQ; Del Rey et al., 2015).	After observing the results, the authors conclude that cyberbullying is related to ED. Appearance Evaluation and concern about being overweight are also related to being a victim of cyberbullying. In addition, it should be noted that 57% of the participants in the study had been victims of online harassment, threats and extortion in the last two months.
Mikhaylova and Bochaver, 2022.	<i>Family Environment Hostility as the Missing Element Between School Bullying Victimization and Anorexia.</i>	Russia	To know the relationship between bullying and the development of ED in this case anorexia, as well as the relationship between bullying and an important factor such as the relationship of the victims of bullying with their family environment.	50 participants.	Qualitative interview conducted via Skype, because the study was carried out during the confinement in 2020, which includes: a biographical part to know the family context, her initiation in eating disorders (use of social networks, pro 'Ana' and pro 'Mia' blogs), relationship with peers and perception of her self-image.	36 patients interviewed had been victims of bullying, both physical and verbal, at school and high school. This bullying was mainly in groups and came from both genders. The bullying was mainly directed at the physical appearance of the victims and, as a result, many of them ended up developing anorexia. It should also be noted that the patients who had not been victims of bullying had a better relationship with their families, while the victims of bullying showed greater hostility within their families.
Morrison, Williams, and Fox, 2022.	<i>Negative childhood events and the development of the anorexic voice: A grounded theory.</i>	United Kingdom	To explore the relationship between adverse childhood situations such as bullying, aggression, loss of family members and the development of anorexia.	12 participants	Conducting an interview about how their eating disorder started, what kind of behaviors led them to do it and the adverse situations they have suffered throughout their life.	The patients claimed to suffer from VA (anorexic voice) that developed especially after a negative or adverse event that led the patients to use food as an escape route: either by ingestion or restriction, food was present as a harmful element. Among these negative events, patients refer to violence, sexual abuse and bullying as very traumatic events.
Nolan et al., 2022.	<i>Prevalence of probable eating disorders and associated risk factors: An analysis of the Northern Ireland Youth Wellbeing Survey using the SCOFF.</i>	United Kingdom	The main objective of this study is to understand and estimate the prevalence of ED in a population-based sample of 11–19-year-olds in Northern Ireland and to investigate the risk factors that are related to eating disorders.	1.291 participants	<i>SCOFF questionnaire</i> (Morgan et al., 2000).	16.2% of the participants met the symptoms and behaviors characteristic of ED. The probability of meeting any of the characteristics of eating disorders was higher in cases in which the participants had parents with mental health problems, general

						health problems and were victims of cyberbullying or school bullying.
Quintero-Jurado et al., 2022	<i>Association Between School Bullying, Suicidal Ideation, and Eating Disorders Among School-Aged Children from Antioquia, Colombia</i>	Colombia	To know the relationship between bullying, the development of ED and suicidal behaviors.	3.222 participants	Seven quantitative tests. Participants had to answer a total of 180 questions related to bullying, suicidal behaviors and ED.	The prevalence of suicidal behaviors was 38% (95% CI 35.8-39.4), and the prevalence of ED was 18% (95% CI 16.2-18.9). Adolescents exposed to medium-high levels of bullying had a significantly higher risk of suicidal ideation (PR = 1.38). In terms of ED, adolescents with medium-high exposure to bullying showed a higher risk of ED (PR = 3.86).
Ruiz-Lázaro et al., 2022.	Autoestima, imagen personal y acoso escolar en los trastornos de la conducta alimentaria.	Spain	To learn through a literature review how body image teasing affects the self-esteem and self-image of the victims of body image teasing.	Systematic review.	The different articles analyzed in the systematic review explain the relationship between teasing and the development of a body image in primary school that can lead to the development of an ED.	The results of this review show different problems to be solved, one of them, that interventions on teasing about physical appearance are not a priority in ACT prevention programs; it is necessary that when designing prevention models gender specificities are considered; it is necessary that interventions are interactive and participatory; the most widespread methods of prevention are. ZARIMA, DITCA and AMEMC.
Tözün and Baobaoglu, 2018.	<i>Cyber bullying and its effects on the adolescent and youth health: A huge problem behind tiny keys.</i>	Turkey	To know the effects of cyberbullying on the physical and mental health of adolescents. This allows us to know in the short and long term what society is facing in order to prevent the effects and improve the lives of young people and their relationship with new technologies.	1.263 participants	In this study, the authors evaluate the different risk factors for cyberbullying using other studies that refute how respect, family relationships, socioeconomic status can influence victims of cyberbullying, devaluing their self-esteem and thus weakening them in the face of bullies.	The results show a relationship between bullying and psychological problems. One of the first effects is a decrease in self-esteem which, over time, can trigger the development of eating disorders due to the distortion of the victims' image. Other results show that boys are more likely to be cyberbullies than girls. This harassment also often leads to health problems, both physical and mental, including depression, suicidal thoughts, the development of restrictive eating behaviors and the abuse of substances harmful to health such

as alcohol and drugs.

White et al., 2018	<i>The relationship between trauma and weight status among adolescents in eating disorder treatment.</i>	United States	To examine the overall prevalence and type of trauma exposure in a clinical sample of adolescent patients with ED.	316 participants	Clinical interview with participants and diagnostic symptoms.	The most common trauma experienced by the participants was exposure to bullying, so its prevalence was higher (34.6%).
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