Article

Cyberbullying: Education Research

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Abstract: Today's society is characterised by a high degree of digitisation and the use of electronic devices at an increasingly early age. Data from recent studies and news reports from different parts of the world have focused on the malicious use of these devices by some young people to engage in peer-to-peer bullying, now known as cyberbullying. Given the negative impact of exposure to these situations on the health and well-being of children and young people, we felt it was important to analyse the scientific evidence from a dual perspective. To this end, we carried out a bibliometric study of 131 articles selected from the Scopus database using the PRISMA method to quantify the scientific literature in terms of productivity, collaboration, impact and dissemination. In addition, we carried out a content analysis to explore this polyhedral reality further through three main categories. The results made it possible to identify the places, authors, and journals where useful information can be found. We were also able to highlight the need for training for the various educational and social actors and to identify risk factors associated with cyberbullying and the importance of primary prevention.

1. Introduction

For several decades now, situations of violence in the school context have been a matter of concern for school management teams, teachers, families, and the educational community in general. In this sense, the perception of the problem has changed. It has moved from positions of denial or minimisation to others that go beyond mere recognition and are concerned with the prevention of such behaviour. We would like to distinguish between school violence and bullying, the former being a one-off situation aimed at causing some kind of harm, while the latter has a continuity over time, i.e., it is a repeated form of violence [1].

Bullying is not a static and immutable phenomenon, and although exclusion, intimidation, or aggression have always existed, the channels through which they are produced (and reproduced) are becoming increasingly diverse. The concept of bullying, traditionally associated with school violence, has been amplified by technological advances. This has led to new forms of violence, such as the phenomenon of cyberbullying. Cyberbullying is repeated and sustained harassment based on intimidation, humiliation, pressure, degradation, or threats using technological devices and the internet—most commonly phone calls, emails, instant messaging tools, and social networking sites [2,3]. It is a multifaceted problem that takes many forms and can affect people of all ages. The field of education and the phenomenon of cyberbullying are, therefore, closely linked and, as detailed below, a significant number of cases involve schoolchildren, making the educational environment a key to prevention, awareness raising, and also to tackling the problem once these behaviours have occurred.

Focusing on the adolescent population, several studies have concurred in pointing out several consequences of cyberbullying, such as a decrease in self-esteem, increased isolation, or distancing from the peer group, anxiety and depression, risk behaviours such as substance use, disorders (sleep, eating, etc.), and even suicidal ideation and behaviour in the most extreme cases [4–6]. Three main actors are involved in this type of violence: the bullied, the bully, and the witnesses, whose role as bystanders can either reduce or increase the impact [7,8]. In this sense, negative behaviours in cyberbullying cases range from the most common forms, such as insults, harassment, intimidation and threats, isolation, and slander, to the distribution of images or videos without consent, identity theft, sextortion, grooming, viruses or malware, sharing personal data, or registering on undesired web services [9].

Regarding variables related to cyberbullying situations, there seems to be no clear consensus on gender as a predictor. Although some studies show that girls are more likely to be victims [6,10], later studies were unable to confirm significant differences [11,12]. As for age, we conclude that it is an explanatory variable for differences in bullying behaviour. It would be interesting for schools to consider adapting effective prevention programmes to specific age groups rather than to the gender of the students [12–14].

A third important variable is the medium used to perpetrate violence: mobile devices and the internet. According to UNICEF's study on the impact of technology on adolescents, based on a sample of 41,508 adolescents in Spain, the average age at which adolescents have their first mobile phone is 10.96 years. In terms of connectivity, 98% have Wi-Fi at home and 90.8% go online every day or almost every day. These worrying figures show that 31.5% use the internet for more than 5 h a week, 58.4% sleep with their tablet or mobile phone in their bedroom, and of these, 21.6% are online after midnight every day or almost every day [15]. According to the same study, 2 out of 10 adolescents may be victims of online bullying, a figure the European Commission estimates to be higher, at 3 out of 10 [16]. Sending personal photos and videos of a sexual nature or accepting friend requests from strangers on social networking sites are two factors that increase the likelihood of being bullied both at school and online. Online gambling or problematic gaming, contact with strangers, and even behaviours such as sexting are associated not only with online behaviour but also with cyberbullying [12,17].

Other not insignificant issues that have been addressed in recent literature in relation to cyberbullying are risk behaviours due to overexposure to the internet and intimate partner violence among adolescents. Cyberbullying is related to what we might call traditional bullying, along with problematic internet use, online gaming, and other risk behaviours such as drug use. On the one hand, there is a high probability, over 50%, that adolescent bullies are occasional cyberaggressors [18]. On the other hand, although the literature on addictions and their relationship to cyberbullying is not extensive, recent studies seem to suggest that it often occurs in combination with a number of factors and that the adolescents involved had significantly higher rates of risk behaviours and substance use [19]. It follows that the same adolescents who engage in online violence are more likely to repeat these behaviours in intimate partner relationships [20,21]. In [20], the authors found a link between cyberbullying and the use of social networks by adolescents: "Cyberbullying as gender-based violence generally occurs without physical coincidence, and repetition becomes the most common privacy invasion strategy used by bullies" [21] (p. 4). The danger lies in the seemingly harmless nature of these attitudes. They are generally perceived as a nuisance rather than a situation of control and harassment on the part of adolescents. Consequently, they might end up naturalising behaviours such as checking their mobile devices, controlling their activity and location, sending messages, and requesting photos or videos.

The aim of this work is to answer questions relating to the countries, authors, and journals where we can find information to learn more, discover established networks and the impact of works published on the subject, and study in depth the issues addressed in

the papers and the conclusions that will allow specific programmes to be designed based on scientific evidence.

2. Method

This work is framed within phase I of the research project "Digital Teaching Materials in Compulsory Secondary Education. Analysis and proposals for school and socio-family use (Secundari@ Digit@l)", presented at the 2022 State Subprogram for Knowledge Generation of the Spanish Ministry of Science and Innovation. We combine bibliometric analysis and content analysis to delve deeper into the prevalence of cyberbullying.

We conducted a bibliometric analysis in order to quantify the scientific literature produced on cyberbullying in childhood and adolescence. This approach allowed us to identify variables related to productivity, collaboration, impact, and dispersion (Table 1) [22].

Table 1. Bibliometric indicators.

Indicators	Categories of Analysis
Productivity	Number of publications by date, field, country, and language.
Collaboration	Authors and networks.
Impact	Number of citations, producers, journals, and impact index.
Dispersion	Distribution by zones.

We chose the Scopus database because of its size and the quality of the documents it contains [23]. The search included the following combination of terms and Boolean operators: "cyberbullying OR bullying AND technology AND youth OR teenager OR minor OR child", seen in titles, abstracts or keywords.

The PRISMA method [24], with 4 phases, was used to select the documents that we would then analyse (Figure 1).
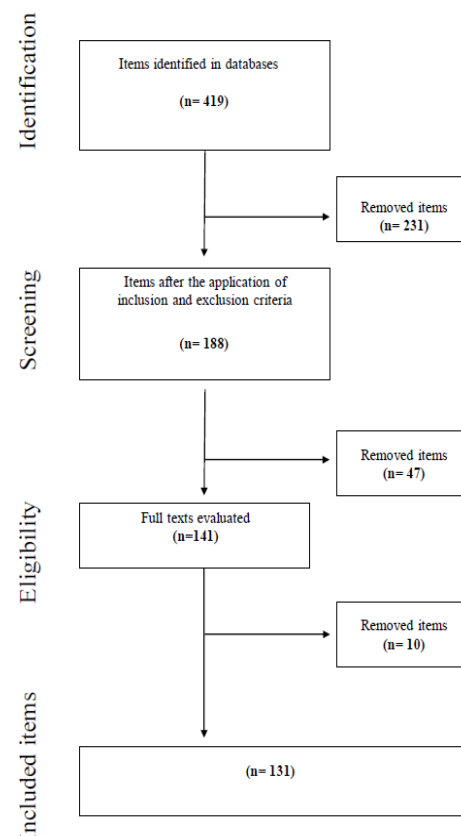
Figure 1. Flowchart.

A total of 419 documents were retrieved. We applied a number of filters, including publication date (limited to the last ten years) and document type (papers other than literature reviews). We did not consider language or subject restrictions. After applying the inclusion and exclusion criteria, a total of 131 papers were selected. The level of inter-coder agreement was high, with a Cohen's Kappa value of k = 0.81.

The content analysis deepened the research conducted and identified three dimensions of analysis, which emerged from the independent reading of three researchers [25] and are listed in Table 2.

Table 2. Categories of analysis.

Category	Sub-Category
Prevention of cyberbullying	The role of technology; analysis of prevention programmes and tools; and guidelines and recommendations.
Assessment: Cyberbullying questionnaires and scales	
Research on cyberbullying	Prevalence; risk factors; victims.

VosViewer [26] was used to represent the data.

3. Results

3.1. Bibliometric Study

From a bibliometric perspective, we organised the results into variables related to scientific productivity, collaboration, impact, and dispersion.

3.1.1. Productivity

In terms of productivity, we analysed the fields of knowledge that have produced research on cyberbullying. Social sciences (25.8%), psychology (25.8%), and medicine (20.4%) have the most representation, but a quarter of the studies are related to other disciplines such as engineering, humanities, computer science, or others.

As for the evolution over the last decade, the distribution is uneven, with 2019 showing the lowest number of publications on this topic and an upward trend over time (Figure 2).
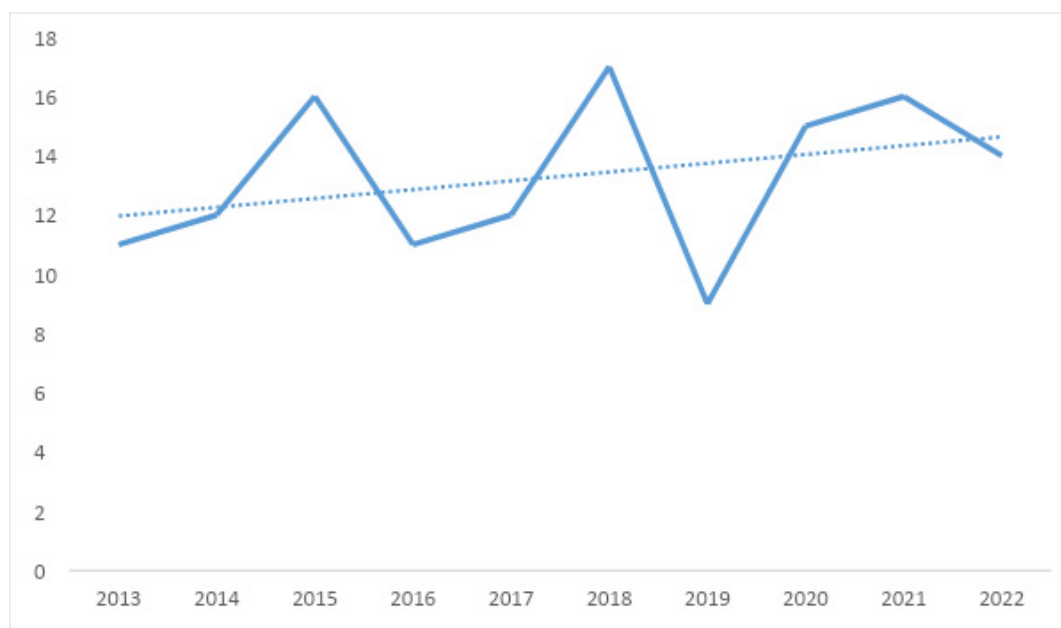
Figure 2. Temporal distribution of publications.

A total of 40 countries around the world have produced work on this topic (Figure 3), including countries as diverse and distant as Uruguay, the United Arab Emirates, Norway, Portugal, Egypt, and Brazil. The countries with the highest productivity are the United States (40.5%), Spain (13%), and the United Kingdom (9.9%).

Figure 3. Number of publications per country.

Looking at the language chosen for the dissemination of knowledge results, there is a clear predominance of English, which is used in almost all documents (93.1%). However, there are documents written in four other languages: Spanish [27–30], French [31,32], Portuguese [33,34], and Italian [35].

3.1.2. Collaboration

In terms of the number of authors signing a paper, the field is characterised by a high degree of collaboration. Only 15.3% of papers were signed by a single author. The paper with the highest number of authors is [36], with a total of 12 authors. Table 3 shows the percentages of authorship.

Table 3. Number of authors per document.

No. of Authors	No. of Documents
1	15.3%
2	22.1%
3	22.9%
4	16.8%
≥5	22.9%

In terms of co-authorship networks, the number of papers signed by authors from the same institution or from the same territory is significant. A smaller proportion of papers are signed by authors from different countries (13.7% of the total). Networks between countries such as the USA and Singapore [37,38] or the USA and Spain in papers such as [39,40] are particularly noteworthy.

3.1.3. Impact

Looking at the cumulative citations for each paper, it is clear that we are analysing a slow citation field. Only 6.9% of the documents have more than 100 citations (Table 4).

Table 4. Number of citations per document.

No. of Citations	No. of Documents
0	15
1–20	72
21–40	18
41–60	14
61–80	2
81–100	1
>100	9

Three of these papers have more than 200 citations (Table 5).

Table 5. Key data of the most-cited documents.

Paper	Journal	No. of Citations
[41]	*Journal of Sex Research*	290
[42]	*Journal of Youth and Adolescence*	275
[43]	*Journal of Youth and Adolescence*	228

As far as producers are concerned, as can be seen in Table 5, there are no major producers, as there is no author with 10 or more publications on the subject of cyberbullying in childhood and adolescence. Names such as K.J. Mitchell or L.M. Jones stand out as medium-sized producers, with six [40,44–48] and five papers respectively [40,44–47], which have been written jointly.

With regard to the journals with the highest number of papers on this topic and their impact index, the following table shows the key data for journals with at least five papers on cyberbullying (Table 6).

Table 6. Journals with the highest number of papers.

Journals	Papers	Cumulative Citations	Impact Index
Computers in Human Behavior	7	291	41.6
Journal of Interpersonal Violence	6	118	19.7
Journal of Youth and Adolescence	5	790	158

3.1.4. Dispersion

Finally, we analysed the relationship between the number of journals and the number of articles published on the topic. The core group included 14 journals and a total of 43 articles (32.8%).

3.2. Content Analysis

The most representative studies are listed below, following the categories identified during the analysis of the 131 documents. The most frequent terms and the relationship between them are shown in Figure 4.
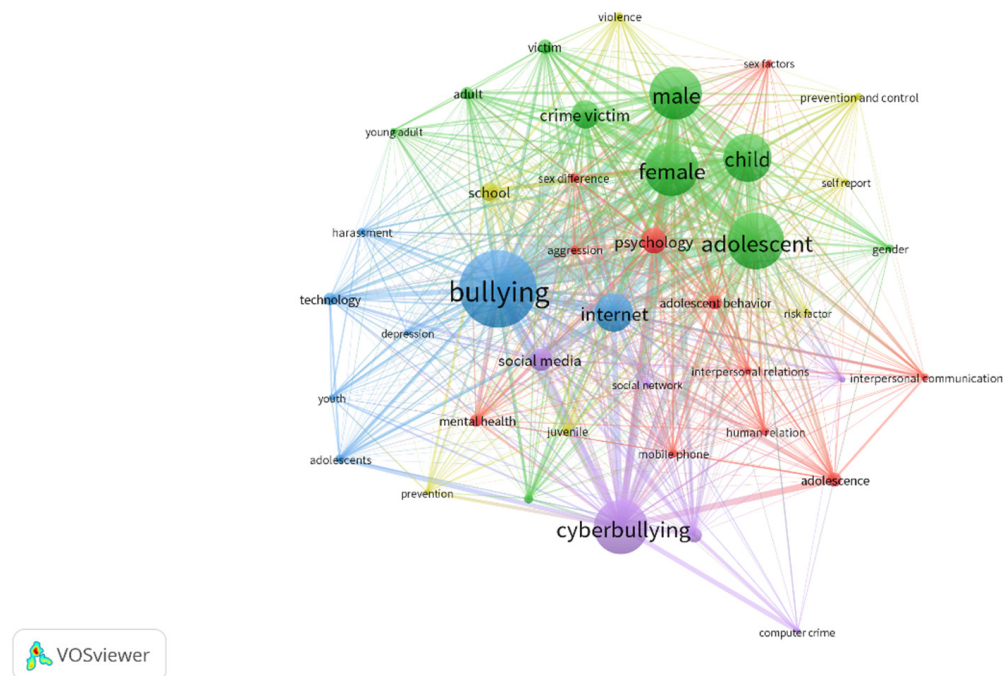

Figure 4. Co-occurrence map.

3.2.1. Prevention of Cyberbullying

This category includes studies that attempt to provide programmes, resources, or tools that can help prevent cyberbullying. In general, their work focuses on primary prevention, with interventions aimed at raising awareness and learning about the issue.

This category is further subdivided into the sub-categories listed and described below.

The Role of Technology in Cyberbullying Prevention

One of the general aims of the studies included in this sub-category is to demonstrate how technology can mitigate and counteract cyberbullying. In this regard] uses a web radio project, namely, the Web Radio Associação de Jovens de Irajá (Brazil), within the programme "Em sintonia com a saúde (S@S)", to understand the knowledge and information that young people in public schools have about cyberbullying [49]. This research highlights participants' questions about the consequences of cyberbullying and the psychological problems suffered by victims. They also showed a desire to learn more about support strategies and an interest in finding out whether there are laws in place to tackle this type of violence. The authors emphasise the importance of dialogue-based communication and discussion, as well as education outside of health centres.

In line with the concerns of participants in the previous study, other studies addresses online harassment, stalking or bullying, and encourages the development of technologies to prevent and counter anti-social behaviour [50]. Examples include voice recognition methods to verify the identity of callers, automated methods to classify attacks, filtering of unwanted communications, etc.

Similarly, other publicacions highlights the need for personalised support systems to solve bullying problems [36]. The paper explores different sensors and social web technologies to enhance the safety and well-being of children and adolescents.

Analysis of Prevention Programmes and Tools

The sample also includes studies evaluating educational programmes and technological prevention tools to determine their effectiveness. In this context, four schools in a town in New England (USA) participated a project (quasi-experimental study) called Screenshots, designed to develop positive digital social skills and achieved positive results [51].

Similar results, which also support the idea that we need this type of intervention, were obtained by [52–55]. Furthermore, these studies are consistent in using co-creation processes to develop programmes against cyberbullying. For example, the first of themuses participatory methods to involve students in the production of content for a MOOC on digital health [52];the second describes a pilot study co-designed with adolescents to evaluate an intervention using online counselling via chatbots [53]; and finally, the lasts studiesdescribe how a team of educators, researchers, and technologists worked together to develop and evaluate a multimedia bullying prevention experience called Free2B [54,55].

Most of the documents in this category of intervention project evaluation focus on technological solutions. Another example is the work of [56], in which the serious game "Conectado" was evaluated by 257 students between the ages of 12 and 17. "Conectado" is a graphic adventure designed to raise awareness about bullying and cyberbullying in schools.

Also interesting is the study by the authors of [57], whose results contradict hypotheses that confirm the effectiveness of internet filters in protecting adolescents from unpleasant online experiences. The paper evaluates the effectiveness of these tools by interviewing 1030 adolescents aged 12–15 and their primary caregivers and found that internet filters were not effective.

Guidelines and Recommendations

The documents in this category provide recommendations for teachers, families, and research teams that may be useful in developing educational programmes to address bullying and cyberbullying. They provide guidelines based on the results of empirical studies. An example of such work is the research conducted by [58] to understand online conversations about bullying, which helped improve the content and communications on the U.S. Department of Health and Human Services StopBullying.gov website. Both refs. [59,60] conducted literature reviews and content analyses of scientific studies to provide recommendations. In the first case, the document included a proposal for an intergenerational group intervention for parents and children with neurodevelopmental disorders. The objective was to protect them from potential online harm. This programme consisted of six weekly sessions of 90 min each, covering the following topics: introduction to digital citizenship; digital citizenship and netiquette basics; protection and safety online; cyberbullying; balancing online and offline activities/screen time and gaming; and digital citizenship contracts and family safety plans.

Recommendations provided in the work by [60] include the need for school management teams, teachers, students, and families to be well informed about cyberbullying through courses and seminars.

3.2.2. Assessment: Cyberbullying Questionnaires and Scales

This category includes papers that validate instruments developed to measure variables related to bullying and cyberbullying. For example, the study by [61] with 1491 Mexican adolescents aimed to analyse the psychometric properties of the Cyberbullying Questionnaire (CBQ), an instrument designed to measure the perpetration and victimisation of bullying through new technologies. Another similar example is the work by [62], who investigated the psychometric properties of the Multidimensional Peer Victimisation Scale (MPVS) and developed different versions to include the assessment of online aggression for perpetrators and victims. They also proposed a revised scale and a new scale: MPVS-Revised and the Multidimensional Peer Bullying Scale.

Among the works in this category, we should also highlight [63], which focused on the development and validation of the Multidimensional Offline and Online Peer Victimisation Scale (MOOPV), which is composed of 20 items and, after analysis, qualified as a very useful, reliable, and valid instrument; so did the analysis of the Olweus Bullying Scale by [64], with equally positive results.

It is worth noting that several research projects have used the European Cyberbullying Intervention Project Questionnaire (ECIPQ), a 22-item Likert-type instrument designed to be used with adolescents. The ECIPQ measures the frequency of cyberbullying and the level of victimisation associated with this phenomenon [65].

3.2.3. Research on Cyberbullying

In the total sample of publications analysed, we also found publications that focused on different types of research on cyberbullying. They were analysed from different perspectives, focusing on research methodology, provenance, subject of study, etc.

As a result, these publications have been grouped into three sub-categories according to their central research axis: prevalence of the phenomenon, risk factors for cyberbullying, and victims of cyberbullying. These are explained below, based on some of the most representative studies in each of these sub-categories.

In terms of type of research, studies using quantitative methodology, as opposed to qualitative or mixed methodology, stand out. Among the most commonly used data collection instruments in cyberbullying research, questionnaires predominate, followed by a combination of quantitative and qualitative instruments (surveys and interviews), and finally, qualitative instruments (usually focus groups or individual interviews).

The age of the sample tends to be between 10 and 18 years, which corresponds to adolescents.

Prevalence of the Phenomenon

Some of the articles analysed aim to study the prevalence of cyberbullying in our society, focusing on statistical data that help us to understand the reality faced by the different educational agents that accompany young people during adolescence, the period of greatest risk for cyberbullying.

Studies such as [66], which involved a sample of 3188 adolescents aged 12–17, found that 5.2% of the respondents were victims, 4.5% were perpetrators, and 4.3% were both victims and perpetrators, depending on the context. In contrast, another similar study by [67] found that 72.1% of the adolescents interviewed had been involved in at least one cyberbullying situation in the past year. Almost half of them were cybervictims (49.3%), 23.3% were cyberaggressors, and 62.3% were cyberobservers, i.e., people who did not bully the victim directly, but contributed to this type of behaviour and would largely determine the consequences. The same author explained in [68] that victimisation is more common among females than males and that the incidence of cyberbullying varies considerably from one school year to another. Thus, while a higher incidence of "traditional" bullying is found in lower secondary education, cyberbullying is more prevalent in upper secondary education, with a large number of victims of different types of bullying. Among the types of bullying reported by the respondents, the following stand out:

- Receiving offensive and insulting messages via mobile phone or the internet (27.2%).
- Receiving anonymous calls to frighten and provoke fear (22.2%).
- Being subjected to defamation through the internet to discredit (17.3%).
- Receiving offensive and insulting calls via mobile phone or the internet (16.3%).
- Being blackmailed or threatened by messages or calls (11.9%).
- Theft of password to prevent access to accounts (11.4%) [69] (p. 12).

Several articles have examined one particular type of cyberbullying, grooming, which is a form of deception used by an adult on a minor to establish a relationship, usually with the aim of sexual abuse. In the study by [27], a sample of 13,000 participants from different schools showed an incidence rate of grooming of 12.6% in public schools, 8.2% in charter

schools, and 8.4% in public schools, mostly by males (20.4%) compared with the number of female groomers (4.2%).

Risk Factors in Cyberbullying

Other research focuses on the main characteristics of victims and perpetrators and identifies a number of characteristics and behaviours that are more likely to be involved in this type of problem.

The different studies analysed seem to agree that the main risk factor for cyberbullying is high participation in online leisure activities, especially social networks and video games. Furthermore, the misuse of networks not only exposes adolescents to becoming potential victims of cyberbullying, but also constitutes the main risk factor for becoming a cyberbully, as "The level of violence observed in the online world reinforces aggressive, violent behaviour in the real world" [69] (p. 7).

This idea is closely related to what is reported in the paper by [70], in which cyber-bullying is related to nomophobia. These authors understand nomophobia as the anxiety or nervousness associated with excessive mobile phone use, especially when access to it is restricted for some reason. This phenomenon "has been associated with an increase in cyberbullying behaviour, and both phenomena are associated with dimensions of psychopathology" [71] (p. 8). Thus, dependence on and misuse of electronic devices often go hand in hand with emotional, academic, and behavioural problems and unstable relationships with overly restrictive or, conversely, non-supervising parents, which are the main characteristics shared by both victims and perpetrators [64,72].

Therefore, studies have found that the risk factors of cybervictims and cyberaggressors are similar and that there is an inverse causal relationship between adolescents' digital literacy and their risk of cyberbullying or cyber-harassment [71]. In terms of the social environment, a good relationship between adolescents and their parents can minimise the risk of cyberbullying, while authoritarian relationships and peer influence can increase it [73].

Victims of Cyberbullying

The final sub-category of cyberbullying research is that of the victims. It provides numerical data, first-person experiences, and some of the main consequences of cyberbullying for the young people who suffer it.

The percentage of cyberbullying victims varies considerably according to gender: 18% of boys are cyberbullied, while the figure rises to 25% for girls, i.e., 1 in 4 adolescent girls report having been cyberbullied. Furthermore, studies show that in most cases victims of cyberbullying are also victims of face-to-face bullying, usually in the school environment [74]. A large number of publications focus on the harassment of LGBTIQ+ people, who are particularly bullied online, usually in a much more severe and violent way, with fatal consequences for the victims [75].

The consequences of these violent situations for cybervictims are varied and directly related to mental health. Studies such as [76–78] agree that young people who have experienced cyberbullying are more likely to suffer from post-traumatic stress, anxiety, self-esteem problems, self-harm, frustration, academic problems, and depression. All of these have a direct impact on their social and family well-being, and in most cases lead to situations of isolation and, in extreme cases, death.

In these cases, early intervention is essential to stop the bullying and minimise its impact. However, this is difficult because although a few studies, such as [79], show that victims of cyberbullying are likely to tell others about their situation (88%), in most studies the respondents do not do so, fearing the repercussions and possible complications. Surprisingly, one of these complications was the fear of their parents' reactions; more specifically, they were afraid that their parents would restrict their use of the internet. In short, "technology has enabled bullies to bypass the watchful eyes of parents and educators and has given them a more direct access to their victims" [77] (p. 72).

As a result, those affected tend to seek other forms of support that they perceive as less complicated, as shown in [80], where LGBTIQ+ victims narrate their experiences of harassment through YouTube videos. They express their feelings, make their situation more visible, and are more likely to seek support from other people who can empathise with what they are going through.

4. Discussion and Conclusions

Based on a combination of bibliometrics and content analysis, this work has made it possible to identify key authors, countries, and journals and to learn more about the phenomenon of cyberbullying and its consequences.

The results of the bibliometric analysis show that the growth of scientific information on this topic is limited. This is justified by the fact that the concept of cyberbullying is relatively new, as can be seen from the number of papers published in the last decade, which is just over one hundred.

We did not identify any major producers, and the distribution of publications in concentric zones of productivity is divided into a well-differentiated core, in line with previous work such as [81]. As in prior studies, we observed a predominance of the fields of social sciences, psychology, and medicine [82], the weight of the USA as a reference country, and English as a vehicular language [83]. The journal Computers in Human Behavior has published the highest number of papers on cyberbullying. The degree of collaboration between authors is high and intra-institutional or intra-national networks are most common [84], while the impact of publications is low [85].

With regard to the content analysis of the papers, a large number of research studies focus on the topic in question using quantitative methods, and the main instruments are questionnaires, with the European Cyberbullying Intervention Project Questionnaire (ECIPQ) standing out, both in terms of application and in terms of papers testing its validity.

The main risk factors associated with cyberbullying are a high level of exposure to technology (and especially to violent content), including through social networks and video games. The use of digital devices can be so intense that alarming situations of dependency are often encountered [86].

In terms of the prevalence of the phenomenon, we found that it affects almost half of teenagers between the ages of 12 and 18, and that females and members of the LGBTIQ+ community are more likely to be affected. Another observation is that victims of online bullying tend to also be bullied in person [74]. In this line, we found a great reluctance to tell adults—and even peers—about the bullying situation, which significantly hinders intervention and treatment of the cause and its consequences.

The results, therefore, reinforce the idea that it is important to educate teachers, families, students, and society as a whole about the warning signs of victims. Society also needs to focus on the behaviour of the aggressors themselves in order to reduce the prevalence of this phenomenon and the potential consequences of this type of bullying among young people.

One of the keys to educational intervention in this area is the digital literacy of children and adolescents, both at school and in the family context. Such interventions must promote more responsible use of technologies and raise awareness of online risks [87].

Furthermore, there are several trends in the literature on cyberbullying prevention related to the analysis of technological tools designed to assist in detection and prevention.

In view of the results, our proposal is to address not only the victims of cyberbullying but the entire adolescent population, as well as other educational agents, including families and the immediate environment. To this end, it is important to design and implement training and prevention programmes in schools and other institutions (city councils, health centres, socio-cultural centres, etc.). These programmes should not be limited to specific actions but should aim to reduce risks and provide tools and strategies for prevention and coping.

The main limitation of our work is the fact that we used only one database, Scopus, to identify the documents. Scopus was chosen because of its recognised prestige and the number of documents deposited in it.

Therefore, future lines of research should include carrying out analyses using other databases or limiting the analysis to specific contexts, focusing on a particular territory. It would also be useful to analyse specific intervention programmes in order to establish guidelines for action based on scientific evidence. This would allow for the design of cyberbullying prevention programmes that revolve around axes such as media literacy for a more responsible use of social networks, mediation and peaceful conflict resolution, and emotional intelligence.

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