

The growth of cyberbullying among youth in higher learning institutions: a bibliometric analysis

Placidius M. Ndibalema^[0000–0002–9119–4255]

The University of Dodoma, 1 Benjamin Mkapa Rd, 41218 Iyumbu, Dodoma, Tanzania

ndibaplac@yahoo.com

https://www.udom.ac.tz/staff/staff_profile?id=VDBSaBRPT0=

Abstract. Cyberbullying has become one of the misconducts among the youth due to an increased use of the internet in the educational context. The bibliometric analysis was carried out to determine the global trends in the evolution of cyberbullying among the youth in higher learning institutions (HLIs). The analysis involved 1073 research articles published between 2008 and 2022 retrieved from the Dimensions scientific database. The VOSviewer 1.6.20 software was used to establish visualisation networks. The results indicate a rapid growth of research articles on cyberbullying from 2019 to 2022, where most HLIs migrated to virtual teaching due to the outbreak of COVID-19. The developed countries had high rates of research publications and strong collaboration patterns in cyberbullying. The results also indicate factors such as harsh parenting and moral disengagement to be the causes of cyberbullying. The analysis shows that publications on cyberbullying from developing countries are very low compared with their developed counterparts. Examining the trends in cyberbullying among youth in HLIs offers new insights into the prevalence, forms, and concerns of cyberbullying within this specific population of HLIs. This study enhances our understanding of cyberbullying consequences and broadens our knowledge about how increased autonomy among youth in using technology immorally can fasten the growth of cyberbullying in HLIs. This study informs the development of appropriate intervention strategies within HLIs that promote digital safety and citizenship. HLIs can also utilise the findings to develop rules and regulations that address cyberbullying within their institutions. Conducting a systematic review of the effective prevention and intervention strategies on cyberbullying employed by HLIs in different contexts may provide more insights into shaping youth in promoting digital safety.

Keywords: cyberbullying · bullying · bibliometric · digital divide · victimisation · digital well-being · digital safety

1 Introduction

This paper has been triggered by various concerns about increased internet use globally. Global statistics show a tremendous increase in the use of the internet,

which has resulted in an increased incidence of cyberbullying. Although internet-based learning is considered an option in many HLIs, an alternative to traditional learning during the Coronavirus pandemic, it became an essential element for maintaining the activity of schools and universities [22]. Most recent statistics indicate that about 50% of the global population is using the internet, of which 70% of that population are the youth [38]. It is clearly stipulated that the youth (69%) of the total population use the internet.

Although there are some indicators of the prevalence of the digital divide across different regions, during the outbreak of the COVID-19 pandemic, many HLIs donated or loaned out devices and offered students internet bundles to give them access to online resources [60]. According to Jain et al. [39], there was a noticeable increase in the factors affecting cyberbullying susceptibility during the COVID-19 pandemic due to the increased use of online learning. With the growing use of electronic communication technologies, interest in cyberbullying is accelerating and catching up with the substantial knowledge base concerning traditional bullying [16]. The recent study by Mkhize and Gopal [48] indicates that the increase in the use of social media during the lockdown has increased victims of cyberbullying in which the youth experience most posts and comments about sexting, sexual comments on young girls' pictures and videos of insulting each other. In the context of this paper, the term youth has been used interchangeably with students in HLIs. At the same time, the term cyberbullying was also considered as the repeated actions of using technologies such as social media, instant messaging, and e-mails to harm, harass, intimidate or humiliate others, causing emotional distress and potential harm to the victims.

There have been several incidences reported by different researchers on the prevalence of cyberbullying in HLIs in different countries. A study carried out in Israel by Peled [56] found that 57% of the students had experienced cyberbullying at least once or twice through different types of media, of which instant messaging was found to be the most common means of cyberbullying among the students. In another study in Myanmar, it was revealed that two out of five students had been the victim of cyberbullying in the past 12 months. Non-resident students and students who had been studying in the university for three years or less were at a higher risk of being cyberbullying victims [41]. Indeed, Nwosu et al. [54] found that over 50% of the students in one University in Nigeria were aware of the incidents of cyberbullying within their cycles in and outside the school environment of which the most typical forms of cyberbullying they were aware of in the past couple of months were text message, phone calls and chat room bullying. Also, a range of 48%-57% undergraduates were bullied through various cyber media listed and 28.6%- 40.0% had bullied others through these devices in the past couple of months [54].

A similar situation was found in Kenya by Ndiege et al. [52], who reported the highest form of cyberbullying through deception, in which 49.7% of the respondents reported sending a rude message to someone electronically. Onditi [55] reports that cyberbullying is a concern among Tanzanian adolescents, of which victims reported experiencing negative emotional, social, cognitive, behavioural,

and academic outcomes as a result of online victimisation. Although there are some indicators of the prevalence of cyberbullying in the global context, several studies indicate a concern about ethical dilemmas. Undoubtedly, the trend of using electronic devices instead of printed materials has increased, but it is unclear how it contributes to cyberbullying. In addition, how ethical issues are addressed in HLIs is under-researched despite their implications for students' behaviour and learning.

There has been a growing interest in bibliometric analysis in education, particularly e-learning among the youth. In some recent bibliometric analyses, it has been revealed that there has been an increase in using digital devices among the youth due to the adoption of smart learning environments to suit learning beyond four walls of the classroom [4, 25, 51]. However, these studies have limited information about possible behaviour associated with excessive use of digital devices or some malpractices, such as cyberbullying, that are likely to occur among the youth. Other researchers have employed bibliometric analysis methodological procedures to analyse the impact of integrating educational technologies into peer assessment in online learning, professional development, distance learning and new emerging learning strategies such as collaborative learning, discovery learning and inquiry-based learning [29, 35, 44, 69].

Despite these studies, inadequate information regarding youth perspectives towards behavioural changes due to increased exposure to digital learning space could still be noticed; thus, there is a need for the current study. However, there are a few bibliometric analyses that indicate a growing interest among researchers in Cyberbullying and the emotional aspects not only among youth or adolescents but also children [24]. The risks associated with a lack of digital well-being strategies for implementing online learning have inadequately been addressed. Thus, the current bibliometric presents evidence regarding the risks associated with cyberbullying among the youth that is a result of inadequate consideration of digital well-being principles in online learning.

1.1 Proliferation of technology and cyberbullying among the youth in HLIs

With the increased access to the internet, technology and social media, the problem of cyberbullying has been on the rise among the youth. Since higher education necessitates access to information technology, university students are found comparatively more exposed and involved in the incidences of cyberbullying [61]. Available empirical evidence indicates that there is a higher rate of male youth in HLIs who commit acts of cyberbullying compared to their female counterparts [52]. In the study, which involved 412 university students aged 18 years and older at one medical university in Magway, Myanmar, it was indicated that about 40.8% of males and 51.1% of females in the study had suffered cyberbullying victimisation in the past 12 months due to an increased use of internet [41]. In most HLIs, ICT has been normalised to be part of daily life, something that increases the risk of students being involved in cyberbullying [8]. According to Jain et al. [39], there has been an increased rate of incidences

of cyberbullying in India due to increased use of technology during COVID-19 among the youth in universities, of which the most prominent forms have been stalking (71.21%) followed by posting derogatory comments (64.39%), leaking pictures/videos online (41.67%), and harassing (21.97%). This is an indication that the proliferation of new technological gadgets such as smartphones with the use of the internet has made a significant contribution towards the growth of cyberbullying among the youth.

Despite the prevalence of cyberbullying among the youth in HLIs, there is limited research regarding the evolution of it. Thus, utilising a bibliometric analysis would bring insights into the growth of cyberbullying in HLIs. Because of the above, the objective of this study was to analyse the evolution of this topic by employing the bibliometric method to get an overview of cyberbullying in the last fifteen years through indicators such as the number of publications, types of documents, countries and institutions, authors, and so forth. Further analysis was made to identify the trends in publications on cyberbullying among the youth in HLIs during this period. The analysis focused on examining the global trends in research about cyberbullying in HLIs, identifying key terms related to forms of cyberbullying in HLIs and exploring factors, conditions and impacts associated with increased forms of cyberbullying among the youth in HLIs.

2 Methodology

The central methodology used for this study was a bibliometric analysis of the research trends on cyberbullying in HLIs. The consideration was on research articles published between 2008 and 2022. The consideration of the publications between 2008 and 2022 was based on the fact that before 2008, there were very limited published empirical articles about cyberbullying [59]. The bibliometric analysis was adopted to evaluate researchers' patterns in terms of collaboration, institutions' and countries' productivity, and the occurrence of key terms related to cyberbullying in HLIs.

2.1 Search database and strategy

This study was conducted using a scientific database known as Dimensions. This digital platform includes citation data, research analytics features, and scholarly e-content. The consideration of the dimensions database was based on its ability to link and offer rich contextual search and data visualisation of huge amounts of data, which include the number of citations per publication [30, 36]. The Dimensions database constitutes the overall research landscape. It helps to bring a broader context of research, the researcher, a research field, an institution, a country, and many other major research issues that may be of interest to stakeholders in the research world [37].

2.2 Literature search strategy

The search keywords strategy was used to identify resources to be included in the bibliometric analysis. The keywords employed in searching include “Cyber-bullying” OR “cyber-bullying” AND “Youth” OR “Student” OR “Learner” AND “Higher Learning Institution” OR “Higher education” OR “Universities” OR “Colleges”. The search for publications was limited to the period from 2008 to 2022. A search filter was applied to the type of documents by selecting open-access articles in journals. The consideration of open-access articles was purposeful to enable the author to read the full article if extra information was needed apart from what was in the abstract. On this basis, book chapters, monographs, edited books, proceedings and preprint materials were excluded because they could lack empirical evidence to support a broad picture of global trends in research about cyberbullying in HLIs. A total of 1073 research articles were found, which were exported in Excel format for later analysis.

2.3 Inclusion and exclusion criteria

The inclusion and exclusion criteria considered are summarised in table 1.

Table 1. Inclusion and exclusion criteria.

Criteria	Inclusion	Exclusion
Accessibility	Open access empirical articles only	Closed access empirical articles
Language of articles	Articles reported in the English language	Articles not reported in the English language
Publication type	Empirical articles that are from a peer-reviewed journal	Thesis, dissertations, review paper, edited books, proceedings book chapters and other papers that were not from journal articles
Publication years	Articles published between 2008 to 2022	Articles published before 2008 and after 2022
The focus of the articles	Articles focusing on cyberbullying among youth in HLIs	Articles that did not focus on cyberbullying in HLIs
Population (students/youth)	Students/youth in HLIs	Students or youth or children who are not in HLIs

2.4 Process flow of the systematic review

The process of selecting articles for review considered PRISMA guidelines as shown in figure 1.

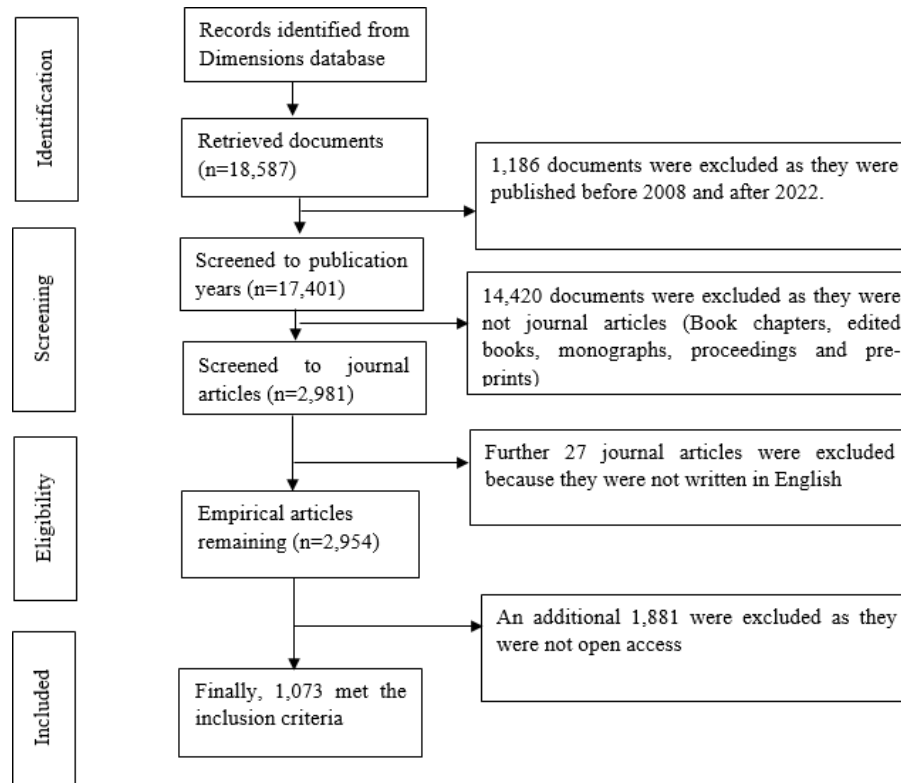


Fig. 1. Flow diagram for the systematic review following the PRISMA statement.

2.5 Data analysis procedures

The VOSviewer 1.6.20 software was used to analyse the publications visually. Both networks and overlay visualisation analysis of citation network of authors, most productive journals, most productive organisations, most productive countries and co-occurrence of keywords were conducted through VOSviewer 1.6.20 software. Further analysis was done to establish the relationship among authors regarding collaborations in which several clusters were established across organisations and countries. The analysis was also based on the strength of the total links, which indicates the total strength of the co-authorship links of a given researcher with other researchers.

3 Results

3.1 Global trends on research about cyberbullying in HLIs

The analysis was made to globally trace the growth of research on the prevalence of cyberbullying among the youth in HLIs. Figure 2 provides further descriptive data on the number of publications per year.

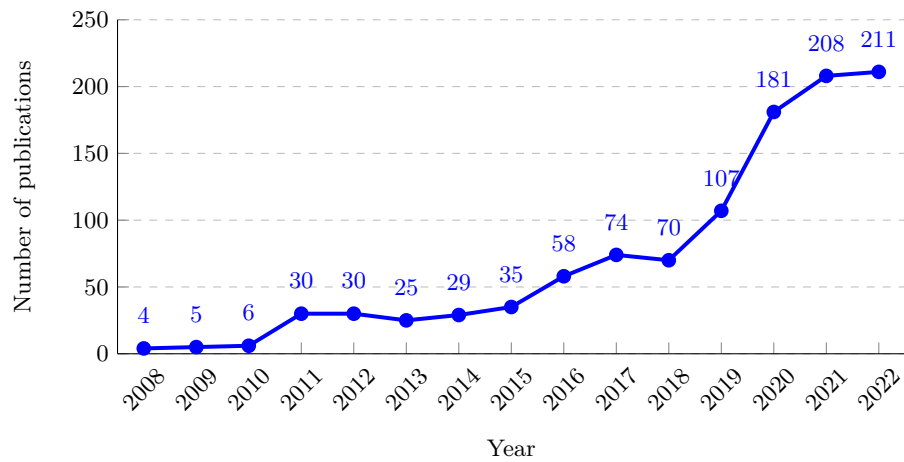


Fig. 2. Trends on publications in cyberbullying among youth in HLIs.

Table 2. Authors with the highest citation links.

Rank	Author	Documents	Citations	Total link strength
1	Hinduja, Sameer	2	336	4
2	Patchin, Justin W.	2	336	4
3	Livingstone, Sonia	2	296	4
4	Ortega-ruiz, Rosario	2	263	12
5	Aydin, Selami	2	202	0
6	Espelage, Dorothy L.	2	167	2
7	Walrave, Michel	5	164	8
8	Ponnet, Koen	4	158	8
9	Ziemba, Ewa	3	152	4
10	Cross, Donna	2	151	3
11	Lester, Leanne	2	151	3
12	Shin, Wonsun	2	135	2
13	Van Ouytsel, Joris	3	126	6
14	Tomczyk, Łukasz	7	124	6
15	Khan, Naseer Abbas	2	121	1
16	Veletsianos, George	2	113	0
17	Khan, Ali Nawaz	4	107	2
18	Alonso-Fernández, Cristina	2	88	1
19	Calvo-Morata, Antonio	2	88	1
20	Fernández-Manjón, Baltasar	2	88	1

The findings in figure 2 indicate a sudden increase in publications since 2019. The reasons for such an increase could be an increased demand and use of online distance learning in many HLIs due to the outbreak of the COVID-19 pandemic, where face-to-face teaching sessions (on-campus) were suspended in most countries.

3.2 Authors with higher citations on cyberbullying

The results of the analysis of authors with higher citations are summarised in table 2.

The citations were analysed by reflecting on the minimum number of 40 citations, and the results indicate that Sameer Hinduja and Justin W. Patchin had the highest citations (336). In contrast, Rosario Ortega-Ruiz had the highest total link strengths (12).

3.3 Organisations with highest citation

The analysis was made based on the minimum number of 40 citations in the organisation, and the results are presented in figure 3.

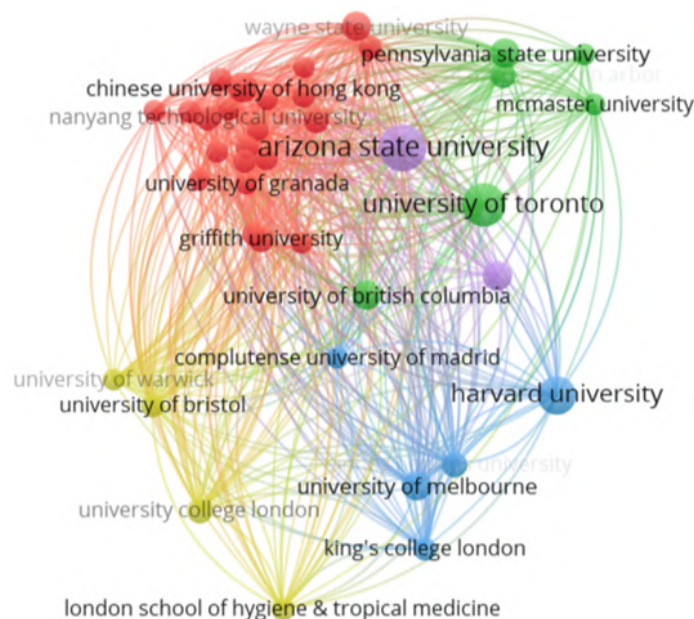


Fig. 3. Patterns on organisations with the highest citation.

The results indicate that the University of Toronto has the highest citations, followed by Harvard University, the University of Antwerp, and Arizona State University.

3.4 Countries with higher publications on cyberbullying among the youth

The bibliometric coupling analysis was made to identify popular countries and collaborative patterns in research publications about cyberbullying among the

youth in HLIs. The analysis was based on the minimum number of 5 documents of the country and the minimum of 5 citations of the country, whereby out of 222 countries, 40 met the threshold. The findings are presented in figure 4.

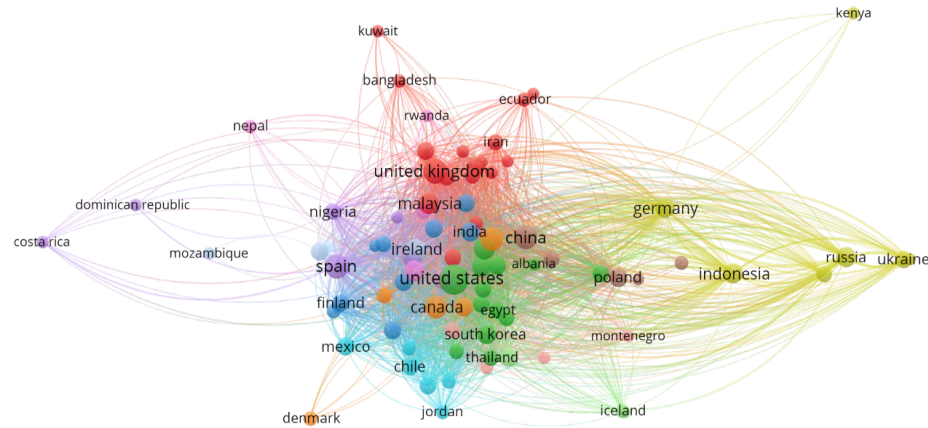


Fig. 4. Network on popular countries on publications about cyberbullying.

The findings in figure 4 indicate that developed countries such as the United States, Germany, the United Kingdom and Canada have high rates of research publications and strong collaboration patterns in cyberbullying. This could be an alert that there is high internet use for networked learning compared to other developing countries such as Mozambique, Nepal, Rwanda, and Kenya, which have low connection patterns.

Further analysis was made to identify popular journals which have strong links to cyberbullying among youth in HLIs. The results are presented in table 3.

Further analysis was made to establish a network visualisation map of the patterns indicating strong links between the journals, and the results are presented in figure 5.

The results indicate that journals such as “Integration of Education”, “International Journal of Environmental Research and Public Health”, “Computers in Human Behaviour”, “Behavioural and Brain Sciences”, “Frontiers in Psychology” and “Children and Youth Services Review” have strong links in publishing research articles on cyberbullying among youth.

3.5 Co-occurrence of keywords about cyberbullying

The co-occurrence analysis of keywords was carried out to explore the popular key areas associated with cyberbullying. The analysis was based on ten minimum number of occurrences of a term, where out of 19186 terms, 747 met the threshold. A relevance score was calculated for each of the 747 terms, and se-

Table 3. Distribution of articles by journal with total highest links.

Rank	Journal	Articles	Citations	Total link strength	Quartile	H-Index	SJR
1	Children and Youth Services Review	21	741	746	Q1	107	0.97
2	International Journal of Environmental Research and Public Health	28	436	674	Q2	167	0.83
3	Computers in Human Behaviour	16	998	531	Q1	226	2.46
4	Current Psychology	11	31	466	Q2	54	0.66
5	Frontiers in Psychology	21	246	413	Q2	157	0.89
6	Integration of Education	56	92	251	Q2	10	0.19
7	Journal of Interpersonal Violence	5	23	243	Q1	119	1.04
8	Child Indicators Research	5	56	195	Q1	39	0.89
9	International Journal of Bullying Prevention	8	68	167	Q1	12	0.75
10	Sustainability	14	365	164	Q1	136	0.66
11	Child Abuse & Neglect	6	128	159	Q1	164	1.72
12	Education and Information Technologies	12	101	152	Q1	61	1.25
13	Information Technology and People	5	131	135	Q1	71	1.08
14	Education Sciences	7	54	111	Q2	40	0.61
15	Journal of Children and Media	5	242	65	Q1	26	0.86

lection was based on the default choice of 60% of the most relevant terms. The results are presented in figure 6.

The word patterns relating to cyberbullying can be classified into six clusters as follows: the first cluster (red colour) shows how cyberbullying has a number of effects such as suicidal ideation, disruption, depression and loneliness. The second cluster (light blue) indicates some causes of cyberbullying, which include perpetration and moral disengagement. The third cluster (blue) indicates some facilitative conditions for cyberbullying, which include frequent internet use and low self-control. The fourth cluster (green) is linked with a frequent virtual environment (i.e., technology) used by the youth, indicating the occurrence of cyberbullying, which includes Facebook and Instagram. The fifth cluster (yellow-green) indicates possible risks such as sexual abuse, social exclusion, sexual orientation and online safety. The sixth cluster (purple) indicates that most victims are girls who are likely to have low academic performance.

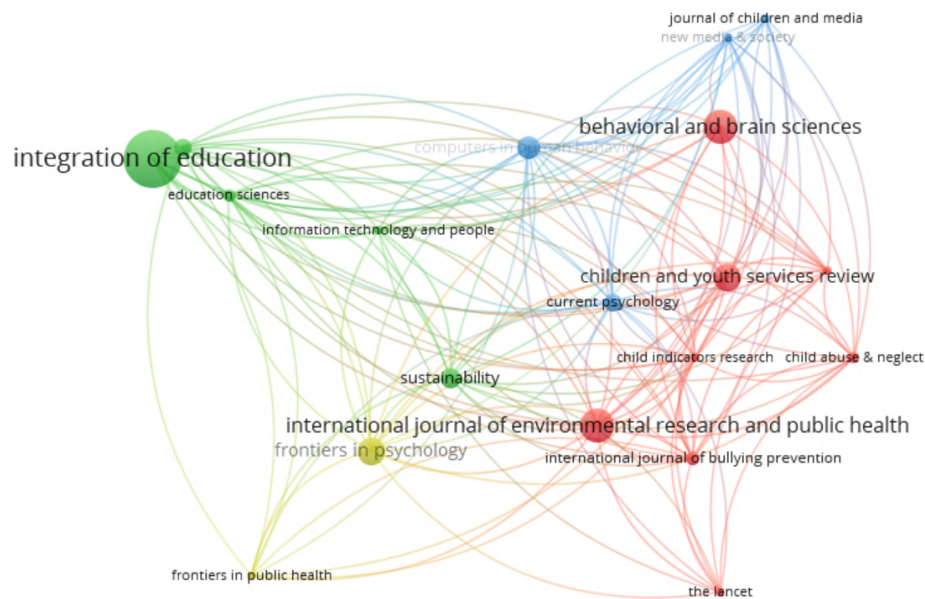


Fig. 5. Network visualisation of popular journals about cyberbullying among the youth.

4 Discussion

The findings indicate that there has been an increase in publications on cyberbullying in HLIs since 2008. This increase has been rapid from 2019 to 2022, which is a period when the world witnessed the outbreak of the COVID-19 pandemic. It has also been revealed in most recent studies that there has been rapid growth during the COVID-19 pandemic in most countries [14, 39]. With this rapid growth of technology, the internet and migration to online distance learning in most HLIs, it is evident that most students have been victims of cyberbullying. Even before COVID-19, some studies indicate the prevalence of cyberbullying in many HLIs in several countries. For instance, the study conducted at U.S. metropolitan North-Eastern Catholic University by Webber and Ovedovitz [65] indicates that out of 187 students, a total of 4.3% of them indicated that they had been victims of cyberbullying while in college and 7.5% indicated that they had participated in cyberbullying at the university level. Another study, which involved 242 students at Malaysia's Universiti Teknologi by Al-Rahmi et al. [6], revealed that more than half of the students indicated that they had been bullied, harassed, and stalked online.

The findings from the previous studies reveal that the prevalence of cyberbullying is due to increased use of the internet for learning and social networks among youth in HLIs. Increased internet use among the youth in HLIs aligns with the sustainable development goals in which there is more emphasis on exploring several opportunities through technology to enhance technical and vocational

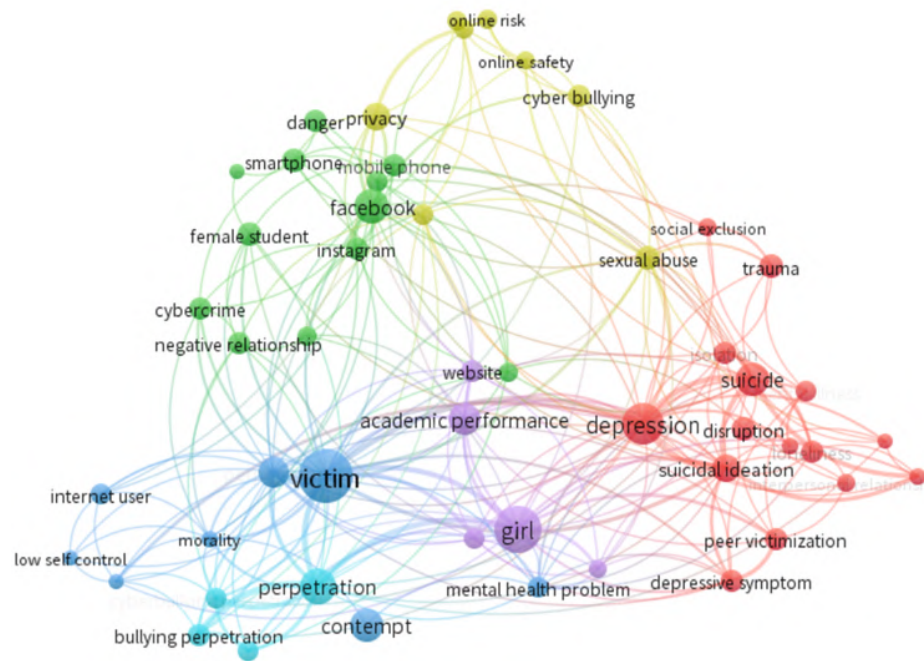


Fig. 6. Bibliographic coupling of co-occurrence of keywords about cyberbullying.

skills for employment, decent jobs and entrepreneurship [1]. This suggests that if technological opportunities among the youth are explored thoroughly, it will be possible to witness continued cyberbullying actions and victims in HLIs.

Further findings revealed that there is a higher publication rate on cyberbullying among developed countries compared to developing countries. This could indicate a high rate of internet users in developed countries, which attracts many researchers to research the impact of its misuse. Another bibliometric study found that most developed countries such as the United States, Spain, China, and Germany had high publications on cyberbullying [62]. Another study by Barragán Martín et al. [15] revealed that the United States, Spain, England, Australia, Canada, China and Italy have the highest rates of publications on cyberbullying among adolescents. This is an indication that there is an increase in the use of new technologies among the youth in HLIs in developed countries. The increase in cyberbullying behaviour among the youth is also attributed to a lack of knowledge among educators and their students on what could be the legal consequences and social impact of being a victim [50].

While the literature indicates an increased publication rate in developed countries, one could notice very little hope in developing countries, as the pattern indicated a few countries such as Mozambique, Nepal, Rwanda, and Kenya. Most HLIs have faced many technological challenges, leading to the low usage of technologies in teaching and learning. Thus, the probability of many students

being victims of cyberbullying is low. Recent literature indicates that some HLIs in developing countries have limited or no internet at all, leading to failure in running e-learning activities [7, 23]. One could also notice little effort in research on the impact of adopting technological innovations in some HLIs as there are variations in terms of culture, beliefs, and habits compared to developed countries [42].

Although technological adoption in some HLIs in developing countries appears to be slow, the literature indicates that online communication is increasing in most educational institutions, which invites the prevalence of cyberbullying behaviour among students [46]. It is possible to conclude that the prevalence of cyberbullying depends on many factors, which may include increased time one spends on social media, meeting strangers online, individual perspectives toward others' opinions, increased posting of private information, increased risk of being a victim of cyberbullying, [10, 39]. It makes sense to conclude that although there are very few publications on cyberbullying in developing countries, it does not guarantee the absence of the same. The problem has probably received limited attention among researchers. It is not a common phenomenon since technology adoption in most HLIs in developing countries is still in its infancy.

Furthermore, the findings from the current review revealed limited co-authorship between authors in developing and developed countries. This indicates that there could be limited evidence and interventions that could work in different contexts. Some funding agencies may need to fund projects addressing global phenomena, but if authors are not collaborating to generate co-authorship, it is possible to generate some solutions that lack contextual reality. Lack of strong collaboration between HLIs may limit researchers to combine their expertise and potential to generate innovations and ideas to solve existing problems. Universities may also have inadequate access to funding and research grants.

The results also indicated a strong pattern between a journal focusing on learners' behaviour and learning. Journals such as "Behavioral and Brain Sciences", "Frontiers in Psychology", and "Integration of Education" were found to have strong collaboration and significant impact on the field of cyberbullying. Most recent literature indicates that these journals, more specifically the journal "Computers in Human Behavior", is a well-established source with a wide range of audiences, publications impact factors and citations in the field of human interactions with computers for more than 35 years [20, 40, 42]. It is the journal with the largest number of publications on cyberbullying. It stands out from the rest by a wide difference because of its production statistics, given the large number of volumes it publishes yearly [15]. Additionally, in the bibliometric analysis of journal articles from 2004-2019 by López-Meneses et al. [45] it was found that the journal of Computers in Human Behavior was the most productive one followed by the "International Journal of Environmental Research and Public Health", "Cyberpsychology, Behavior, and Social Networking", "Frontiers in Psychology", "Children and Youth Services Review", just to mention a few. It is perhaps appropriate to conclude that evidence about the prevalence of cyberbullying in HLIs has been published widely in most reputable journals, which

is a good indicator that the upcoming researchers can really trace its historical underpinnings and devise possible insights to inform the practices in HLIs.

Further analysis was made to capture frequently used keywords among researchers in addressing the cyberbullying problem over time. The findings from the occurrence of keywords revealed that there are several factors, such as harsh parenting, electronic aggression, moral disengagement, perpetration and emotional problems. The prevalence of such factors suggests that families and HLIs seldom support students in developing digital safety skills. It is possible that when youth lack digital safety skills, they are likely to abuse the potential of technology. As a result, they develop addictions which affect their social and emotional well-being. Similar findings have been revealed by López-Meneses et al. [45], who found that cyberbullying caused by psycho-sociological factors associated with aggressive behaviour was associated with the use of technologies such as e-mail, software, video recording, information technology, internet and inadequate parent-child relations or parenting. Another study on a systematic literature review about the factors for cyberbullying by Shaikh et al. [61] found that emotional problems such as depression, anxiety and stress were the highest reported cyberbullying factors, followed by self-esteem and aggression.

Other factors include personality, poor relationships, parenting style, lack of empathy, anonymity and internalising behaviour, revenge, peer-to-peer relationship, technology exposure and ease of internet access [61]. Unlike the present review, other researchers found that the occurrence of cyberbullying among university students was highly associated with the time spent on the internet use [41, 70]. It is well known from other researchers that increased acts of cyberbullying among students in HLIs are due to increased use of computer-mediated communication and digital solutions as pedagogical tools [63]. Harsh parenting and electronic aggression could also be linked with imitation behaviour.

In the context of social learning theory, imitation may facilitate students' engagement in cyberbullying. In social learning theory, imitation refers to the process by which an individual engages in behaviour after observing similar behaviours in others [5]. Similarly, the concept of imitation is similar to modelling in which individuals learn different sets of complex behaviour through observing [12]. It is on this basis that students in HLIs are likely to imitate harsh and aggressive treatment from their parents or peers on campus. Given this scenario, parents or other members of HLIs have the moral obligation to ensure that they reinforce proper characters that students can model as a means to reduce or prevent the occurrence of cyberbullying behaviour.

It has also been recognised in several studies that the prevalence of cyberbullying among university students is due to a lack of proper understanding about it and possible legal impacts [27, 61]. This has also been reflected in the findings by Alsawalqa [8], who found that most of the students who were bullies admitted that the main reason for cyberbullying was humour and that they were unaware that their harsh or aggressive behaviours could be categorised as bullying. Based on these researches, there have been some concerns that female students are more bullied than male students because more male students are likely to commit acts

of cyberbullying compared to their female counterparts [50, 52, 58, 61]. In another research, it was found that being involved in cyberbullying for both males and females was due to being upset after being bullied by another person. The typical response for male respondents was that it was fun, whereas, for female respondents, it was that they just did not like the person [26]. However, sufficient literature concludes that cyberbullying has not been thoroughly researched [56, 61, 70]. This indicates that much effort among researchers is needed to explore the possible causes and prevention strategies of cyberbullying to inform best practices in HLIs. Therefore, it makes sense to conclude that the preceding discussion suggests that there is a need for deliberate measures to develop strategies in HLIs that can promote good personal-emotional and social adjustment [47] and moral commitment towards effective use of digital media to reduce the occurrence of cyberbullying among students.

In addition, the bibliometric analysis revealed an increased occurrence of cyberbullying due to the transition to an online learning environment and distance learning in most HLIs during the COVID-19 pandemic. Such a transition attracted more risks for students engaging in unwanted behaviour as they were inadequately oriented on the appropriate digital safety norms. The research evidence indicates that most HLIs transitioned to virtual learning without proper preparations, which caused so many problems for students, including social and emotional challenges such as anxiety and depression [18, 28, 31, 32]. Likewise, the sudden transition to online learning threw students and their instructors into traps of cyberattacks and cyberbullying as most of them had to obtain their learning needs through cyberspace and engagement in social media and online gaming activities [11, 39]. Most students in HLIs faced several challenges and higher risks of cyberbullying due to an increased and unstructured time spent on online learning platforms, which, as a result, increased the chance of accessing harmful and violent digital content [33, 57]. This indicates that most HLIs have not fully established e-learning policies that may guide daily e-learning practices during emergencies. Researching on the transition from face-to-face to e-learning in South African University in the context of COVID-19, Mpungose [49] revealed that the university did not have any policy in place to guide the use of e-learning and no training was provided to lecturers.

Further evidence indicates that in some HLIs in developing countries, the e-learning policies are not in place, and some are struggling to develop them [13, 66]. In many HLIs, transitioning to e-learning during COVID-19 has been a challenge due to a lack of motivation to work in a virtual environment, a lack of proper skills in ICT and pressure from learners to learn e-learning to manage the spread of COVID-19 [53]. Likewise, Zarei and Mohammadi [68] note that developed countries have established and adjusted their technological infrastructures to transition from a face-to-face education to a digital one. In contrast, the developing countries were not entirely prepared for this transition during COVID-19. This indicates that most of the HLIs in developing countries, particularly in Sub-Saharan countries, lag in technological innovations.

Despite the African Agenda 2063 [2], which emphasises accelerating the development of human capital, science and technology and innovation through increasing access to tertiary and continuing education in Africa by capitalising on the digital revolution and global knowledge, one could still notice minimal efforts being made to achieve the same. It has been critically recommended that for the online teaching-learning process, each university needs to develop an online mode of education as an alternative mode with an education-friendly curriculum, updated technology, designated faculty and proactive administration [31]. Where possible, HLIs need to develop specific online learning policies that could guide the effective utilisation of digital learning opportunities [53]. However, Afsar et al. [3] note that HLIs lack proper anti-cyberbullying policies, highlighting the need for research to establish the same.

Regarding the impacts of cyberbullying, the findings from the analysis indicate a strong link between being a victim of cyberbullying and social and emotional challenges that may lead to suicide, sexual assaults and alcohol abuse. One of the implications here is that students who are victims of cyberbullying cannot concentrate fully on their academic activities or seldom have a settled mind, as their mental well-being is compromised. Along with these findings, many of the recent studies also clearly indicate other evidence attributed to cyberbullying among students in HLIs. For example, Khine et al. [41] found that most university students in Myanmar who suffered cyberbullying victimisation faced academic difficulties and started or increased smoking, betel chewing or alcohol drinking. Other researchers report several impacts of being a victim of cyberbullying, such as mental health problems, including stress, anxiety, depression, and suicidal thoughts [19, 50]. In the study conducted in Myanmar, it was found that cyberbullying victims were found to be positively associated with difficulty in concentrating and understanding lectures and starting or increasing substance abuse [41]. Students who are exposed to cyberbullying face low levels of concentration due to undesirable pictures, messages and harassment, which leads to academic problems, interpersonal problems, family problems, depression, substance abuse, suicidal ideation, and self-esteem problems [6, 56]. Many questions remain about the extent to which students are affected by cyberbullying in HLIs, which might need quasi-experimental measures. Further results indicate that the victimised bullies have greater difficulties in their organisation and planning for study and exams and are less able to adapt to university [9]. Most college students who have been cyberbullied have committed suicide, dropped out, or endured torment while in school [64]. Further evidence indicates that cyberbullying can lead to sadness, anxiety, low self-esteem, poor mental health, and the development of suicide ideation and sometimes suicidal tendencies [67].

Although the findings from the previous studies indicate several impacts on cyberbullying, these findings also suggest important recommendations on how institutions can prevent the occurrence of cyberbullying among students in HLIs. Most researchers suggest the need to address academic adjustment and effective means to adapt to the university technological environment and be informed

of the repercussions of technology used so that appropriate conduct may be instilled in them since they are at the young age [9, 34]. While these researchers recommend effective strategies for the adoption of the technological environment, others suggest the need for parental monitoring and regulating the time spent on online activities and the need for a standardised policy and curriculum that universities can use to implement and enforce cyber safety behaviour at the university [17, 21]. Periodic screening for cyberbullying, counselling services, cyber-safety educational programmes, and awareness-raising campaigns should be implemented in HLIs [41]. Similarly, Lim and Lee [43] suggest the need to modify the existing adult and peer support groups to minimise cyberbullying victims' social and psychological distress [43]. Generally, the study highlights the immoral use of the internet as a source of cyberbullying, which has led to the prevalence of many perpetrators and victims in HLIs. Further evidence indicates that most countries have not established cyberbullying laws, which are ineffective and call for reforming or establishing new ones [67]. There is a good reason to believe that students in HLIs become victims of cyberbullying due to a lack of understanding of cyberbullying impacts.

5 Conclusion and recommendations

This paper analysed global research trends in publications on cyberbullying in HLIs from 2008 to 2022. It was found that publications on cyberbullying increased exponentially during the COVID-19 pandemic when there was a shift to online distance learning. This is an indication that there is a growing interest in research about cyberbullying behaviour in HLIs due to the increased use of the internet and digital devices. The keywords analysis revealed various clusters, which have been categorised into several topics, including factors of occurrence of cyberbullying behaviour and its impacts. This is an indication that there are many topics for further research for scholars who wish to explore the causes and impacts of cyberbullying in different levels of education and contexts.

The results of the current bibliometric analysis suggest that there are limited studies on cyberbullying in HLIs in developing countries due to the low use of technology. However, there are some indicators of the adoption of innovations. In that context, there is a need to explore more opportunities for researchers to capitalise on the impact of cyberbullying due to an increased use of technology. This bibliometric analysis provides some insights to HLIs about safe online learning environments while emphasising developing anti-cyberbullying policies to safeguard internet users. For the HLIs to be competitive and a safe place for digital natives to learn, the development of e-learning and anti-cyberbullying policies is inevitable. Helping the youth to understand the side effects of cyberbullying has the potential to enable them to value the role of technology in an unchallenged digital learning environment. This review employed a bibliometric analysis of research articles from the Dimensions database only, which may have omitted important information regarding cyberbullying. Further analysis could be done on the same topic, engaging other scientific databases such as Scopus and Web

of Science. The current review included empirical articles only; future research may include non-empirical publications such as dissertations and books. Further research may be carried out, focussing on the systematic review of the effective interventions and preventive strategies available in different contexts of HLIs to identify how they shape youth in abstaining from cyberbullying behaviour.

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