

# Research Trends On Technology-Assisted Child Sexual Abuse: A 20 Years Bibliometric Analysis

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## Abstract

*Technology-Assisted Child Sexual Abuse (TA-CSA) is a critical issue. This study examines the trends of TA-CSA studies globally to understand the issues. Bibliometric analysis with VOSviewer was conducted on 840 selected journal articles published in the last 20 years from the Scopus database. Between 2002 and 2023, scientific articles on the subject were published by 89 countries, with the US, UK, and Canada being the top 3 countries with the highest publication in TA-CSA. Authors from the US and UK dominate research related to TA-CSA. Research on CSA is more related to medicine, psychology, and social science. TA-CSA research tends to increase, with the highest increase occurring in 2020. Bibliometric analysis also reveals researchers' concerns and research trends regarding TA-CSA. The consistent presence of clusters focusing on TA-CSA highlights the ongoing and persistent nature of this issue. Research in this area continues to explore various aspects, including the prevalence, risk factors, and the impact on victims. It emphasizes policy evaluation and victims' access to and accept various forms of protection and assistance.*

**Keywords:** *Technology-Assisted Child Sexual Abuse, Bibliometric Analysis and Research Trends.*

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## I. INTRODUCTION

Digital technology development has significantly impacted various aspects of human life, including how crimes are committed. One of the negative impacts of technological advances is the increasing cases of child sexual abuse facilitated by technology, known as Technology-Assisted Child Sexual Abuse (TA-CSA). Technology-assisted child sexual abuse (TA-CSA) refers to any form of sexual abuse involving an online element, targeting individuals under the age of 18 [1]. It includes a wide range of activities such as online grooming, dissemination of child sexual abuse material (CSAM), and live streaming of abuse [2], [3]. The increasing integration of technology into daily life has exacerbated the prevalence and complexity of TA-CSA, making it a significant public health issue [2], [4]. Global data shows that TA-CSA is increasing along with expanding internet access and social media use among children. A report from the National Center for Missing & Exploited Children (NCMEC) noted that reports of online child sexual exploitation reached more than 29 million cases in 2021, a drastic increase compared to previous years [5].

TA-CSA perpetrators often take advantage of the anonymity offered by the online world to approach, manipulate, or coerce child victims into engaging in sexual activity. The impact of TA-CSA on victims is profound and multifaceted, affecting their emotional, psychological, and social well-being [6], [7]. Victims may experience similar consequences to those of offline abuse, such as trauma and mental health issues, but with added complexities due to the digital nature of the abuse. These complexities include the permanence and uncontrollability of digital images, the potential for re-victimization, and the psychological burden of knowing that abusive material may continue to circulate online [8], [9]. Victims of TA-CSA often face unique challenges in seeking support, as traditional support systems may not adequately address the online components of the abuse [1]. Practitioners frequently lack clear guidelines on approaching TA-CSA during initial assessments, highlighting the need for specialized training and multi-agency collaboration [1], [6]. Additionally, there is a systemic failure to recognize the severity of TA-CSA compared to offline abuse, which can lead to inadequate protection and support for victims [6]. Thus, it is crucial to examine the trends

of TA-CSA studies globally on how to understand most issues of TA-CSA through bibliometric analysis. In addition, it aims to provide future research that is significantly related to TA-CSA issues.

## II. METHODS

This article is a descriptive study with a bibliometric approach. Bibliometric research analyses the relationship between documents, authors, keywords, or journals [10]. As a bibliometric study, this study uses a dataset provided by Scopus, which was then analyzed using Excel software and VOSviewer 1.6.18 to analyze the relationship between the data and visualize the results [11]. The Scopus dataset was selected based on the number of indexed document databases [12]. Data from the Scopus database was retrieved on December 10, 2024, with the keywords TITLE-ABS-KEY ( ("technology" OR "digital" OR "online" OR "internet" )AND "child" OR "youth" OR "minor" OR "juvenile" ) AND ( "sexual abuse" OR "exploitation" OR "assault" OR "victimization" ) ) AND PUBYEAR > 2002 AND PUBYEAR < 2024 AND ( LIMIT-TO ( SUBJAREA , "MEDI" ) OR LIMIT-TO ( SUBJAREA , "PSYC" ) OR LIMIT-TO ( SUBJAREA , "SOCI" ) OR LIMIT-TO ( SUBJAREA , "ARTS" ) OR LIMIT-TO ( SUBJAREA , "NURS" ) OR LIMIT-TO ( SUBJAREA , "BUSI" ) OR LIMIT-TO ( SUBJAREA , "HEAL" ) ) AND ( LIMIT-TO ( DOCTYPE , "ar" ) ) AND ( LIMIT-TO ( LANGUAGE , "English" ) ).

In the first stage, the keyword search resulted in 2,090 articles. The next stage was to limit the publication category to open-access articles for 20 years from 2003 to 2023 and focus the data on articles published through journals. In the second stage, 849 articles were obtained. This study analyzes the trend of publications related to TA-CSA and critical indicators such as the distribution of journals, impact index, article citations, average citations per year, and the most productive countries for related themes. Then, we will analyze and visualize relationships between data, such as relationships between keywords, citation relationships between journals, and relationships between authors using VOSviewer.

## III. RESULT AND DISCUSSION

### Type and Trend of TC-CSA Publication

The types and numbers of TA-CSA journal subjects for two decades (2003-2023) are as follows. The highest number of documents is in the subject area of medicine, amounting to 509 journals (36.8%); second in psychology, 326 documents (23.5%); third in social science, 263 documents (19.0%); and the fourth are the arts and humanities (77 documents; 5.6%). The number of articles on TA-CSA over the past two decades (2003-2023) shows an increasing trend, although there are fluctuations in specific years. In 2004, there were only two research, increasing to 160 in 2023. A significant increase occurred from 2019 to 2020 (50 to 85 studies or 70%), then from 2020 to 2021 (85 to 135 studies or 58.82%). This increase comes as the COVID-19 pandemic has led to a significant increase in technology-assisted child sexual abuse (TA-CSA). Several factors have contributed to this increase: (a) *Increased Technology Use*: The pandemic resulted in widespread stay-at-home orders and social isolation, leading to a substantial increase in the use of digital technologies by children and adolescents for education, social interaction, and entertainment [13]; (b) *Social Isolation*: Social isolation measures reduced children's interactions with peers, teachers, and other adults who could potentially identify and report abuse. Isolation also meant that children spent more time at home, often unsupervised, making them more vulnerable to online predators [14]; (c) *Economic Instability*: The economic impact of the pandemic led to increased stress within families, which can exacerbate the risk of abuse [13]; (d) *Reduced Access to Support Services*: The pandemic disrupted child protection services and reduced access to support systems, making it harder for victims to seek help and for authorities to intervene [14], [15], [16]; (e) *Anonymity for Offenders*: The anonymity provided by digital platforms allowed offenders to groom and exploit children without fear of immediate detection [17]; (f) *Lack of Prioritization by Technology Companies*:

There was a perceived lack of prioritization of child protection by technology companies during the pandemic, which may have contributed to the increase in TA-CSA [16]. Furthermore, analyzing publications related to TA-CSA across countries can be valuable in identifying countries that have made significant contributions to TA-CSA studies. Between 2002 and 2023, scientific articles on the subject were published by 89 countries. In 2023, the US was in first place with 283 publications. This position was followed by the UK (n=180), Canada (n=75), Spain (n=56), and Australia (n=55). Among the top 10 countries, only China was categorized as a developing country, while the others were categorized as developed. It implies that developed countries have conducted most of the studies related to TA-CSA. Meanwhile, developing countries tend to be the locus of research. Referring to the authors, from 2003 until 2023, 3,178 authors had written articles on the TA-CSA theme. The top 10 authors in terms of the number of publications are listed in Table 1. Four authors were from the US, four from the UK, one from Germany, and one from Canada. Ybarra, M.L., from the US, is one of the seminal authors, with 19 articles and 2,944 citations. Besides, there are Mitchell, K.J. (US), Wachs, S. (Germany), and Quayle, E. (UK) who have actively published articles in the field with 16, 10, 10 and 9 articles, respectively and with 1,679, 858, 197, and 108 citations, respectively.

**Table 1.** Most Influential Authors

No	Element	h_index	g_index	m_index	TC	NP	PY_start
1	Ybarra, M.L.	16	19	0.762	2944	19	2004
2	Mitchell, K.J.	11	16	0.611	1679	16	2007
3	Finkelhor, D.	9	10	0.529	858	10	2008
4	Wachs, S.	8	10	0.889	197	10	2016
5	Quayle, E.	7	9	1	108	9	2018
6	Wright, M.F.	7	7	0.875	96	7	2017
7	Hamilton-Giachritsis, C.E.	6	8	0.545	183	8	2014
8	Kloess, J.A.	6	9	0.75	160	9	2017
9	Beech, A.R.	5	6	0.455	170	6	2014
10	Briken, P.	5	5	0.556	219	5	2016

Ybarra, M.L. is the author with the highest total citations; the most cited article was "Examining the Overlap in Internet Harassment and School Bullying: Implications for School Intervention." The research found that while the data do not support the assumption that many young people who are harassed online are bullied by the same (or even different) peers at school, the findings support the need for professionals working with children and young people to be aware of the possible link between school behaviour and online harassment for some young people [18]. Mitchell, K.J. is another leading researcher, with highly cited articles entitled "Online "Predators" and Their Victims: Myths, Realities, and Implications for Prevention and Treatment." Particular attention should be paid to adolescents at high risk, including those with histories of sexual abuse, sexual orientation issues, and patterns of online and offline risk-taking [19].

**Keyword Analysis**

The map of research publishing articles on TA-CSA in 20 years illustrated the results of clustering of keywords marked with each colour and number of nodes. Figure 1 shows a network visualisation based on co-occurrence by the authors' keywords, with the keywords "cyberbullying", "bullying", "internet", "adolescents", and "child sexual abuse" being more prominent than the other keywords. The visualisation is based on the analysis results using VOSviewer; the larger the circle size, the more frequent the keywords will occur. Keywords with the same colour show that they are in the same cluster and are closely related to other keywords.





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