

REVIEW ARTICLE

Cyberbullying Among Adolescents: An Emerging Public Health Concern in the Digital Era

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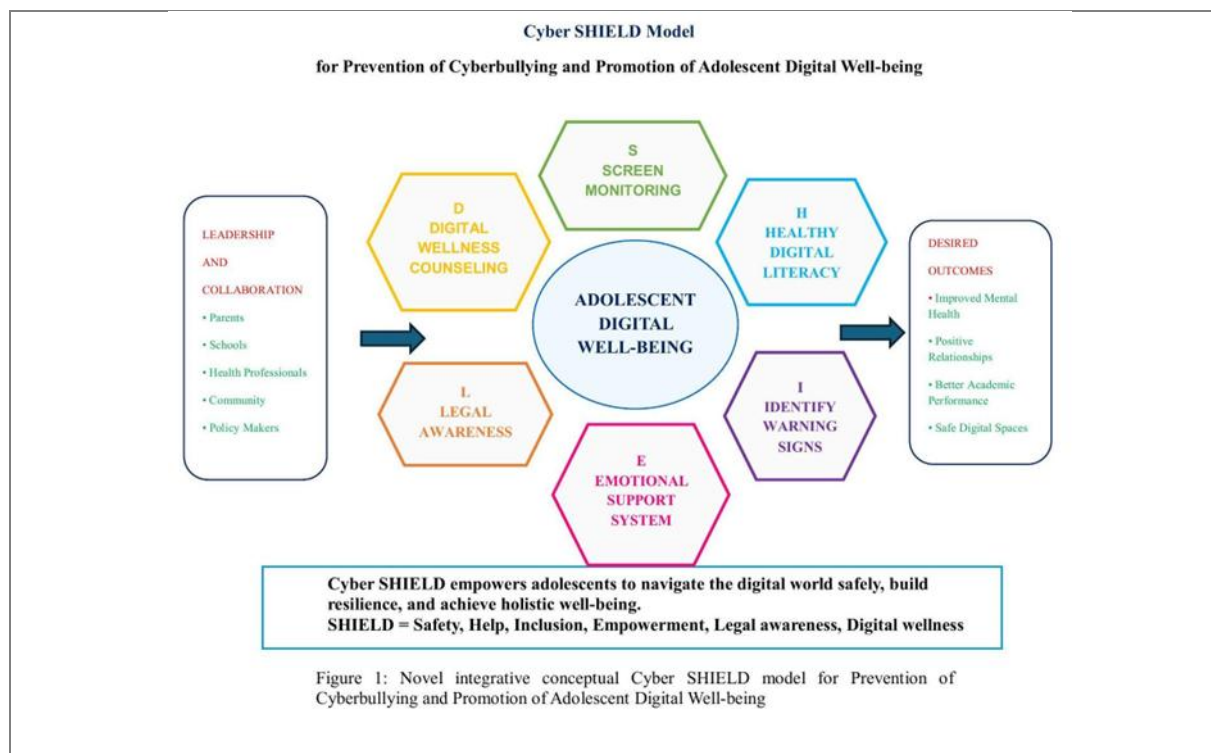
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GRAPHICAL ABSTRACT



HIGHLIGHTS

- Cyberbullying is a rapidly growing adolescent public health problem, with Indian prevalence estimates of 20–40% and global estimates of 15–35%.
- Victims of cyberbullying face nearly twice the risk of depressive symptoms and suicidal ideation compared with non-victims.
- Underreporting remains high because of fear of stigma, retaliation, and limited school-based mental health support.
- A multidimensional Cyber SHIELD Model is proposed, integrating monitoring, digital literacy, early identification, emotional support, legal awareness, and counseling to guide prevention efforts.

ABSTRACT

Background: The rapid expansion of internet accessibility and smartphone ownership has transformed how adolescents communicate, exposing them to an increasing risk of cyberbullying. Cyberbullying — repeated harassment, humiliation, or threatening behaviour conducted through electronic media — has emerged as a significant adolescent public health concern in India and globally. **Objective:** This review synthesizes current evidence on the magnitude, psychological consequences, and public health implications of cyberbullying among adolescents, and proposes a conceptual framework for prevention. **Methods:** A narrative review of peer-reviewed literature and institutional reports (World Health Organization, UNICEF, UNESCO) published up to 2024 was conducted using electronic databases, focusing on studies addressing cyberbullying prevalence, psychosocial impact, and preventive interventions among adolescents. **Findings:** Global prevalence of adolescent cyberbullying ranges from 15–35%, with Indian studies reporting 20–40%. Victims commonly experience anxiety, depression, low self-esteem, sleep disturbance, and academic decline, with nearly

twice the risk of depressive symptoms and suicidal ideation compared with non-victims. Underreporting, inadequate digital literacy, and limited school-based mental health services delay identification and intervention. Conclusion: Cyberbullying requires a coordinated, multidisciplinary public health response. The proposed Cyber SHIELD Model — encompassing screen monitoring, healthy digital literacy, identification of warning signs, emotional support, legal awareness, and digital wellness counseling — offers a structured framework for schools, families, and health professionals to prevent cyberbullying and promote adolescent digital well-being.

Keywords: Cyberbullying; Adolescents; Mental health; Social media; Public health

INTRODUCTION

The rapid expansion of digital technology and internet accessibility has significantly transformed communication patterns among adolescents worldwide. India currently has over 750 million internet users, with adolescents and young adults representing a substantial proportion of social media consumers. According to recent national surveys, smartphone access among Indian adolescents has increased considerably in both urban and rural settings, exposing young individuals to prolonged online engagement. Although digital platforms provide educational and social advantages, they have simultaneously increased vulnerability to cyberbullying, which has emerged as a serious public health concern.

Cyberbullying refers to intentional and repeated harassment, humiliation, intimidation, spreading of rumors, or threatening behavior through electronic media such as social networking sites, messaging applications, online gaming platforms, and digital forums. Global evidence suggests that approximately 15–35% of adolescents experience cyberbullying during their school years, while Indian studies report prevalence rates ranging between 20% and 40% among school and college students. The growing anonymity and unrestricted accessibility of

digital platforms further intensify the psychological impact of cyberbullying compared to conventional bullying.

Adolescents are particularly vulnerable to the harmful consequences of cyberbullying because of their emotional and developmental sensitivity. Victims commonly experience anxiety, depression, loneliness, low self-esteem, sleep disturbances, emotional distress, poor academic performance, and social withdrawal. Evidence also indicates that adolescents exposed to cyberbullying have nearly twice the risk of depressive symptoms and suicidal ideation compared to non-victims. Unlike traditional bullying, cyberbullying can occur continuously beyond school environments, making escape and recovery difficult for affected individuals.

Digital technology usage among adolescents has increased dramatically because of widespread smartphone accessibility, affordable internet services, and increased social media engagement (Telecom Regulatory Authority of India, 2024; World Health Organization, 2024a). The COVID-19 pandemic further accelerated digital dependency through online education and virtual communication (Twenge & Martin, 2020). Although digital platforms provide educational and social benefits, prolonged and unsupervised internet use has simultaneously increased adolescents' vulnerability to cyberbullying, online harassment, and digital exploitation (Nagata et al., 2020; UNICEF, 2023). Poor digital literacy and limited awareness regarding cyber safety further contribute to cyber victimization among adolescents (Hinduja & Patchin, 2023).

Despite the growing recognition of cyberbullying as a public health issue, evidence on its magnitude, psychosocial consequences, and preventive strategies among Indian adolescents remains fragmented. This review therefore aims to synthesize current evidence on the prevalence, psychological and behavioral consequences, and public health implications of cyberbullying among adolescents, and to propose a structured conceptual framework — the

Cyber SHIELD Model — to guide prevention, early identification, and digital wellness promotion in this population.

MATERIALS AND METHODS

This paper is a narrative review synthesizing published literature and institutional reports on cyberbullying among adolescents, with an emphasis on evidence relevant to the Indian context.

Search Strategy

Electronic databases, including PubMed/MEDLINE, Scopus, and Google Scholar, were searched for peer-reviewed articles published between 2007 and 2024 using combinations of the keywords “cyberbullying,” “adolescents,” “online harassment,” “digital victimization,” “mental health,” and “public health.” Reports and technical guidelines published by the World Health Organization, UNICEF, UNESCO, and the Telecom Regulatory Authority of India were additionally reviewed to contextualize national prevalence and policy data.

Selection Criteria

Articles were selected based on their relevance to the prevalence, psychological and behavioral consequences, and preventive or policy-level interventions for cyberbullying among school- and college-going adolescents. Peer-reviewed original research, systematic reviews, meta-analyses, and institutional reports published in English were included. Studies unrelated to the adolescent age group or focused exclusively on traditional (offline) bullying without a digital component were excluded. A total of 43 sources meeting these criteria were retained and synthesized thematically to inform the discussion presented below.

Development of the Conceptual Framework

Building on the themes identified from the reviewed literature — namely digital exposure, prevalence, psychological consequences, public health implications, and preventive strategies

— a conceptual prevention framework, the Cyber SHIELD Model, was developed. The model was formulated by mapping recurring intervention themes from the literature onto established behavioral and public health theories, as detailed in the Discussion.

DISCUSSION

Magnitude of the Problem

Cyberbullying has emerged as a rapidly growing global public health issue affecting adolescents across multiple sociocultural settings (Moreno & Vaillancourt, 2017). Cyberbullying includes repeated intimidation, humiliation, social exclusion, spreading rumors, and threatening behavior through digital communication platforms (Smith et al., 2008). Meta-analytic evidence suggests that approximately one in three adolescents experiences cyberbullying during school years (Modecki et al., 2014). Indian studies have reported cyberbullying prevalence rates ranging from 20% to 40% among school and college students (Balakrishnan, 2018). Increased anonymity and unrestricted online communication further contribute to the persistence and severity of cyber victimization (Tokunaga, 2010). Evidence also indicates that cyberbullying prevalence increased substantially following the COVID-19 pandemic because of increased online activity among adolescents (Barlett et al., 2021).

Psychological and Behavioral Consequences

Cyberbullying significantly affects adolescents' psychological well-being and behavioral functioning (Kowalski et al., 2014). Victims commonly experience anxiety, depression, loneliness, emotional distress, low self-esteem, sleep disturbances, academic decline, and social withdrawal following repeated online victimization (John et al., 2018; Nixon, 2014). Persistent cyberbullying may increase the risk of aggressive behavior, substance abuse, self-harm, and suicidal ideation among vulnerable adolescents (Hinduja & Patchin, 2010; Kowalski & Limber, 2013). The anonymous and continuous nature of cyberbullying often intensifies

psychological trauma and prolongs emotional suffering beyond school environments (Livingstone & Smith, 2014).

Public Health and Community Concerns

Cyberbullying is increasingly recognized as an emerging adolescent public health issue with significant community-level implications (Cassidy et al., 2013). Poor awareness regarding cyber safety and responsible digital behavior contributes to increased psychological vulnerability among adolescents (Moreno et al., 2020). Fear of embarrassment, retaliation, and social stigma frequently prevents victims from reporting cyberbullying incidents (Patchin & Hinduja, 2011). Inadequate parental monitoring and limited school-based mental health services further contribute to delayed identification and intervention (World Health Organization, 2021). Long-term exposure to cyber victimization may adversely affect social relationships, educational attainment, productivity, and quality of life (UNESCO, 2019). The growing burden of adolescent mental health problems associated with cyberbullying may also increase healthcare and social support demands at the community level (UNESCO, 2022).

Need for Preventive and Community-Based Interventions

Effective prevention of cyberbullying requires multidisciplinary and community-based interventions involving schools, families, healthcare professionals, and policymakers (American Academy of Pediatrics, 2019). Schools should incorporate structured digital literacy, cyber safety education, and mental health awareness programs into regular curricula (Kowalski & Limber, 2007; World Health Organization, 2024b). Parents and teachers should be trained to identify early warning signs associated with cyber victimization and provide timely emotional support (Selkie et al., 2016). Community health professionals and school health nurses can contribute through early screening, counseling, peer-support initiatives, and

awareness programs promoting responsible digital behavior and adolescent well-being (Brewer & Kerslake, 2015; Hamm et al., 2015).

Strengthening Policies and Future Directions

Strengthening cyber safety policies and adolescent mental health services is essential to reduce the growing burden of cyberbullying (Bauman et al., 2013). Integration of digital safety education into school curricula may improve awareness regarding responsible social media use and online behavioral risks (Hinduja & Patchin, 2007). Social media platforms should strengthen reporting mechanisms and monitoring systems to reduce harmful online interactions among adolescents (Dredge et al., 2014). Policymakers should encourage collaborative efforts between healthcare, education, and information technology sectors to address cyberbullying comprehensively (Ortega et al., 2009). Future research should focus on long-term psychological outcomes, culturally appropriate interventions, and epidemiological surveillance of cyberbullying among Indian adolescents (Slonje & Smith, 2008). A coordinated public health approach emphasizing awareness, prevention, early intervention, and mental health support is necessary to protect adolescent well-being in the evolving digital era (Willard, 2007).

Need for Government Policies and Cyber Safety Regulations in India

- Cyberbullying among adolescents has emerged as a significant public health and cyber safety concern requiring urgent national policy attention because of increasing digital dependency among Indian youth (World Health Organization, 2024b).
- Rapid smartphone penetration, unsupervised internet access, and excessive social media use have substantially increased adolescents' exposure to online harassment, identity misuse, and psychological abuse (UNICEF, 2023).

- Lack of standardized cyber safety education and inadequate awareness regarding legal protection contribute to underreporting and delayed intervention in cyberbullying incidents (Moreno & Vaillancourt, 2017).
- Integration of cyber safety, responsible digital behavior, and mental health awareness into school curricula is essential to strengthen preventive efforts at the community level (UNESCO, 2022).
- Establishment of adolescent-friendly cybercrime reporting systems, school counseling services, and psychological support mechanisms may facilitate early identification and timely intervention (American Academy of Pediatrics, 2019).
- Strong intersectoral collaboration between healthcare professionals, educators, parents, law enforcement agencies, policymakers, and information technology sectors is necessary for effective cyber safety governance (Moreno et al., 2020).
- Strengthening government regulation of social media platforms through stricter monitoring systems, content moderation policies, and reporting mechanisms is crucial to protect adolescent mental well-being and ensure safer digital environments (Livingstone & Smith, 2014).

A Proposed Conceptual Framework: The Cyber SHIELD Model

In addition to policy-level interventions, there is a need for a structured conceptual framework to guide prevention, early identification, emotional support, and digital wellness promotion among adolescents. Therefore, the Cyber SHIELD Model is proposed as a multidimensional framework for prevention of cyberbullying and promotion of adolescent digital well-being.

S — Screen Monitoring – Regular parental and school monitoring of screen time, online behavior, and risky digital exposure.

H — Healthy Digital Literacy – Promoting safe social media practices, privacy awareness, and responsible online communication.

I — Identify Warning Signs – Early identification of behavioral symptoms such as anxiety, social withdrawal, fear, sleep disturbances, and emotional distress.

E — Emotional Support System – Providing counseling, peer support, family communication, and school-based mental health assistance.

L — Legal Awareness – Educating adolescents regarding cybercrime reporting systems, privacy laws, and digital rights.

D — Digital Wellness Counseling – Structured interventions by school health nurses, counselors, teachers, and mental health professionals to promote balanced technology use.

Figure 1: Cyber SHIELD Model for Prevention of Cyberbullying and Promotion of Adolescent Digital Well-being

Theoretical Basis of the Cyber SHIELD Model

The Cyber SHIELD Model is theoretically grounded in the Socioecological Model, Pender's Health Promotion Model, Resilience Theory, and the Public Health Prevention Framework. These theories collectively emphasize that adolescent digital behavior is influenced by family, school, peers, community, and policy environments, while highlighting the importance of education, emotional support, resilience building, early identification, counseling, and preventive interventions. The framework incorporates primary prevention through digital literacy and awareness, secondary prevention through early identification of warning signs, and tertiary prevention through counseling and psychosocial support to promote adolescent digital well-being.

Despite increasing internet penetration in India, awareness regarding digital safety, responsible social media use, and early recognition of cyberbullying remains inadequate among adolescents, parents, and educators. Fear of retaliation, social stigma, and limited mental health support services contribute to significant underreporting of incidents. Therefore, addressing cyberbullying requires a multidisciplinary and community-based approach.

Schools should incorporate structured digital literacy and mental health awareness programs into educational curricula. Parents and teachers must be trained to identify behavioral changes associated with cyberbullying and provide timely emotional support. Community health professionals and school health nurses can play a crucial role in early screening, counseling, and preventive education. Strengthening cyber safety policies and promoting collaborative efforts between healthcare professionals, educators, policymakers, and families are essential to protect adolescent mental well-being in the digital era.

CONCLUSION

Cyberbullying has emerged as a significant and growing adolescent public health concern in India, with prevalence rates comparable to or exceeding global estimates. Its psychological and behavioral consequences — ranging from anxiety and depression to self-harm and suicidal ideation — underscore the urgency of coordinated preventive action. Addressing this problem requires multidisciplinary collaboration among schools, families, healthcare professionals, and policymakers, supported by structured digital literacy programs, early identification systems, and accessible mental health services. The proposed Cyber SHIELD Model offers a practical, theory-informed framework that schools, community health professionals, and policymakers can adapt to strengthen adolescent digital well-being. Future research should prioritize longitudinal studies, culturally tailored interventions, and systematic epidemiological surveillance to inform evidence-based cyber safety policy in India.

DECLARATION OF CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest.

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AUTHOR CONTRIBUTION

Conceptualization: [Nandakumar. S]; Literature search and screening: [Dr Meena P]; Data curation and thematic synthesis: [Nandakumar S]; Development of the conceptual framework (Cyber SHIELD Model): [Nandakumar S]; Writing – original draft: [Nandakumar S]; Writing – review and editing: [Dr Madhavi S]; Supervision: [Dr Meena P]. All authors read and approved the final manuscript.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new datasets were generated or analyzed during the current review. All sources synthesized in this review are cited within the article and are publicly available through the references listed.

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