Online Child Sexual Exploitation and Abuse (OCSEA) of Children and Adolescents: A Systematic Literature Review

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Abstract. Internet can be dangerous since it has become a new medium for sexual crimes against children and adolescents. This study aimed to investigate online child sexual exploitation and abuse (OCSEA) of children and adolescents. It also identified the vulnerability factors contributing to OCSEA and explored the measures to prevent and address this challenge. In this study, a systematic literature review method was used, along with the formation of PICO, language terminology, inclusion and exclusion criteria, and data collection through PRISMA. The literature review showed that OCSEA vulnerability factors included young age, perception, communication, economy, accessibility, emotional stability, population, gender, parental supervision, and children's internet knowledge. Even though there were relevant policies, the process of handling vulnerability was still at the stage of developing framework, necessitating new and comprehensive laws to address OCSEA more explicitly. Therefore, the limited prevalence data and evidence on OCSEA prompted this study to conduct a literature review to better understand the concept, development, and context.

Keywords: adolescents, children, online child sexual exploitation and abuse (OCSEA)

Online Child Sexual Exploitation and Abuse (OCSEA) terhadap Anak dan Remaja: Tinjauan Literatur Sistematis

Abstrak. Internet dapat berbahaya karena telah menjadi media baru bagi kejahatan seksual terhadap anak-anak dan remaja. Studi ini bertujuan untuk mengidentifikasi faktor kerentanan anak dan remaja terpapar *online child sexual exploitation and abuse* (OCSEA) dan mengidentifikasi langkah-langkah penanganan untuk mencegah dan mengatasi masalah ini. Studi ini menggunakan metode tinjauan literatur sistematis *(systematic literature review)* yang meliputi pembentukan PICO, pembentukan terminologi bahasa, kriteria inklusi dan eksklusi, serta seleksi data melalui PRISMA. Hasil dari tinjauan literatur menunjukkan faktor kerentanan OCSEA disebabkan oleh usia muda, persepsi, komunikasi, ekonomi, aksesbilitas, stabilitas emosi, populasi, gender, pengawasan orang tua, dan pengetahuan anak dalam menggunakan internet. Penanganan terkait OCSEA masih pada tahapan menyusun kerangka kerja meskipun terdapat kebijakan yang relevan tetapi perlu untuk membuat undang-undang baru yang komprehensif dalam menangani OCSEA secara lebih eksplisit. Keterbatasan prevalensi dan bukti terkait masalah OCSEA membuat peneliti berinisiatif melakukan tinjauan literatur yang bertujuan untuk memahami konsep, perkembangan, dan konteks dari eksploitasi dan penyalahgunaan seksual anak secara *online*.

Kata Kunci: anak, *online child sexual exploitation and abuse* (OCSEA), remaja

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Children and adolescents often associate with digitalization era by interacting more on social media, sharing feelings, activities, hobbies or concepts related to the conditions. However, criminals have developed certain methods to reach minors through digitalization. Disrupting Harm household survey showed that 92% of children aged 12-17 years old in Indonesia were internet users. In the last 3 months, children aged 16-17 years old, categorized as adolescents, tended to be consistent internet users (98%) than 12-13 years old (83%) (Taylor, 2022). Internet can be dangerous since it has become a new medium for online criminals to commit sexual crimes against children and adolescents. Fauziah and Adriansyah (2024) defined online child sexual exploitation and abuse (OCSEA) as the exploitation or sexual violence and abuse of children online. According to Quayle (2020), several violations based on OCSEA include the production, dissemination, and possession of child sexual exploitation material (CSEM) (online grooming, sexting, sextortion, revenge pornography, commercial sexual exploitation of children, exploitation through online prostitution, and the livestreaming of sexual abuse (Drejer et al., 2024).

The prevalence of OCSEA cannot be clearly identified for various reasons. For example, most cases were largely unreported, and only 2-4% report on children's support services worldwide between 2019 and 2021 were specific to OCSEA, which did not reflect the true prevalence (Shuster et al., 2023). In this case, children often give major reasons for not disclosing OCSEA, namely lack of awareness about where or who to report to, feelings of wrongdoing, thoughts of not being understood, worry about getting into trouble, and feelings of shame that could cause problems for the family. Analyses have shown that children were often blamed and punished for abuse that was not entirely their fault. Moreover, OCSEA perpetrators are most presumably individuals from children's circle of trust. These crimes are prevalent among children who spend time online or are technology savvy. The victims tend to inform closest family members, specifically mothers. This event often occurs on social media, including Facebook, Twitter, Instagram and TikTok. Law enforcement, the judiciary, and social support systems lack the awareness, capacity, and adequate resources to respond to OCSEA cases. Therefore, the implementation of the law against perpetrators in many countries, such as Thailand, needs to be strengthened. It is also crucial to increase awareness among stakeholders regarding internal instruments and standards (Hoang & Wagner, 2023).

OCSEA challenge is associated with mental health difficulties such as depression, anxiety, suicidal thoughts, and decreased self-esteem. The increase in these factors makes prevention a priority of European Commission after 2017 (Handelshoyskolen, 2022). A study from 2016 by United Nations International

Children's Education Fund (UNICEF) showed that 80% of vulnerable children were victims of online sexual violence in the Philippines. In other words, 8 out of 10 children were vulnerable to trauma as a result of this horrendous crime, which was a high-risk figure. Furthermore, 2.5% had graphic content with naked bodies widely exposed on internet, which can be accessed through any means online. Therefore, the country was labelled a center for direct sexual harassment. As though the data were not worrying enough, the COVID-19 pandemic, which began in 2019, further exacerbated the situation (Gullim, 2022). OCSEA is a global challenge that needs special attention as well as appropriate preventive and curative efforts. WeProtect Global Alliance and Global Partnership to End Violence Against Children conducted a study to strengthen the evidence base on OCSEA with a particular focus on 13 countries in East and Southern Africa as well as Southeast Asia. The East and Southern African countries were Ethiopia, Kenya, Mozambique, Namibia, South Africa, Tanzania, and Uganda, while the Southeast Asia countries were Cambodia, Indonesia, Malaysia, the Philippines, Thailand, and Vietnam (Taylor, 2022). This shows OCSEA is a serious challenge requiring appropriate law enforcement measures to protect the rights of exposed children and adolescents.

Causative factors include easy access for perpetrators to interact with victims, lack of understanding of children using social media,

and limited communication between children and parents. The environment around children also plays a role in preventing this case (Nada et al., 2024). In this context, a strategy for dealing with OCSEA is Children's Rights Network which aims to reduce the number of online sexual exploitation in the Philippines. This could be conducted by advocating for the Filipino community regarding children's rights laws on the National Government, regions and the private sector with the #Shutdown OCSEA campaign, as well as implementing the Safer Internet Day agenda and children's rights monitoring. The challenge has an impact on the government and society in understanding why online sexual exploitation threatens the future of children. Even though internet technology is promising and beneficial, it can be dangerous for children (Trisnawati & Rijal, 2022). Therefore, it is important to note the factors contributing to the vulnerability of children and adolescents to OCSEA and the extent of treatment steps taken in addressing the challenge.

Similar to other locations where children live and grow up, online environment can expose children to the risk of sexual exploitation and abuse. However, the scarcity of available evidence makes it difficult to understand the nature of the harm caused and provide constructive recommendations about public policy for prevention and response (Taylor, 2022). Due to the limited prevalence and evidence related to the challenge, the current study conducted a literature review aimed at

understanding OCSEA concept, development and context. It was also used to determine the initial emergence of OCSEA and the development over time.

Method

Positioning OCSEA as a cybercrime force shifted the context in which violations and exploitation occurred. This potentially helped to prevent or manage crimes beyond considering the characteristics of perpetrators or victims (and the possibility to influence behavior). In the context of youth mental health and digital environments, digital technologies have capabilities reflected in persistence, replicability, scalability, and searchability. In this case, digital technology capabilities (in conjunction with online technology and social media) enable information to be easily copied (replicability), shared with large audiences (scalability), recorded and archived (persistence), as well as accessible to others in the future (searchability) (Quayle, 2020). The current

study aimed to identify children and adolescents vulnerable to OCSEA exposure and the extent which handling steps were taken. A systematic literature review (SLR) method was used to find and comprehensively synthesize related studies through organized, transparent, and replicable procedures (Shaffril et al., 2021). Relevant literature on OCSEA in children and adolescents was used. The review was conducted in stages, namely the formation of PICO (population, intervention, comparison, outcome), language terminology, inclusion and exclusion criteria (Divisi Pelatihan dan Pengembangan Perpustakaan Universitas Airlangga, 2022), and data collection through PRISMA.

PICO formation

Keyword searches were generated through PICO to provide an overview of the scope and limitations of SLR. PICO was used as a model for developing review questions (Eriksen & Frandsen, 2018), ensuring that relevant questions were defined, as follows:

Table 1

PICO

Criteria	Content
Population (P)	Children and Adolescents
Intervention (I)	No
Comparison (C)	Online child sexual exploitation and abuse (OCSEA)
Outcomes (O)	Factors of children and adolescents who are vulnerable to OCSEA, Treatment of OCSEA

Table 1 uses PICO *Worksheet and Search Strategy* (Miller, 2001) to obtain keywords, "children and adolescents", "Online child sexual exploitation and abuse (OCSEA)", "factors of children and adolescents vulnerable to OCSEA", " Handling OCSEA", "OCSEA on children and adolescents".

Language terminology

Keywords were created using various language terminology as alternatives to find journal articles related to the study topic, as shown in the Table 2.

Table 2

Language Terminology

Language Used	Terminology 1	Terminology 2	The Use of Boolean Operator
Online child sexual exploitation and abuse	OCSEA	Online sexual exploitation and abuse	Online AND children AND sexual AND exploitation AND abuse
Children and Adolescents	Children and adolescents	-	Children AND adolescents

Inclusion and exclusion criterias

Inclusion and exclusion criteria were formulated to limit and narrow down the search results for journal articles, thereby focusing more on the selected topic or challenge. This was conducted by using PICO to search for articles.

Table 3

Inclusion and Exclusion Criteria

Criteria	Inclusion	Exclusion
Population (P)	Children and Adolescents	Adults and elderly
Intervention (I)	No	No
Comparison (C)	Online child sexual exploitation and abuse (OCSEA)	Except for the OCSEA form
Outcomes (O)	Factors of children and adolescents vulnerable to OCSEA, Treatment of OCSEA	Apart from factors and handling
Study design and publication type	All study types	No
Publication years	After 2018	Before 2019
Language	English-Indonesia	Except English-Indonesia

Data selection through PRISMA

PRISMA is a recommended reporting guideline to assist this study in providing clear, accurate, and complete documentation regarding the review process (Swartz, 2021), as shown in the Figure 1.

Figure 1

PRISMA 2020 Flow Diagram
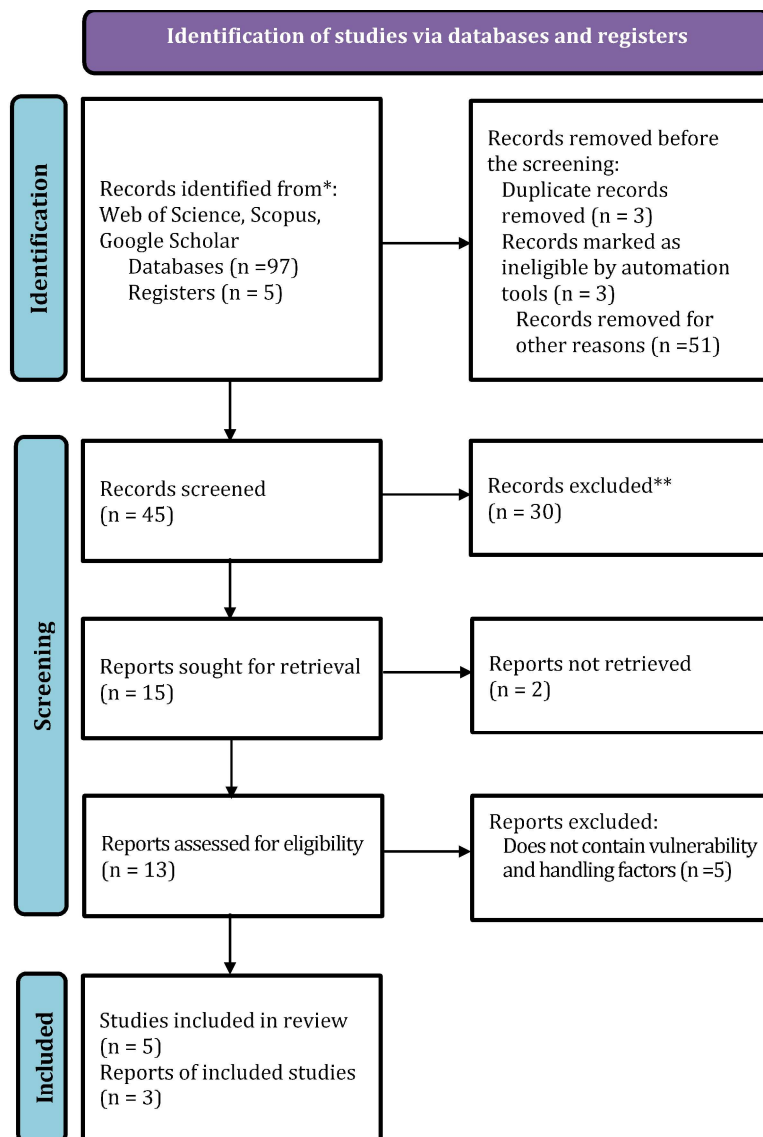
The following is a brief explanation of the eight pieces of literature reviewed:

Ramiro et al. (2019) explored various perceptions and norms of OCSEA from a community perspective, using a qualitative ethnographic design. The study was conducted in two barangays in Manila City. In the Philippines, small administrative units are called barangays headed by a chairman and council members (kagawad). The study location was considered a "hot spot" by authorities regarding incidents of child sexual exploitation and abuse (CSEA). For ethical reasons, the names of the communities studied were withheld and only referred to as Brgy A and Brgy B. The participants were male and female children aged 13 years and over, living in the selected communities for a minimum of 6 months. The sample consisted of males and females aged

13-17 years, 18-24 years, and 35-50 years. Twelve informants from each gender and age group in each community were asked to participate in interviews, with a total of 72 key informants per community or 144 respondents from both communities. Furthermore, 6 local officials and other community leaders, internet cafe and money exchange managers, and police officers from each community were also interviewed.

Hoz (2021) used HUMANIZATECH (HTECH) project design, specifically the first phase of the project (HTECH-POL), and applied qualitative methodology of non-participant observation, content analysis, social network analysis, and case studies (Caliandro, 2017). Data collection was based on content analysis techniques under a set of 31 categories of selected keywords in English, Spanish, and French concerning the topic under study. Search engines and four digital monitoring tools were also used for news published on internet. HTECH project aimed to increase parental responsibility and awareness about the use of digital devices and related products by children.

Voziki (2021) investigated the international and European legislative framework for childrens' protection in OCSEA cases. The study also explored the effective mechanisms and tools to prevent and address egregious violations of children's rights to ensure the security and dignity in the digital space. This analysis was carried out from a legal perspective to analyze the agreed definition of OCSEA critically and further explore how international and European provisions protect children from online threats. In this context, the preventive measures established under the relevant legislative instruments were examined. The most prevalent measures taken at international and regional levels were also adequately investigated to finally present how a holistic and multidisciplinary response could play a decisive role in the fight against OCSEA.

The report by Taylor (2022) was based on the WeProtect Global Alliance's threat assesment in 2018, a desire to understand and deepen the impact of existing investments, and the Global Partnership to End Violence Against Children initiatives, through the Safe Online Initiative. The current study was conducted to strengthen the evidence base on OCSEA, specifically focusing on 13 countries in East and Southern Africa and Southeast Asia. In this case, the report was prepared based on several methods, including a summary of methods used by ECPAT (End Child Prostitution in Asian Tourism) in Indonesia (Interviews with government representatives, Data analysis and non-law enforcement consultations, Survey of frontline social support workers, Access to Justice interviews with OCSEA victims and caregivers, Access to Justice interviews with professionals, Literature review and legal analysis, Conversations with OCSEA survivors), INTERPOL (International Criminal Police Organization) summary of methods used in Indonesia (Quantitative case data analysis, Qualitative capacity assessment), summary of methods used in Indonesia by UNICEF Research Office - Innocenti (Household survey of internet-using children and their caregivers), as well as ethical approval and national consultation.

The report prepared by Hoang and Wagner (2023) contained a summary of the results of the conference sessions, with an emphasis on important points and lessons. This conference aimed to identify the actions needed to ensure effective prevention and response to violence against children (VAC) during the COVID-19 pandemic and recovery using the strategies outlined in INSPIRE (WHO, 2016). Moreover, INSPIRE is an evidence-based resource with seven strategies to help countries and communities intensify focus on prevention programs and services to reduce VAC. Bandaranayake (2023) conducted a literature review and obtained data from primary and secondary sources. This included international legal instruments such as Convention on the Rights of Children (CRC), Optional Protocol on the Sale of Children (OPSC), Children Pornography and Prostitution, Lanzarote Convention, and the Budapest Convention. Other sources used were domestic legal provisions in the Criminal Code, and the Computer Crimes Law (Law on Information and Electronic Transactions), textbooks, journal articles, and internet-based sources. An exploratory report from Hoang and Wagner (2023) outlined the dynamics of OCSEA in the Economic Community of West African States (ECOWAS) region, with the aim of empowering policymakers to reduce risks. Cape Verde, Ivory Coast, and Ghana were selected for case study as the countries had different risk factors. Moreover, there were

high internet penetration rates relative to the ECOWAS region, including the top six ECOWAS countries. This report aimed to explore the dynamics of OCSEA market in these countries. Limited data (in the form of literature and official records), and low awareness among stakeholders about OCSEA in the countries, complicated market analysis. The report utilized existing evidence to outline market dynamics and focused on mapping existing regional and national structures and initiatives in responding to OCSEA. It also strived to support stakeholders in taking action against the black market, which had a devastating impact on victims and families.

Drejer et al. (2024) used a scoping review method to assess the scope and nature of the evidence and identified study gaps while following a systematic approach. It also explored literature and synthesized emerging evidence about livestreaming of child sexual abuse (LSCSA). In this context, literature is considered eligible for inclusion when it primarily focuses on live-streaming technology and OCSEA, with children of 18 years or younger. Out of 2,218 pieces of literature, 14 were selected for review. The data were mapped and divided into four categories, namely victims, perpetrators, legislation, and technology. Some literature showed that the victims were predominantly women. In addition, the average perpetrators of live streaming were found to be older than the average OCSEA perpetrators.

Results

This study aimed to identify factors contribu ting to vulnerability of children and adolescents to OCSEA exposure and the extent to which treatment steps are taken to address the challenge. The following are the results of the literature search.

Table 4

Data Description

Author Name and Year	Journal Title	Population and Sample	Study Type	Data Collection	Important Findings	
					Vulnerable Factors	Handling
(Ramiro et al., 2019)	Online child sexual exploitation and abuse: A community diagnosis using the social norms theory	Filipino children and adolescents	Qualitative	Interviews and observations	Beliefs, attitudes, social norms, and easy ability in English to interact with anonymous users on internet served as important risk factors for OCSEA among Filipino children and adolescents in certain communities.	There were no treatment steps mentioned, showing that the most appropriate treatment was to strengthen the life value system, namely beliefs, attitudes and behavioral tendencies of children and the peer groups, parents and the environments, as well as community leaders.
(Hoz, 2021)	New trends in online crime using social networking sites and apps against children and adolescents: Police-based longitudinal research	Minors and adolescents	Longitudinal study	Archived data on criminal use of SNS and Apps against minors collected from 140 police departments around the world	Potential victims showed symptoms associated with excessive exposure to internet with dysfunctional use of social media and online games, hiding low social competence, masked by deficits in emotional regulation skills.	Implementation of HTECH project which aimed to increase parental responsibility and awareness about the use of digital devices and related products by children by providing a list of safe SNS and Apps, as well as monitoring people under the police radar for crimes against minors.
(Voziki, 2021)	Cyber-enabled child sexual exploitation and sexual abuse: Fighting for children's dignity and safety	-	Literature review	Data on violations related to OCSEA	Allowing children to access digital environment services without parental permission might be permitted before the age of 18, with age restrictions like 13 for social media accounts, can increase vulnerability.	Addressing measures by reviewing international and European legislative schemes that criminalize various types of sexual offenses against children, namely the policies of UNCRC, OPSC, Lanzarote Convention and Directive 2011/93/EU.

Author Name and Year	Journal Title	Population and Sample	Study Type	Data Collection	Important Findings	
					Vulnerable Factors	Handling
(Taylor, 2022)	Disrupting harm in Indonesia: Evidence on online child sexual exploitation and abuse	-	Report	-	Children with disabilities, involved in migration, living on the streets, not attending school, and experiencing other forms of violence were vulnerable to online harassment due to lack of understanding and realizing the risks of dangerous online activities.	Even though existing laws, policies and standards in Indonesia included provisions relevant to OCSEA, the level of awareness of OCSEA was still low, coupled with lack of human resources and budget as well as inadequate technical knowledge and skills. This resulted in suboptimal provisions.
(WHO-Western Pacific Region, 2022)	Ending violence against children during COVID-19 and beyond: Second regional conference to strengthen implementation of the INSPIRE strategies	-	Report	-	Children with disabilities and female adolescents were vulnerable populations exposed to OCSEA. Females were particularly vulnerable due to patriarchy.	Policies handling OCSEA were suboptimal because law enforcement, the judiciary and the social support system do not have adequate awareness, capacity and resources to respond to cases. Therefore, it was crucial to increase awareness among stakeholders regarding internal instruments and standards for addressing OCSEA.
(Bandaranayake, 2023)	Combating online child sexual exploitation and abuse in Sri Lanka: Toward a statutory response	--	Literature review	Primary and secondary data, including international legal instruments	Vulnerability factors for children and adolescents exposed to OCSEA included young age, lack of experience in understanding the risks and impacts of internet use, and lack of parental supervision in accessing internet.	There was no specific legislation directly addressing the issue of OCSEA. Therefore, the State of Sri Lanka currently lacks adequate legal framework to address the challenge effectively.

Author Name and Year	Journal Title	Population and Sample	Study Type	Data Collection	Important Findings	
					Vulnerable Factors	Handling
(Hoang & Wagner, 2023)	A growing threat? Online child sexual exploitation and abuse in Ghana, Côte d'Ivoire and Cape Verde	-	Report	-	Vulnerability factors included young age, males, accelerating internet penetration, expanding children's access to internet with low awareness of digital threats, economic hardship, rapid urbanization, increasing sex tourism, political instability, conflict, natural disasters, and the existence of gender-based discrimination such as reports preventing male children from being recognized as victims of CSEA and OCSEA, with many programs addressing CSEA failing to engage male victims.	The implementation of WeProtect Global Alliance's Model National Response (MNR) was one of the most relevant and sophisticated frameworks designed to guide national responses to OCSEA.
(Drejer et al., 2024)	Livestreaming technology and online child sexual exploitation and abuse: A scoping review	-	Scoping review	There were 14 accounts of live streaming of online child sexual abuse, peer-reviewed journal articles and gray literature.	The vulnerability of children and adolescents exposed to LSCSA as a form of OCSEA included perceptions of the family and environments and poverty factors.	Handling of OCSEA was still at the stage of developing a framework to create a comprehensive new law to handle OCSEA more explicitly.

According to Ramiro et al. (2019), other forms of beliefs, attitudes, and social norms concerning online sexual activity can have an impact on the persistence of OCSEA. There is a general belief in many countries that online behavior, such as showing nude photos and live streaming, is not a form of children's abuse as no physical contact is involved. The belief that identity can be hidden on internet also drives users to engage in online sexual activity. The

factors of poverty, poor parenting, peer influence, and high levels of OCSEA among children in the Philippines can be attributed to the relative ability in English to ease communication with foreign actors. Therefore, the study concluded that beliefs, attitudes, social norms, and easy ability in English to interact with anonymous users on internet was an important risk factors for OCSEA among Filipino children and adolescents in certain communities.

Ramiro et al. (2019) stated that political officials and community leaders were responsible for children's environments in the Philippines. These leaders are aware of events in the communities but select to ignore or downplay the negative impacts of online sex work. While the neighborhood may be organized to act as a form of social control, it tends to be a mere passive bystander (gossip) due to the "mind your own business" attitude. The results showed a microcosm of the lives of poor urban communities, who were socio-economically disadvantaged, often struggled to fulfill daily needs. The communities also tend improve living standard and dream big, but through risky processes that damage the dignity and culture. Personal beliefs and norms are often based on these valuable values. Therefore, interventions for addressing OCSEA should target the beliefs, attitudes, and behavioral tendencies of children, peer groups, parents and the environments, as well as community leaders. It is also crucial to

strengthen individuals' values by changing societal belief systems regarding violence against children's protection. Even though Ramiro et al. (2019) failed to identify steps to handle OCSEA, it was concluded that the most appropriate treatment was to strengthen the life value system.

According to Hoz (2021), potential victims exhibit symptoms associated with excessive exposure to Internet with dysfunctional use of social media and online games, hiding low social competence masked by deficits in emotional regulation skills. Victims often experience emotional distress, family problems, suicidal thoughts, feelings of loneliness, or self-harming behavior. In general, social media platforms, dating apps, online games, and chat rooms are monitored by criminals to detect vulnerable victims, not only for OCSEA but also for human trafficking. It is also important to understand and confront the dangers or risks of constant exposure to digital technologies in cognitive, social, and emotional areas. Therefore, vulnerability factors for children and adolescents exposed to OCSEA include excessive use of social media and online games, as well as hiding low social skills with unstable emotional regulation. Families play a crucial role at the prevention and intervention level in risk awareness, protective measures, and resilience development in the face of OCSEA. Using HTECH project, Hoz (2021) addressed OCSEA project by increasing parental responsibility and awareness of the use of

digital devices or related products by children. This was carried out by making a list of available websites and checking the devices used by children, installing parental controls, or setting screen time limits. According Hoz (2021), 58% of parents often check websites and messages, and 52% confirm using some type of parental control. It is also crucial to know the extent social networking sites and applications can hide criminals. Most adolescents often learn parental controls and screen time by watching videos on YouTube or Reddit about how to circumvent or disable parental security measures. As a longitudinal study, HTECH is intended to consistently improve questionnaire design and provide direct comparative data from adolescent and adult users (parents and teachers). Follow-up process can provide a list of safe SNS and Apps, as well as monitor individuals under the police radar for crimes against minors. Parallel socio-legal analysis can produce proposals for finding a common international legal framework to improve inter-departmental cooperation and data sharing (Hoz, 2021). In conclusion, the handling of OCSEA was based on HTECH project, which aimed to increase parental responsibility and awareness about the use of digital devices and related products by children. This was ensured by providing a list of safe SNS and Applications, as well as monitoring individuals under the police radar for crimes against minors.

The presence of children in digital environments and the right to access certain services without parental permission may be allowed before 18 years. For example, the minimum age to create social media accounts is often set at 13, which can increase children's vulnerability. However, all minors are entitled to special protection as full rights holders (Voziki, 2021). This study did not specify the vulnerability factors of children and adolescents to OCSEA but noted certain age limits in accessing various social media accounts may apply. Under 18 is a relatively vulnerable age for using internet, which can promote online harassment. Handling actions to address OCSEA is still limited to investigating international and European legislative schemes that criminalize various types of sexual offenses against children. In particular, Voziki (2021) reviewed United Nations Convention on the Rights of the Child (UNCRC), OPSC, Lanzarote Convention, and Directive 2011/93/EU, stating the prominent provisions of both substantive and procedural criminal law as well as several types of protective and preventive measures that should be considered by interrelated stakeholders as part of legislative responses and government policymaking. The provisions offer a comprehensive legislative framework, have a victim-centered approach anchored in promoting transnational, multidisciplinary, and coordinated action. It also encourage a wide range of institutional partners and actors to place children at the center of joint efforts, ensuring the views are heard and respected (Voziki, 2021). At European level, the handling of OCSEA

is evidenced in the response of CoE and European Union through 'EndOCSEA@Europe' and the 'EU Strategy for a more effective fight against children's sexual abuse'. The first consists of three strengthening components aimed at enforcing multisectoral collaboration, strengthening legislative and policy responses, as well as focusing on awareness-raising measures that place children at the center of the preventive and protective measures in question. On the other hand, the latter is seen as an effective scheme at European Union level, establishing eight comprehensive initiatives that develop appropriate legal frameworks, promote law enforcement responses, and stimulate multidisciplinary actions related to prevention, investigation, and substantial assistance to victims (Voziki, 2021). Therefore, the handling of OCSEA, according to Voziki (2021), was to examine international and European legislative schemes that criminalize various types of sexual offenses against children, including the policies of UNCRC, OPSC, Lanzarote Convention, and Directive 2011/93/EU.

Taylor (2022) stated that children were consistently the least aware of the risks associated with potentially harmful online activities. While it may be uncomfortable to discuss these issues with children, they should be included in awareness efforts. It is also crucial to communicate information to children in highly vulnerable situations, specifically those with disabilities, involved in migration, living on the streets, out of school, and experiencing other forms of violence. Civil society organizations may be ideally positioned to provide information to these vulnerable populations. This is not intended to place self-protection burden on children but rather to be aware of the risks. The study also concluded that children and adolescents were vulnerable to online harassment due to lack of understanding and realizing the risks of dangerous online activities. Mandated government agencies in Indonesia recognize that OCSEA is a threat, but response efforts need to be broader. The capacity of law enforcement agencies, justice professionals and social support workers to provide access to children-friendly justice and support services for victims is limited by low levels of OCSEA awareness, lack of human and budgetary resources, as well as inadequate technical knowledge or skills. Although existing laws, policies and standards in Indonesia already include provisions relevant to OCSEA, further legislative action is needed to criminalize all related acts (Taylor, 2022). Therefore, it was concluded that OCSEA handling was still limited and relevant provisions were suboptimal.

Some children can be more vulnerable than others, specifically those with disabilities, which tend to be victims of OCSEA and violence. Female adolescents face special challenges due to vulnerabilities related to patriarchy (Hoang & Wagner, 2023). Social media, such as Facebook, Twitter, Instagram, and TikTok, serve as platforms for perpetrating violence.

Unfortunately, law enforcement, justice, and social support systems often lack sufficient awareness, capacity, and resources to respond to cases. The application of laws against perpetrators in several countries, such as Thailand, needs to be strengthened. It is also crucial to increase awareness among stakeholders regarding internal instruments and standards. This includes mobilizing and increasing engagement with the private sector and other relevant stakeholders to actively engage in monitoring, prevention, and response actions through regulation, corporate responsibility, and collaboration in the development of effective measures to detect, remove, and report illegal content (Hoang & Wagner, 2023). Therefore, handling of OCSEA was suboptimal because law enforcement, the judiciary, and the social support system lacked adequate awareness, capacity, and resources to respond to cases.

Bandaranayake (2023) showed the consequences of the inherent vulnerability of children due to age, lack of experience, limited understanding of the risks associated with internet use, and lack of supervision from adults regarding technology use. Online violence against children has become a contemporary global problem. The vulnerability factors for children and adolescents exposed to OCSEA include young age, lack of experience in understanding the risks and impact of internet use, and inadequate parental supervision of children in accessing internet. The State of Sri Lanka currently lacks adequate legal framework to combat OCSEA effectively and has no specific laws directly addressing this violation. Therefore, the country needs to increase its efforts in implementing new laws targeting OCSEA. Significant progress can be made in combating OCSEA by obligating to protect children's rights. Bandaranayake (2023) concluded that there was no specific law directly addressing the issue of OCSEA, as the State of Sri Lanka currently lacks adequate legal framework to address OCSEA effectively.

OCSEA vulnerabilities across West Africa reflect cases worldwide. Among the most important are the acceleration of internet penetration and the expansion of children's access to internet and electronic media, coupled with low awareness of digital threats and widespread economic hardship. Factors, such as rapid urbanization, increasing sex tourism, political instability, conflict, and natural disasters are also indirect risk factors. Globally, economic hardship has been repeatedly identified as a risk factor, because it facilitates the sexual exploitation of children for financial gain from families. Other prominent factors, though unexclusive to the West African context, also contribute to children's vulnerability to CSEA and OCSEA. This includes the widespread gender-based discrimination reportedly preventing male children from being recognized as victims of CSEA and OCSEA. Others are failure of programs addressing CSEA to include male victims, normalized high levels of violence

against children, as well as local and customary practices capable of increasing vulnerability (children's marriage, female genital mutilation, superstitions that men can be cured of HIV/AIDS by having sex with a virgin young girl, and *'kayaye'*). A study in 2019 found that many female children from poor areas in the northern part of Ghana who do *kayaye*, namely work as porters in the urban centers of Accra and Kumasi to help families, have become OCSEA victims. OCSEA refers to CSEA facilitated or carried out either in part or in whole by digital technology. The young age of children using internet is one element of the increased vulnerability. According to a joint study by INTERPOL and ECPAT International, the younger CSEA victim, the more severe the abuse. The study, strengthened by IWF (Internet Watch Foundation) data, also found that male children tended to be victims of severe CSEAM (CSEA materials) than females (Hoang & Wagner, 2023). The results also showed young age was the main contributing factor to the vulnerability of children and adolescents to online harassment. Vulnerability factors for OCSEA included young age, being male, accelerated internet penetration, expanding children's access to internet with low awareness of digital threats, economic difficulties, rapid urbanization, increasing sex tourism, political instability, conflict, natural disasters, and the existence of gender-based discrimination. Reports often prevent male children from being recognized as CSEA and OCSEA victims, with

many programs addressing CSEA failing to engage male victims.

Currently, Model National Response (MNR) from WeProtect Global Alliance is one of the most relevant and sophisticated frameworks designed to guide national responses to OCSEA. This framework consisted of 20 capabilities organized into six thematic areas, including policy, legislation, and governance, criminal justice, victim support and empowerment, society and culture, industry, as well as studies and data. According to UNICEF survey of the global response to OCSEA, very few countries have a dedicated unit, with the majority mandating cybercrime units to investigate children's sexual exploitation. This contributes to a lack of awareness of OCSEA and an absence of children- and gender-sensitive approaches. Concerning criminal justice, MNR further recommends specific training for prosecutors and courts on OCSEA, a criminal management system that offers rehabilitation programs for perpetrators and the use of INTERPOL's ICSE database. Southeast Asia is one of the regions that disproportionately experiences sexual exploitation of children. Addressing the scale of OCSEA, several member states of Association of Southeast Asian Nations (ASEAN) have leveraged MNR framework from WeProtect Global Alliance to strengthen response frameworks. In November 2019, ASEAN ratified the Declaration on the Protection of Children from All Forms of Online Exploitation

and Abuse and developed Regional Action Plan, listing specific measures to be adopted into national law. This includes points to strengthen legislative frameworks, national policies and perpetrator management systems, as well as improving judicial and law enforcement capabilities. Regional Action Plan is an example of successful implementation of MNR framework as it promotes a multi-stakeholder and sectoral approach to addressing OCSEA (Hoang & Wagner, 2023). The appropriate treatment for addressing OCSEA was the application of MNR framework from WeProtect Global Alliance as one of the most relevant and sophisticated frameworks designed to guide national responses to OCSEA.

Drejer et al. (2024) stated that about half of OCSEA victims had family members involved in LSCSA or were aware of children's involvement in sexual activity on webcam, showing the level of normalization in society. LSCSA is a form of OCSEA, with poverty considered as one of the main driving forces. Most investigations of Drejer et al. (2024) were based on data from the Philippines, where poverty rates were high, with approximately 24% living below the poverty threshold during the first half of 2021. LSCSA is considered relatively harmless as there is no contact abuse in most cases. It is often regarded as a method of providing income for the family. Children in these environments are often expected to help provide income for the family lacking basic needs. The vulnerability of children and

adolescents exposed to LSCSA, which is a form of OCSEA, includes perceptions of the family and environments, as well as poverty factors. Drejer et al. (2024) stated that national laws and international instruments for addressing OCSEA often fail to adequately address LSCSA criminal acts. This presents a framework for creating new, comprehensive laws for addressing OCSEA more explicitly. Failure of national law and international instruments to harmonize can cause gaps in legislation, with states, judges, and courts interpreting the same instrument differently. Cross-border collaboration can be challenging and significantly affect scientific studies, since multiple definitions are used due to a lack of agreement on legal requirements. Therefore, effective handling of OCSEA is still at the stage of developing a framework to create a comprehensive new law.

Based on literature reviews, the vulnerability factors for OCSEA include young age, perception (beliefs, attitudes, social norms from the family and environments), communication (ability to speak English fluently and interact with anonymous users on internet), economics, accessibility (excessive use of social media and online games, age limits in accessing various social media accounts, accelerated internet penetration, expanding children's access to internet with low awareness of digital threats), emotional stability (concealment of low social skills with unstable emotional regulation), and population (children

with disabilities, involved in migration, living on the streets, not attending school, and experiencing other forms of violence). Other factors include gender (female adolescents, gender-based discrimination such as reports prevent male children from being recognized as victims of CSEA and OCSEA, with many programs addressing CSEA failing to engage male victims), supervision (lack of parental supervision of children accessing internet), and knowledge (lack of experience in understanding the risks and impacts of internet use). While several studies have identified various steps in handling OCSEA, relevant policies are still at the stage of developing a framework. Therefore, it is crucial to create a novel and comprehensive law to address OCSEA more explicitly. This challenge can be attributed to low levels of awareness, lack of human resources, budget, and knowledge, adequate technical skills, law enforcement, justice, as well as inadequate awareness of social support systems, capacity, and resources to respond to OCSEA cases. Studies have shown that the most appropriate treatment is to strengthen the life value system, including beliefs, attitudes and behavioral tendencies of children and peer groups, parents and the environments, as well as community leaders. It is also crucial to increase awareness among stakeholders regarding internal instruments and standards for handling. Several studies applied OCSEA treatment to HTECH project, examining international and European legislative schemes that criminalize various types of sexual offenses against children, including the policies of UNCRC, OPSC, Lanzarote Convention, and Directive 2011/93/EU. A study also found that there was no specific law or legal framework to effectively address OCSEA in Sri Lanka. Some studies showed that the appropriate treatment was the application of MNR framework from WeProtect Global Alliance as one of the most relevant and sophisticated frameworks designed to guide national responses to OCSEA.

Discussion

What are vulnerability factors for children and adolescents being exposed to OCSEA?

Vulnerability factors for children and adolescents exposed to OCSEA include young age, perception (beliefs, attitudes, social norms from family and surrounding environment), communication (ability to speak English fluently and interact with anonymous users on internet), economy, and accessibility (excessive use of social media and online games, age restrictions in accessing various social media accounts, accelerated internet penetration, expanding children's access to internet with low awareness of digital threats). Other factors are emotional stability (concealment of low social skills with unstable emotional regulation), population (children with disabilities, involved in migration, living on the streets, not attending school, and experiencing other forms of violence), and gender (female adolescents, gender-based discrimination such as reports prevent male children from being recognized

as victims of CSEA and OCSEA, with many programs addressing CSEA failing to engage male victims). Supervision (lack of parental supervision of children in accessing internet), and knowledge (children's lack of experience in understanding the risks of using internet) are also important factors.

According to Syam et al. (2024), children are highly vulnerable to OCSEA threat, specifically those categorized by ECPAT International as the poorest, having disabilities, from dysfunctional families or victims of domestic violence, working, not living with relatives, migrated alone or with families, displaced at home when parents migrated, as well as abandoned refugees. Vulnerability can be attributed to children's factors (disability, behavioral disorders, emotional mental disorders), family factors (lack of understanding and knowledge about ICT (Information and Communication Technology), societal values and norms, parents or family having a history of stress, physical or sexual, incomplete family structure (single parents, divorced, separated), and early marriage of parents), and Community/Social Factors (high poverty and unemployment, high crime rates, low community support, influence of cultural shift, low social services).

OCSEA can occur in children with disabilities by causing psychological impacts such as self-isolation and unstable emotional stability. This was supported by Álvarez-Guerrero et al. (2024), stating victims with disabilities often experienced social isolation, withdrawal from social media platforms, and emotional distress. Social isolation has specifically emerged as a recurring theme, significantly increasing vulnerability to OCSEA and leading to revictimization. Sexual abuse and exploitation of children is a form of crime and human rights violation that is highly traumatic, negatively impacting victims in lifetime (Sandvik, 2022).

One of the vulnerability factors for exposure to OCSEA is perception. Factors influencing risk perception are divided into three levels, namely macro, meso, and micro, with macro level being structural and institutional. In the Philippines, police rarely arrest OSEAC perpetrators, primarily exploiting children in family structures and homes. The legal framework has loopholes and weaknesses that allow for few prosecutions of perpetrators caught. Moreover, there are no specific violations from OSEAC that can be imposed on perpetrators. Absence of consequences in response to OSEAC behavior can facilitate more violence. Meso factor is at the peer and community level, namely the social acceptance of a behavior. Lastly, micro factor refers to individuals' perceptions and knowledge of situation. Risk perceptions can be classified into three, namely perceptions of possibility (the chance of occurrence), vulnerability (personal impact or vulnerability), and loss (the extent of loss incurred). The inability to understand risks accurately can lead to higher levels of risk tolerance (Wang, 2022).

Several key factors contributing to the online crime unique are explained in Cooper's "Triple-A Engine" Theory (1998) in (Sandvik, 2022), namely Accessibility, Affordability, and Anonymity. In terms of accessibility, the significant increase in individuals accessing internet, specifically adolescents and children with access to smart devices, has significantly increased children's vulnerability and the number of CSAM in circulation. Affordability relates to the decreasing costs of accessing materials and usage costs, which consistently decline as technology develops. There was also a perception that perpetrators who previously undertook so-called "sex tourism" to commit offenses in person were increasingly turning to online forms of offending, both due to accessibility and affordability. "A" anonymity is a common misconception among online criminals, where internet gives a false sense of anonymity and the belief that crimes cannot be digitally traced. This factor ensures privacy-assuring technologies, such as end-to-end encryption, discussed in OCSEA chapter, can take various forms of criminally defined violations. A term increasingly used in the context of OCSEA is "sextortion", where children are blackmailed into self-producing and sharing images (CSAM) with perpetrator as a grooming victim (Sandvik, 2022).

What are the handling steps to prevent and address OCSEA?

Currently, there are no handling steps relevant to OCSEA, as policies dealing with children's abuse are still at the stage of developing a framework. Although there are relevant policies, it is crucial to create a comprehensive new law that addresses OCSEA more explicitly. This is due to low levels of awareness, lack of human resources, budget, and knowledge, adequate technical skills, law enforcement, judiciary, as well as inadequate awareness of social support system, capacity, or resources to respond to cases. Studies have shown that the most appropriate treatment is to strengthen the life value system, namely beliefs, attitudes and behavioral tendencies of children and peer groups, parents and the environments, as well as community leaders. It is also crucial to increase awareness among stakeholders regarding internal instruments and standards to address OCSEA. Several studies applied OCSEA treatment to HTECH project, examining international and European legislative schemes that criminalize various types of sexual offenses against children, including the policies of UNCRC, OPSC, Lanzarote Convention and Directive 2011/93/EU. A study conducted in Sri Lanka showed no specific law or legal framework directly addressed OCSEA issues. Some also showed that the appropriate treatment for OCSEA problem was to apply MNR framework from WeProtect Global Alliance as one of the most relevant and sophisticated frameworks designed to guide national responses to OCSEA.

In international law, CSEA is a violation of human rights. Articles 34 and 35 of CRC

require states to apply all appropriate measures to prevent sexual abuse and exploitation of children, including "the use of children's exploitation in pornographic performances and materials", as well as children's trafficking. Article 19(1) requires majority countries to take all appropriate legislative measures to protect children from all forms of physical or mental violence, injury or harassment, abuse or sexual exploitation. A significant difference between sexual exploitation and abuse is that sexual exploitation involves a form of exchange, such as financial gain, while sexual abuse does not necessarily include this aspect (Sandvik, 2022).

According to Reeves et al. (2024), OCSEA can be prevented using a collaborative approach between children, academics, expert non-governmental organizations (NGOs) and professionals producing thought-provoking digital programs (May and Bay) to sensitively address sexual grooming and promote children's protection. May and Bay game design and development process exemplifies the importance of a child-centered, human rights-based approach and equitable partnerships in creating shared solutions to complex children's protection issues such as OCSEA, care, children's trafficking, and community protection. The project, as a whole, shows the importance of prioritizing children in relevant matters and recognizing them as central figures in life. May and Bay aims to reduce the possibility of children becoming victims of sexual grooming, OCSEA, and children's trafficking through

prevention, education, and awareness of the potential risks posed both online and in the community. While children may not be able to identify or articulate potential dangers in the risk areas addressed by May and Bay, this interactive simulation effectively breaks down barriers by encouraging open discussion in groups with trained facilitators. These facilitators have access to training materials, as well as links to local support networks and resources, fostering a more informed and supportive environment.

OCSEA can be handled by strengthening existing policies in the country and implementing the following concepts. The first concept is a revision of Children's Protection Law by adding a definition of online sexual crimes such as grooming, online threats to sexually exploit children, online verbal harassment, sexual blackmail of intimidating children, online defamation of children, and other sexual crimes. Revision of this legal regulation should consider long-term possibilities and be implemented soon to keep up with current developments. It is also necessary to introduce provisions regarding online sexual crimes against children, as well as regulations regarding same-sex sexual offenses committed against children, specifically those with disabilities and mental disorders. The second concept is the establishment of a special agency/institution to assist crime cases involving children as victims of online sexuality. This special agency/institution can form a new

agency by adding a new division to an existing children's protection agency or prosecutor's office in Indonesia. The third concept includes the creation of an agency with a specific mandate regarding cybersecurity and online safety, including technology-facilitated sexual exploitation and abuse of children. The agency should be authorized to delete videos, photos, audio, and all files related to children victims of sexual crimes that have been shared, stored, or misused by online sex perpetrators. The fourth concept includes the development of special systems that facilitate the reporting of crimes by victims and assist law enforcement. This system can be in the form of a website or a downloadable application. It can also include education, reporting hotlines, consultation services, databases, tracking features, and handling by law enforcement officials. The fifth concept is the formation of a national organization as a forum for aspirations and protection. This organization acts as a community working collectively with the government and schools to educate children in Indonesia about the potential dangers in cyberspace. It is hoped that after gaining knowledge about the possibility of sexual crimes in cyberspace, children in Indonesia will become more careful and wise in using social media. The sixth concept is to make self-defense a mandatory subject from elementary to high school. The curriculum can be regulated by law, with schools giving the freedom to choose the type of self-defense. Lastly, the seventh concept

aims to create programs that empower, assist, educate, and improve the economic conditions of poor communities. It is hoped that better economic conditions will facilitate children's growth and development. Efforts to revise laws in Indonesia regarding the protection of children victims of online sexual crimes include proposals to establish a special agency in handling such cases with different approach or by adding a new division to children's protection or prosecution agency in Indonesia (Rahayu et al., 2023).

OCSEA can be significantly influenced by psychological (experiencing trauma) and physical aspects (transmission of infectious diseases). Necessary precautions include effective use of internet, limited interactions and not being easily fooled by other internet users, critical thinking before posting and sharing stories about personal life, avoiding pornographic discussions, and having the courage to report and firmly reject OCSEA problems. Trauma can be specifically addressed by conducting therapy with professional experts, being open with closest friends, accepting situations, self-love, and thinking positively (Fauziah & Adriansyah, 2024). The current study was limited by the focus on vulnerability factors and treatment steps to prevent and address OCSEA. It did not cover the appropriate definitions reflecting the characteristics of perpetrators and victims, the role of media technology in promoting OCSEA, communities and environmental responses to OCSEA, or other related factors and aspects.

Conclusions

In conclusion, this study aimed to identify factors contributing to children and adolescents vulnerability to OCSEA as well as identify treatment steps to prevent and address the challenge. The literature review found that the major vulnerability factors were young age, perceptions, communication, economics, accessibility, emotional stability, population, gender, parental supervision, and children's knowledge of internet. Furthermore, there were no relevant steps in handling OCSEA, as relevant policies dealing with children's abuse were still at the stage of developing a framework, necessitating the development of new comprehensive law. However, OCSEA could still be handled by strengthening life value system (beliefs, attitudes and behavioral tendencies of children and peer groups, parents and the environments, as well as community leaders), and increasing awareness among stakeholders regarding internal instruments and standards). Others included implementing HTECH project, reviewing international and European legislative schemes that criminalize various types of sexual offenses against children (UNCRC policies, OPSC, Lanzarote Convention and Directive 2011/93/EU), and adopting MNR framework from WeProtect Global Alliance as one of the most relevant and sophisticated frameworks designed to guide national responses to OCSEA.

Suggestion

Future studies were recommended to include different research questions and methods to complete the investigation regarding OCSEA in children and adolescents. It is also crucial to find other related aspects in order to elaborate the scope of discussion.

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