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The Law's Protection Against Children as Victims of Exploitation Artificial Intelligence-Based Cyberpornography

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Abstract: Child sexual exploitation through AI-based cyberpornography is a serious and growing threat in the digital era. Advanced AI technologies, such as deepfake and AI bots, provide new opportunities for perpetrators to easily create and disseminate exploitative content, significantly impacting the physical, psychological, and social well-being of child victims. Although Indonesia has established legal frameworks such as the Child Protection Act and the Electronic Information and Transactions (ITE) Act, adaptive regulatory revisions and stronger implementation are needed to address AI-based crimes and provide maximum protection for children. This study aims to analyze the legal protection for children as victims of AI-based cyberpornography in Indonesia. It employs a normative juridical method focusing on the study of legal norms, both written and customary, to explore legal solutions to this issue. Using primary and secondary legal materials, the analysis is conducted descriptively and prescriptively to evaluate the application of existing laws and propose relevant enhancements or updates. The findings reveal that child sexual exploitation in AI-based cyberpornography represents a crime leveraging advanced technologies such as deepfake and AI chatbots, with serious psychological, social, and physical consequences for victims. Despite existing regulations such as the ITE Act and Child Protection Act, legal gaps related to AI use in these crimes demand regulatory reforms to address modern legal challenges and reinforce cross-sectoral collaboration.

Keyword: Child Sexual Exploitation; Cyberpornography; Legal Protection.

INTRODUCTION

The rapid development of digital technology has brought significant changes to human life. Artificial Intelligence (AI) (Muhamad Danuri, 2019) is one of the most prominent innovations, with its ability to mimic human intelligence and perform complex tasks. In Indonesia, the use of AI is increasingly widespread, ranging from the industrial sector, health, to education. The Ministry of Communication and Informatics (Kominfo) notes that by 2023, investment in AI in Indonesia will reach trillions of rupiah. (Opriyaman Laoli et al, 2024) AI is projected to be the driving force of the digital economy and drive transformation in various

sectors. However, behind its positive potential, AI also holds risks that need to be watched out for. (Suhendri Wiranata, 2024) The increasingly sophisticated capabilities of AI can be misused for harmful purposes, including online sexual exploitation of children. This poses new challenges in child protection efforts in the digital era. Law No. 35/2014 on Child Protection mandates the state to protect children from all forms of violence and exploitation, including sexual exploitation in cyberspace. However, the rapid development of technology, especially AI, requires adjustments and strengthening of the legal framework to be more effective in protecting children from the threat of AI-based cyberpornography. (Shannon Gandrova and Ricky Banke, 2023)

Artificial intelligence (AI) has penetrated various aspects of life and provided tremendous convenience, especially in terms of access to information and communication. (Iis Saidah, 2021) Through AI, information can be accessed quickly and easily from various sources. AI also facilitates communication between individuals across geographical and language boundaries. However, despite its benefits, AI also has the potential to be misused for criminal purposes, including child sexual exploitation in the form of cyberpornography. The ease of creating and disseminating digital content through AI can be exploited by irresponsible individuals to sexually exploit children. (Salmia Syarifuddin et al., 2023)

Data from the Indonesian Child Protection Commission (KPAI) noted that in 2023 there were 49 cases of children who were victims of pornography and cybercrime. This figure underscores that the sexual exploitation of children in cyberspace is a serious threat that requires deep attention. Cyberpornography crimes involving children can take various forms, such as the distribution of images or videos containing child pornographic content, persuasion or seduction of children to carry out sexual activities online (online grooming), to live streaming of sexual violence against children. (Sri Hartini, 2017) This crime has a very detrimental impact on children, including physical, psychological, and social aspects. Therefore, comprehensive and effective legal protection is needed to prevent and handle cases of child sexual exploitation in AI-based cyberpornography. The legal system must be able to adapt to technological developments to ensure maximum protection for children from various forms of sexual violence and exploitation in the digital .

Cyberpornography refers to the production, distribution and consumption of pornographic material involving minors through digital media. The forms of cyberpornography involving children are very diverse, ranging from the distribution of pornographic images or videos of children, online sexual exploitation of children, to the use of children in pornographic performances via webcam or live streaming. (Yusron Nur Hadi & Niken Ayu Khoirun Nisa, 2023) Cyberpornography has a very detrimental impact on child victims. Physically, children can suffer injuries or sexually transmitted diseases. Psychologically, children may experience trauma, depression, anxiety, and post-traumatic stress disorder (PTSD). Socially, children may experience isolation, stigma, and difficulty in building interpersonal relationships. The negative impact of cyberpornography on children shows the urgency to provide comprehensive and effective legal protection. The law must be able to reach various forms of cyberpornography crimes involving children, including those involving the use of AI technology. (Mahsun Ismail, 2019)

Unfortunately, advances in AI technology also bring new threats in the form of online child sexual exploitation. (Laksmi Rachmaria & Andy Susanto, 2024) AI can be misused for various modus operandi, such as the creation of deepfake content that displays a child's face on an adult body in pornographic videos. In addition, online grooming with AI bots that mimic the behavior of children can be used to ensnare victims and commit sexual exploitation. Manipulation of images or videos of children can also be done easily using AI, increasing the risk of spreading child cyberpornography content. One example of a shocking AI-based child cyberpornography case is the spread of a deepfake video featuring the face of a child singer in Indonesia in 2022. This case shows that the threat of AI-based cyberpornography is not a mere

figment of the imagination, but has become a reality that must be faced. The development of increasingly sophisticated AI technology poses its own challenges for child protection efforts. AI continues to evolve with increasingly amazing capabilities, so the modus operandi of cyberpornography crimes is increasingly diverse and difficult to detect. This requires increased awareness, knowledge, and skills from all parties involved in child protection, from parents, educators, law enforcement officials, to internet service providers. (Farhan Aulia Harun & Lucky Nurhadiyanto, 2024)

In dealing with the threat of child cyberpornography, Indonesia already has a fairly comprehensive legal framework, although its implementation still needs to be improved. Law No. 35/2014 on Child Protection is the main foundation in protecting children from all forms of violence and exploitation, including sexual exploitation in cyberspace. The Child Protection Law emphasizes that every child has the right to protection from sexual violence, both in the real world and in cyberspace. Children who are victims of cyberpornography are entitled to legal assistance, psychological rehabilitation, and social reintegration. In addition to the Child Protection Law, Law Number 11 of 2008 on Electronic Information and Transactions (ITE Law), as amended by Law Number 19 of 2016, also regulates the handling of child cyberpornography. Article 27 paragraph (1) of the ITE Law prohibits the dissemination of content containing decency, including child pornography. Perpetrators who disseminate child cyberpornography content can be charged with a maximum prison sentence of 6 years and/or a maximum fine of Rp1 billion. (Azza Fitrahul Faizah & Muhammad Rifqi Hariri, 2022)

Indonesia has also ratified international legal instruments that regulate the protection of children from online sexual exploitation, such as the Optional Protocol to the Convention on the Rights of the Child on the Sale of Children, Child Prostitution and Child Pornography (OPSC). (Zulkifli Ismail et al., 2021) These instruments require state parties to take measures to prevent, handle and enforce laws against all forms of child sexual exploitation, including those that occur online. However, although the legal framework is in place, its implementation in the field still faces various challenges. The complexity of child cyberpornography issues, including those involving the use of AI, demands more comprehensive and innovative efforts to protect children from sexual exploitation in cyberspace. (Maslihati Nur Hidayati, 2012)

Despite the existing legal framework, the protection of children from AI-based cyberpornography is still not optimal. (Henny Saida Flora & et al, 2023) There are legal gaps that need to be addressed, such as the lack of specific regulations governing the use of AI in the context of sexual crimes against children. In addition, law enforcement against child cyberpornography cases involving AI also still faces various obstacles. The complexity of AI technology makes it difficult for law enforcement officials to collect evidence, identify perpetrators, and prove criminal acts. Therefore, a holistic approach is needed that includes prevention, handling, and recovery for child victims of AI-based cyberpornography. Prevention can be done through education and digital literacy for children, parents, and communities. Case handling involves cross-sector cooperation between law enforcement officials, child protection agencies, and experts such as psychologists. Recovery for child victims includes psychological, medical and social rehabilitation. (Mahdi Hidayatullah, 2024) Based on the description above, this research is formulated with the aim to analyze the legal protection of children as victims of AI-based cyberpornography sexual exploitation in Indonesia. (Eko Nurisman, 2022).

METHOD

This research uses the normative juridical method, which is an approach that focuses on the assessment of relevant laws and regulations that apply to provide legal protection to children as victims of sexual exploitation of Artificial Intelligence (AI)-based cyberpornography in Indonesia.

This method aims to analyze the legal norms contained in Law Number 35 of 2014 on Child Protection, Law Number 11 of 2008 on Electronic Information and Transactions (ITE

Law), as well as international instruments that have been ratified by Indonesia such as the Optional Protocol to the Convention on the Rights of the Child. This research will also review the legal gaps in existing regulations, especially regarding the use of AI in cyberpornography crimes, as well as evaluate the implementation of the law in protecting children from sexual exploitation in cyberspace. With this approach, the research is expected to provide recommendations for strengthening a more effective and innovative legal framework in facing the challenges of AI-based cyberpornography.

RESULTS AND DISCUSSION

Child Sexual Exploitation in Artificial Intelligence-Based Cyberpornography: Modes, Impacts, and Legal Vulnerabilities.

Child sexual exploitation is one of the most disturbing forms of crime and has a long-term impact on victims.(Nuzul Qur'aini Mardiya, 2017) In the ever-evolving digital era, the modes of this crime are increasingly sophisticated along with technological advances. One of the new forms of crime that is becoming more prevalent is child sexual exploitation in the form of artificial intelligence (AI)-based cyberpornography.(Jay Sadikin Abdul Azis Mandala Putra, 2024) AI has the ability to process data and create digital content with high precision, which is often utilized by irresponsible parties for harmful purposes. The use of technologies such as deepfake, AI chatbots, and image/video manipulation has opened up new avenues for perpetrators to exploit children without the need for direct physical interaction. These technologies allow the creation of content that looks genuine despite the use of digital manipulation, making it very difficult to distinguish from reality. The impact of this exploitation is not only psychologically damaging, but can also affect a child's social condition and development in the long run. Shame, trauma, and social pressure can lead to isolation, depression, and various other mental disorders. On the other hand, the vulnerability of the law in ensnaring perpetrators who use AI as a tool of crime is still a big problem, especially in Indonesia. While there is an Electronic Information and Transaction Law (UU ITE) and a Child Protection Law, these laws do not specifically cover the use of AI technology in sexual exploitation.(Royhan Zaki Ramadhana & Muhammad Irwan Padli Nasution, 2024)

In analyzing the legal gaps related to the use of advanced technology such as AI in cybercrime, including child sexual exploitation, it is relevant to link legal theory with the practice of legislation. One of the relevant legal theories in this context is the realist legal theory developed by legal thinkers such as Oliver Wendell Holmes Jr. and further developed in the Indonesian context by legal experts such as Satjipto Rahardjo.(Royhan Zaki Ramadhana & Muhammad Irwan Padli Nasution, 2024) Realist legal theory emphasizes that law must be understood and applied in the context of social practices and realities, not just written texts or norms. In this regard, the existence of laws such as the ITE Law and the Child Protection Law should be evaluated in the context of how effectively they address the real challenges of AI technology-based sexual exploitation. According to the legal realist approach, the effectiveness of the law is measured by its ability to respond to rapid changes in society, including technological developments. Weaknesses in Indonesia's current legal regulations indicate a legal gap in the application of this theory, where the law lags behind the reality of technology used in modern crimes. This confirms that existing laws must be updated to be in line with evolving criminal practices, such as the use of deepfakes and AI bots in child exploitation.(Abdul Halim & Others, 2008)

Artificial intelligence (AI) has penetrated various aspects of life and provided tremendous convenience, especially in terms of access to information and communication. Through AI, information can be accessed quickly and easily from various sources.(Saidah, n.d.) AI also facilitates communication between individuals across geographical and language boundaries. However, despite its benefits, AI also has the potential to be misused for criminal purposes, including child sexual exploitation in the form of cyberpornography.(Heny Novyanti & Pudji

Astuti, 2021) The ease of creating and disseminating digital content through AI can be utilized by irresponsible individuals to sexually exploit children.(Annisa Tiara Ramadhani et al., 2024) According to data from the Indonesian Child Protection Commission (KPAI), in 2023 there were 49 cases of children as victims of pornography and cyber crime.(Khalissa Aliya Indriany, 2023) This figure shows that sexual exploitation of children in cyberspace is a real threat that needs serious attention. Cyberpornography crimes involving children can be in the form of spreading pornographic images or videos of children, persuasion or seduction of children to carry out sexual activities online (online grooming),(Kayus Kayowuan Lewoleba & Muhammad Helmi Fahrozi, 2020) to live streaming of sexual violence against children. The impact of this crime is very detrimental to children, both physically, psychologically and socially. Therefore, comprehensive and effective legal protection is needed to prevent and address the sexual exploitation of children in AI-based cyberpornography.(Putri Ayu et al., 2024)

Deepfake content creation is one of the most troubling forms of exploitation in the world of cyberpornography. Deepfake is an artificial intelligence (AI) based technology designed to generate or manipulate visual and audio content with a very high degree of realism. It is capable of creating real-looking videos or photos by combining visual elements from multiple sources. In the context of child sexual exploitation, deepfake technology is used by perpetrators to attach children's faces to adult bodies in pornographic content. The ability of deepfake technology to create highly realistic content poses a major challenge in the identification and separation of genuine and manipulative content. Law enforcement faces difficulties in tracking down and removing these contents as the technical expertise required to distinguish between what is genuine and what is manipulated is very high. This challenge is further compounded by the ease of distribution of content through various platforms on the internet, including social media, personal websites, and dark forums. The implications of deepfake content creation involving children include not only potential reputational damage and embarrassment, but also impacts on children's mental and emotional health if the content becomes known to them or their surroundings. Child victims of deepfakes can feel exploited and vulnerable, even if they were not directly involved in the creation of the content. Feelings of insecurity, shame and trauma can haunt them for life, interfering with their psychological development as well as their ability to socialize and build trust with others.(Salsabila Rheinata Rhamadani Putri Supriadi et al., 2022)

Online grooming with AI bots is a mode of exploitation that utilizes advanced technology to approach children in the digital space. Cybercriminals use AI bots specifically designed to have conversations with children, with the aim of building a relationship of trust.(Laurensius Arliman, 2018) These bots have the ability to mimic human conversations very convincingly and realistically, thanks to natural language processing (NLP) technology that allows them to respond in an appropriate and engaging manner. In this way, children are often unaware that they are interacting with an AI program instead of a human. Once a relationship of trust is established, the AI bot can manipulate children into providing personal information or, in more serious cases, sending sexually charged photos or videos. This grooming process usually starts with a gradual, friendly conversation, during which the bot gathers information about the child's interests, feelings, and routines. Gradually, the bot steers the conversation to more intimate topics, making the child feel comfortable and safe to share personal things. This technology allows perpetrators to reach multiple victims at once, reducing the risk of detection and intervention compared to traditional grooming methods that require direct human involvement. This creates a huge challenge for parents, educators and law enforcement, as AI bots can operate across multiple platforms, including social media, chat apps and online games, with anonymous profiles that are difficult to trace.

The manipulation of images or videos of children with AI-based technology is one of the increasingly worrying modes of exploitation. With the advancement of AI-based image

manipulation tools, offenders can easily alter or modify photos of children taken from social media or other online platforms to create sexual content. This technology allows perpetrators to create images or videos that look very real, despite being completely digitally engineered. The advantage for offenders is that the technology makes it easier to produce large amounts of content and allows for widespread dissemination without the direct involvement of the child. Seemingly innocuous photos on social media can be taken and turned into sexually exploitative content, putting children in situations they never imagined and without their knowledge. This creates a very difficult situation for victims, who may not realize that their image has been misused. The impact of this manipulation on the child is profound. While the child may not have been directly involved in the creation of the content, if they or those around them become aware of the content, the impact can include psychological trauma, deep shame, and loss of security. Children may feel that their privacy has been violated and become afraid to share anything online, which hinders their development in socializing in the digital world.

The impact of sexual exploitation through AI-based cyberpornography on children is vast and profound, touching various aspects of their lives. One of the most significant impacts is the psychological impact experienced by child victims. Prolonged trauma is often the initial response upon learning that their images or videos have been manipulated and disseminated online. Children can experience depression, anxiety, and in many cases, post-traumatic stress disorder (PTSD). Deep feelings of shame arise from knowing that their image has been used without permission and shared in a damaging context. This can damage the child's self-esteem and result in a severe loss of confidence. The constant fear of further exposure and potential repetition of the event can also disrupt a child's daily life, hampering their ability to focus at school, socialize and interact with others. Such incidents not only create a sense of insecurity in the digital space, but also seep into a child's daily life, making them feel watched and vulnerable despite being physically safe. The psychological impact experienced often triggers sleep disturbances, such as nightmares or insomnia, as well as physical reactions such as headaches and fatigue caused by excessive stress. In some cases, children who feel ashamed or isolated as a result of this exploitation may withdraw from social interactions, avoid friendships and have difficulty building new relationships. The feelings of helplessness that arise from these situations can exacerbate the risk of further mental disorders, including self-harming tendencies or, in severe cases, suicidal ideation.

Sexual exploitation through AI-based cyberpornography has a very serious social impact on child victims. One of the most significant impacts is the social isolation they experience. When manipulative content involving them is shared online, children often become targets of stigma and bullying from peers or even the wider environment. This bullying can take many forms, including abusive comments, teasing, or ostracization in schools and communities. Such stigma and bullying can leave children feeling isolated and ashamed, even when they were not directly involved in the creation of the content. This deep sense of shame often causes them to withdraw from social interactions and stay away from everyday activities they used to enjoy. They may avoid meeting up with friends, not want to go to school, or refuse to participate in group activities for fear of being judged or ridiculed. The social isolation that victims of exploitation experience can disrupt their emotional development and lead to difficulties in building and maintaining relationships. Children who feel alienated may lose self-confidence, feel a drop in self-esteem, and feel unsafe in their environment. They are also at risk of having difficulty trusting others, which can negatively impact their ability to interact and socialize in the future.

While AI-based sexual exploitation is largely digital in nature, it can impact the physical health of victimized children. These impacts often arise as a reaction to the emotional and psychological distress they experience. One of the most common physical impacts is sleep disturbances. Children who face shame and trauma from the dissemination of manipulative content may have difficulty sleeping or wake up frequently at night due to nightmares. This poor sleep quality can affect their overall health and lower energy levels and concentration abilities. Loss of appetite is also a physical impact that victims often experience. Feelings of anxiety and excessive stress can make children lose interest in food, which in the long run can lead to weight loss and other health problems. This further deteriorates the child's physical health, making them more susceptible to illness and fatigue.

In more extreme cases, children who experience AI-based sexual exploitation may feel so distressed that they self-harm. Feelings of shame, helplessness, and intense emotional distress can drive

them to seek out means of release or try to ease the emotional pain through self-harming behaviors. This is a physical manifestation of deep psychological trauma and shows how serious the impact of this exploitation is on a child's well-being. All of these physical effects, whether sleep disturbances, loss of appetite, or self-harm, emphasize that AI-based exploitation not only leaves a mark in cyberspace, but also brings real and damaging consequences in the lives of children.

The legal vulnerability of addressing child sexual exploitation involving AI technology in Indonesia is a complex issue that includes limitations in current regulations. While several laws have been drafted to address cybercrime and child protection, challenges arise when advanced technologies such as AI start to be used for harmful practices, such as image manipulation, deepfake videos, or online grooming with AI bots. The Electronic Information and Transaction Law (ITE Law) No. 19/2016, which regulates the use of information technology in Indonesia, already includes various provisions related to the dissemination of illegal content, including pornographic content. Article 27 paragraph (1) of the ITE Law prohibits everyone from distributing or transmitting content that violates decency. In the case of child sexual exploitation, perpetrators who spread such content can be charged under this provision. However, the ITE Law does not specifically regulate the use of AI technology in content manipulation, such as deepfakes involving children's faces or bodies. This lack of clarity creates difficulties in prosecuting perpetrators who use AI technology for sexual crimes due to the absence of regulations covering sophisticated aspects of digital manipulation.

The ITE Law, Child Protection Law No. 35 of 2014 which amends Law No. 23 of 2002 on Child Protection also provides protection against sexual exploitation and indecent treatment of children. Article 76D and Article 81 state that everyone is prohibited from committing violence or sexual exploitation against children, and violations of this article may be subject to criminal sanctions. However, while the Child Protection Law provides a legal basis to combat various forms of exploitation, it does not specify the use of advanced technologies such as AI in the creation of content that exploits children. The absence of specific regulations governing child sexual exploitation involving AI technology, such as deepfake content manipulation or the use of AI bots for online grooming, points to a gap in Indonesia's legal regulations. Existing laws regulate exploitative content and its distribution, but do not cover new content creation technologies that utilize AI. This gap makes it difficult for law enforcement to prove and prosecute crimes involving AI-based manipulation, as the technology allows perpetrators to operate anonymously and spread content widely and quickly.

Child sexual exploitation involving advanced technology such as artificial intelligence (AI) poses a major challenge to the Indonesian legal system. Modus operandi such as deepfake, image/video manipulation, and online grooming with AI bots have introduced new forms of crime that are difficult to reach by existing laws and regulations. While the ITE Law and Child Protection Law provide the basic framework to fight cybercrime and protect children, these laws do not specifically cover AI technologies used in these modern crimes. Unfortunately, this vagueness creates legal gaps that complicate law enforcement and provide opportunities for perpetrators to take advantage of regulatory voids.

Legal Protection for Child Victims of Sexual Exploitation of Artificial Intelligence-Based Cyberpornography.

The sexual exploitation of artificial intelligence (AI)-based cyberpornography requires a thorough and comprehensive approach, given the complexities and challenges presented by rapid technological development. AI technology has brought great benefits to society, but it also opens up opportunities for dangerous cyber crimes, including child sexual exploitation. In this context, it is necessary to understand how prevention, case handling, law enforcement, and victim rehabilitation can be integrated to provide effective and holistic protection. Efforts to protect children from this kind of exploitation must involve various parties, from families, schools, to communities, in raising awareness and digital literacy. In addition, law enforcement officials, child protection agencies and mental health professionals play a key role in handling the case as a whole. Strict and fair law enforcement requires revising existing regulations, including the Electronic Information and Transaction Law (UU ITE) and the Child Protection Law, to cover the use of advanced technologies such as deepfake and AI bots.

Legal protection for child victims of AI-based cyberpornography sexual exploitation is a responsive legal theory introduced by Philippe Nonet and Philip Selznick. This theory focuses on how the law should function in response to social and technological changes to effectively protect the

interests of society. Responsive legal theory emphasizes that law is not only static and normative, but must be adaptive, responsive, and able to adjust to the development of conditions in society. In the context of AI-based child sexual exploitation, responsive legal theory highlights the importance of the law to constantly evolve and update in order to face new challenges presented by technological advances. The use of AI in cybercrime, such as image/video manipulation (deepfake) and online grooming using AI bots, are forms of crime that have not been fully accommodated by existing laws, such as the ITE Law and the Child Protection Law. This shows that existing laws are not yet fully responsive to rapid technological change.

Responsive legal theory proposes that the law should be able to protect the rights of individuals and respond to the needs of society with sufficient flexibility. In the case of child sexual exploitation involving advanced technology, this means the law must have clear and specific coverage regarding the use of technologies such as deepfake and AI to exploit children. Current regulations do not explicitly cover these threats, creating a legal gap that allows criminals to exploit weaknesses in the legal system. The implementation of responsive legal theory in practice will encourage lawmakers and legal stakeholders to revise and update legislation. For example, the ITE Law needs to be expanded to cover AI-based manipulative technologies and clarify the relevant sanctions for these offenses. These revisions will make the law more responsive to new threats, ensuring that the law serves not only as an enforcement tool, but also as an effective deterrent and protector of society.

Families play a key role in protecting children from AI-based sexual exploitation by providing good supervision and guidance in the use of digital technology. Parents need to equip children with adequate digital literacy, teach them about the importance of maintaining privacy, online safety, and recognizing threats that may appear online. This education includes how to recognize signs of harmful interactions, such as online grooming or suspicious requests for personal information. To support this role, educational programs for parents are essential. Digital literacy seminars and trainings can help parents understand cybercrime threats and advanced technologies, such as deepfakes and AI bots that can be used in sexual crimes. With this knowledge, parents can guide their children more effectively, discuss limits on technology use, and establish an open dialog about their children's experiences and interactions online. Active family involvement in technology supervision and regular communication about online safety can create a safe environment for children.

Schools have an important role to play in protecting children from the risk of AI-based sexual exploitation by integrating digital literacy into the education curriculum. Education programs should include learning about internet safety, ethical use of technology, and how to detect modes of cybercrime, such as online grooming and digital manipulation. By equipping students with this knowledge, schools can help them become more vigilant and able to protect themselves when they are online. In addition, collaboration between schools and non-governmental organizations and child protection agencies is needed to expand the reach of digital literacy programs. These organizations can provide additional resources, training and workshops focused on digital safety, as well as information on new and evolving technological threats.

Communities have a very important role to play in creating awareness and preventing AI-based child sexual exploitation. Public campaigns organized by local communities and mass media can be an effective tool to spread information about the dangers of this cybercrime and preventive measures that parents and children can take. These campaigns can involve seminars, public discussions, informative posters, as well as the dissemination of educational content through social media platforms and television. Local communities can collaborate with non-governmental organizations, child protection agencies, and authorities to conduct outreach programs that explain how to recognize and avoid modes of exploitation such as online grooming and digital content manipulation. Active participation from the media is also important to reach a wider audience, deliver news and articles that highlight the threat of AI technology to children's safety, and provide advice on digital safety measures that can be implemented.

Law enforcement officials play a central role in efforts to address cybercrime, including cases of child sexual exploitation involving the use of AI technology. This type of crime presents new challenges that are different from conventional crimes, especially because AI technology can be used to create and disseminate highly realistic content, such as deepfakes and other digital manipulations. AI's ability to alter and manipulate visual and audio content makes identifying perpetrators and proving crimes more complex. Therefore, law enforcement officials must have sufficient digital forensic skills to detect,

collect evidence, and investigate these crimes. Digital forensics covers various aspects, including metadata analysis, cyber activity tracking, and identification of behavioral patterns that indicate the use of advanced technology in crime. These skills are essential as criminals often use sophisticated techniques to hide their identities and protect their digital footprints.

The technology used in AI-based cybercrime also poses challenges in terms of proof in court. Deepfake content, for example, can look very real, making it difficult for law enforcement to prove that the content is manipulated. This requires sophisticated supporting technologies, such as deepfake detection software, as well as data analysis methods capable of verifying the authenticity of the content and identifying its source. The presence of AI technology in cybercrime expands the terrain that law enforcement officers must face, not only from a technical perspective but also in terms of understanding changing crime patterns. Criminals can utilize AI technology to spread exploitative content anonymously and on a large scale, which makes law enforcement more difficult. These technologies enable rapid production and distribution of content, accelerating its spread before authorities can respond.

Child protection agencies play an important role in ensuring that children who are victims of AI-based sexual exploitation receive comprehensive protection, both physically and legally, throughout the legal process. In situations involving cybercrime, such as image and video manipulation or online grooming, these agencies are tasked with keeping children physically and emotionally safe and ensuring their rights are protected. During the legal process, child protection agencies should ensure that child victims are treated with empathy and without causing additional trauma. They are tasked with providing comprehensive assistance, including legal assistance that ensures the child understands the legal process they are facing and is protected from intimidation or pressure that may occur during the investigation and judicial process.

Support provided by child protection agencies should include psychosocial services. This includes counseling for victims to help them cope with the trauma experienced as well as supporting families in understanding how to accompany their children during recovery. These agencies also play a role in connecting families with other necessary resources and services, such as mental health and rehabilitation services. The support provided should not only focus on the child as an individual but also take into account family dynamics. Involving the family in the support process is crucial to building a stable and supportive environment for the child in their recovery. Child protection agencies should work with various parties, including psychologists, social workers, and local communities, to ensure that child victims can feel safe, supported, and have a structured recovery path.

Psychologists and mental health professionals have a crucial role to play in supporting children who are victims of AI-based sexual exploitation. Such crimes, which often involve manipulative technologies such as deepfake and online grooming, can have profound emotional impacts and long-term trauma. Therefore, intervention from a psychologist is an essential part of the victim's recovery process. Psychologists play a role in providing emotional support designed to help children overcome the fear, shame and trauma they experience. This approach not only aims to relieve early symptoms of trauma, such as anxiety or depression, but also ensures that children have effective coping mechanisms to deal with the long-term impact of the experience. Individual therapy is the main method used, where the psychologist can work directly with the child to build a sense of safety, restore confidence, and help them process the events they have experienced.

A multidisciplinary approach is essential in dealing with trauma caused by AI-based cybercrime. A team of psychologists, psychiatrists, social workers and other mental health professionals need to work together to provide comprehensive support. This approach ensures that every aspect of the child's recovery, whether mental, emotional or social, is addressed appropriately. For example, in addition to individual therapy, family therapy sessions may be held to help parents understand how to effectively support their child during the recovery process. A coordinated approach also requires communication and collaboration between psychologists and child protection agencies to ensure that children get legal protection that is in line with their psychological needs. Psychologists should help children understand the legal process they may undergo, so that they do not feel intimidated or confused by the process. Psychosocial support programs should include rehabilitation activities that help children re-adapt to everyday life. This includes teaching social skills, coping skills and activities that build confidence. Psychologists also need to monitor the child's progress at regular intervals to ensure that they do not

experience future mental deterioration and can lead healthy and productive lives after experiencing trauma.

Revising laws related to child sexual exploitation in the context of AI-based cybercrime is crucial to close the current legal gaps. While the Electronic Information and Transaction Law (ITE Law) and the Child Protection Law provide a legal basis to fight cybercrime, they still fall short in regulating crimes involving advanced technologies such as deepfakes and AI bots. The main problem with the existing laws is the lack of explicit description of these new technologies and how they can be misused for criminal purposes. The ITE Law, for example, provides for the prohibition of distributing content that violates decency in Article 27 paragraph (1). However, this law does not specifically cover the use of AI technology to produce manipulative content such as deepfakes. This means that when perpetrators use AI to create fake content that exploits children, existing articles may not be sufficient to appropriately prosecute perpetrators. Deepfake technology allows perpetrators to create highly realistic videos or images by pasting the victim's face onto pornographic content. The absence of regulations governing this aspect causes uncertainty in the process of prosecution and proof in court.

The Child Protection Law faces similar challenges. While the law provides protection against sexual exploitation and violence against children, its definitions are general and do not cover the use of modern technology for sexual crimes. Existing articles focus more on physical acts and content distribution without accommodating aspects of advanced technology that allow perpetrators to digitally exploit children without direct contact. As a result, AI-based cybercrimes often lack a strong legal foundation to be punished according to their severity. Another problem is the unclear definition of manipulative technology. For example, there is no detailed explanation in existing laws of what a deepfake or AI bot is and how these technologies can be used in sex crimes. Without specific definitions, law enforcement faces a huge challenge in categorizing and prosecuting these crimes. This leaves room for perpetrators to take advantage of the legal vacuum and avoid proper accountability. The revision of the law needs to include a comprehensive definition of manipulative technologies such as deepfake and the use of AI bots. This is important so that law enforcement officials have a clear legal framework in prosecuting perpetrators and ensuring that the sanctions imposed are commensurate with the level of crime committed. Strict sanctions should also be stipulated in this revision to strengthen the deterrence effect, so that potential perpetrators realize the serious consequences of using AI technology to exploit children.

International cooperation is an important element in addressing cybercrime, including child sexual exploitation involving AI technology, due to the transnational nature of these crimes. Cybercrimes often involve networks of perpetrators operating across multiple countries, using global digital infrastructure that makes it difficult for law enforcement to act in just one jurisdiction. Therefore, collaboration with international law enforcement agencies and the utilization of extradition treaties are essential to ensure perpetrators operating outside of Indonesian jurisdiction can be identified and prosecuted. This cooperation allows Indonesian law enforcement officials to share critical information, data and evidence with their counterparts in other countries. This process involves coordination with international organizations such as Interpol or Europol, which have extensive experience and networks in dealing with transnational crimes. In addition, such cooperation also allows access to technology and resources that may not yet be available domestically, such as advanced digital forensics software that can detect and identify AI-based manipulation.

Extradition treaties play an important role in ensuring that offenders who are abroad can be tried in Indonesia. Without such agreements, the process of bringing offenders to justice can be hampered by differences in laws and policies between countries. With a strong extradition treaty, law enforcement officials can request assistance from other countries to detain and hand over offenders hiding in their territory. This is particularly relevant in the case of cybercrime, where perpetrators can take advantage of their location in countries that do not have strict regulations against cybercrime to avoid legal action. International cooperation also includes participation in multilateral treaties governing cybercrime, such as the Budapest Convention on Cybercrime, which provides the global legal framework for combating cybercrime. Indonesia can strengthen its role by joining such treaties or expanding bilateral cooperation with countries that have advanced cyber law enforcement capabilities. Challenges in international cooperation often involve differences in laws, privacy policies and data regulations between countries. However, with effective coordination, these can be overcome through the formation of agreements that accommodate such differences while still ensuring strict legal action against perpetrators.

Psychological support is a critical component in the rehabilitation of children who are victims of AI-based sexual exploitation. This rehabilitation process should include intensive psychological services facilitated by a licensed psychologist who has specialized experience in treating child trauma. Trauma from cyber-exploitation can have long-lasting effects on a child's mental and emotional health, so comprehensive treatment is necessary. Individualized therapy is one of the main approaches in psychological support for victims. Through these private sessions, psychologists can help children identify and understand their feelings, including the shame, fear and anxiety that come with exploitation. The individualized approach allows for a more personalized treatment tailored to each child's needs and level of trauma, providing a space for them to talk openly in a safe and supportive environment.

Group therapy should also be provided as part of rehabilitation support. Group therapy helps children feel that they are not alone in their experiences, creating a sense of solidarity and support between victims. Interacting with other children going through similar situations can reduce the sense of isolation and provide a significant emotional boost. Psychologists leading group therapy can facilitate discussions that build confidence, share coping strategies and strengthen children's social skills. The importance of these psychological services is not limited to early recovery; long-term support is also needed to monitor children's development and prevent deterioration of their mental state. Child victims of AI-based sexual exploitation may face additional challenges in the future, such as difficulties in building healthy relationships or facing social stigma.

Long-term programs in mental health services are essential to support child victims of AI-based sexual exploitation, as the impact of the trauma they experience can continue and affect their lives into adulthood. Trauma from cybercrimes such as image or video manipulation and AI-based online grooming not only has an immediate impact, but can also leave a deep and lasting emotional imprint. Therefore, rehabilitation programs designed for the long term are necessary to ensure sustainable and holistic recovery. This program should include counseling and therapy services that focus not only on initial treatment but also on ongoing monitoring and support. Follow-up therapy can help children cope with the emotional impact that comes with growing up, such as difficulties in establishing interpersonal relationships, mistrust of others, or prolonged shyness. With a long-term approach, children can learn to develop effective coping skills and build strong mental resilience to face challenges later in life.

Long-term mental health services should also include family support programs. Families play a huge role in a child's recovery process, and programs that involve family counseling can help parents or guardians understand the trauma the child is experiencing, provide consistent support, and create a stable and safe environment at home. This support is important so that the child feels fully supported and does not feel isolated in their struggle to overcome trauma. This long-term approach should be accompanied by a plan for regular evaluation to assess the child's progress and adjust therapy methods according to their needs. The long-term involvement of mental health professionals, including psychologists, psychiatrists, and social workers, allows for continuous monitoring and adjustments to treatment, allowing for optimal recovery. Long-term mental health programs should also provide easy access to additional resources, such as support groups, education on stress management, and self-development workshops that help children build skills that will be useful in the future.

Family counseling and community engagement play an important role in the recovery process of child victims of AI-based sexual exploitation. Support from the family is crucial as the family is the first place where the child feels safe and supported. Family counseling helps parents or guardians understand the impact of the trauma experienced by the child and provides them with tools and strategies to provide effective support. With guidance from an experienced psychologist or counselor, families can learn how to interact with the child positively, help rebuild the child's confidence, and create a safe and caring environment at home. Family counseling also provides space for family members to express their own feelings and concerns, which is important for maintaining the mental health of the entire family. With a better understanding of the trauma experienced by the child and the best ways to support him or her, the family can serve as a strong and cohesive support network, allowing the child to feel accepted and loved, despite their emotional difficulties.

Community interventions are also crucial to reduce the stigma that children may face in their social environment. Stigma associated with sexual exploitation can make children feel isolated and ashamed, hindering the recovery process. Community programs that involve education and outreach about cybercrime and its impact can help people understand the situation faced by victims and reduce judgmental attitudes. It also helps to establish a more supportive and inclusive environment where

children can feel accepted and supported by those around them. Community engagement in the form of support group activities, workshops and awareness campaigns can help change community perceptions and create empathy. These activities allow children to interact with their peers without fear of discrimination or bullying, and promote healthy social reintegration. Communities that understand the importance of protection and support for child victims of sexual exploitation will be better able to help them undergo a full recovery process and rebuild confidence and positive social interactions.

Legal protection for child victims of sexual exploitation of AI-based cyberpornography requires a comprehensive approach that includes prevention, case handling, law enforcement, and sustainable rehabilitation. Prevention should involve the active role of families, schools, and communities. Families should provide adequate supervision and education on digital literacy and online safety, while schools need to integrate learning about cybersecurity into the curriculum.

Public campaigns by communities are also important to raise awareness and preventive measures. In handling cases, law enforcement officers need to have strong digital forensic skills to investigate AI-based cases, while child protection agencies should provide physical and legal protection and support for victims' families. Psychologists and mental health professionals play an important role in providing in-depth emotional support and therapy, using a multidisciplinary approach to ensure a child's complete recovery. Law enforcement requires revising existing regulations, such as the ITE Law and Child Protection Law, to specifically regulate the use of AI technologies such as deepfake and AI bots. Clearer regulations and strict sanctions for perpetrators are needed. In addition, international cooperation should be enhanced to address perpetrators operating overseas through extradition treaties and coordination with global law enforcement agencies.

CONCLUSION

Child sexual exploitation in artificial intelligence (AI)-based cyberpornography is a modern form of crime that utilizes advanced technologies such as deepfake, AI chatbots, and digital manipulation to create damaging content without direct physical interaction with victims, making it difficult to detect and eradicate. These crimes have profound psychological, social, and physical impacts on victims, including trauma, social isolation, and mental and physical health disorders, and pose serious legal challenges due to regulatory gaps in Indonesia.

While the Electronic Information and Transaction Law (UU ITE) and the Child Protection Law are in place, they do not specifically address the use of AI technology in child exploitation, so revisions are needed to include explicit definitions and strict sanctions for AI-based crimes. Preventing and addressing this exploitation requires collaboration between families, schools, communities, and law enforcement officials through digital literacy education, digital forensic skills, psychosocial support for victims, and strengthening regulations. In addition, international cooperation is essential to address transnational crimes involving AI technology by utilizing extradition treaties and global coordination. Responsive legal approaches, ongoing support, and the involvement of all elements of society are key to protecting children from the serious impacts of AI-based exploitation.

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