Indian Journal of Science, Technology & Environment (IJSTE)

An International Peer Reviewed, Refereed, Indexed & Quarterly Research Journal of Science, Technology & Environment

ISSN : 3108-2017(Online)
3108-1304(Print)
IIFS Impact Factor : 5.875
Vol.-2; Issue-3(July-Sept.) 2026
Page No.- 55-64
©2026 IJSTE
https://ijste.gyanvividha.com

Author's :

1. Rajeev Surana
Research Scholar, School of Law, Shobhit Institute of Engineering & Technology (Deemed-to-be University), Meerut, India.

2. Dr. Kuldeep Kumar
Assistant Professor, School of Law, Shobhit Institute of Engineering & Technology (Deemed-to-be University), Meerut, India.

Corresponding Author :

Rajeev Surana
Research Scholar, School of Law, Shobhit Institute of Engineering & Technology (Deemed-to-be University), Meerut, India.

A Socio-Legal Analysis of POCSO Cases in Rajasthan : Exploring the Role of Artificial Intelligence in Child Protection and Justice

Abstract : The Protection of Children from Sexual Offences (POCSO) Act, 2012, is a landmark law in India's fight against child sexual abuse. However, the existence of a comprehensive legal framework does not automatically translate into effective justice on the ground. Its success depends on legal awareness, institutional preparedness, inter-agency coordination, procedural compliance, victim support, gender sensitivity and the capacity of stakeholders to implement the law effectively (Bajpai, 2019; Kumar, 2022; Sharma, 2022). This paper is based on a larger doctoral study that examines the implementation of the POCSO Act in Rajasthan. The study proposes an empirical sample of 400 key stakeholders, including police personnel, Child Welfare Committee (CWC) members, NGO representatives, teachers and parents, with the objective of examining legal awareness, institutional preparedness, gender sensitivity and perceived implementation effectiveness.

The paper extends this socio-legal framework by examining the emerging role of Artificial Intelligence (AI) in child protection and justice. AI represents a double-edged dimension of contemporary child protection. On one hand, AI-assisted technologies may support the identification of Child Sexual Abuse Material (CSAM), detection of online grooming patterns, digital forensics, evidence management and case administration. On the other hand, generative AI introduces emerging risks, including synthetic sexual content involving minors, deepfakes, impersonation and technology-facilitated exploitation (UNICEF Innocenti, 2025). The paper therefore proposes a conceptual framework for the responsible integration of AI into POCSO implementation in Rajasthan. The framework places particular emphasis on human oversight, evidentiary integrity, privacy,

accountability and the best interests of the child.

Keywords: POCSO Act, Child Protection, Socio-Legal Analysis, Rajasthan, Artificial Intelligence, Generative AI, Deepfakes, Digital Evidence, AI Governance, Justice 5.0.

1. Introduction : Children are among the most vulnerable members of society. Child sexual abuse can produce immediate as well as long-term psychological, social and developmental consequences. A systematic review of child sexual abuse in India has highlighted the substantial prevalence and complex social dimensions of the problem (Choudhry et al., 2018). The legal response to this vulnerability was significantly strengthened through the enactment of the Protection of Children from Sexual Offences Act, 2012. The POCSO Act provides a specialised and gender-neutral legal framework dealing with penetrative sexual assault, sexual assault, sexual harassment and the use of children for pornographic purposes (Government of India, 2012; Sidhva, 2013).

The POCSO framework also incorporates child-sensitive procedural safeguards. The broader objective is not merely to prosecute offenders but to ensure that the child is protected from additional trauma during reporting, investigation and judicial proceedings (Bajpai, 2019; Sharma, 2022).

However, the implementation of POCSO is a complex socio-legal process. Previous scholarship has identified challenges relating to awareness, institutional capacity, training, judicial processes and implementation (Kumar, 2022; Kshirsagar, 2020). Studies specifically examining Rajasthan have similarly highlighted questions concerning the effectiveness of POCSO, victim support and institutional implementation (Aggarwal & Rawat, 2025; Verma & Malviya, 2026).

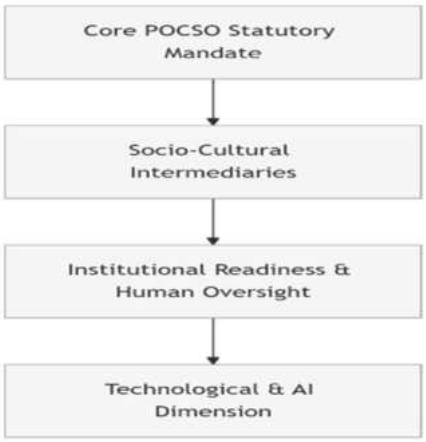
The ongoing doctoral research, A Socio-Legal Analysis of POCSO Cases in Rajasthan, therefore examines the functioning of the law not merely as a statutory framework but as a system operating through institutions and communities. The study focuses on legal awareness, institutional preparedness, gender sensitivity and perceptions of implementation effectiveness.

A further transformation has emerged with the rapid development of digital technologies and Artificial Intelligence. Children increasingly interact with digital platforms, algorithmic systems and AI-enabled environments. While these technologies may create opportunities for education, communication and protection, they may also facilitate new forms of exploitation. UNICEF's guidance on AI and children specifically identifies emerging risks associated with AI-generated child sexual abuse material, non-consensual intimate imagery, privacy and online safety (UNICEF Innocenti, 2025).

Generative AI has therefore introduced a new dimension to the problem. Real photographs may potentially be manipulated into sexually explicit synthetic content, while automated systems may facilitate increasingly sophisticated forms of online interaction and exploitation. At the same time, AI-assisted tools may support digital forensics, evidence analysis and the management of large volumes of digital information.

This produces the central question of the present paper:

Can Rajasthan's child-protection and justice system effectively respond when both the nature of child sexual exploitation and the technological tools available to combat it are being transformed by Artificial Intelligence?



2. The Local Reality: Socio-Cultural Hurdles in Rajasthan : The implementation of POCSO in Rajasthan cannot be understood exclusively through statutory provisions. Socio-cultural factors influence reporting, access to justice, institutional responses and the willingness of families to pursue legal remedies.

Child sexual abuse in India has historically been associated with stigma, silence and social barriers to disclosure (Choudhry et al., 2018). In communities where family reputation and social honour carry significant importance, families may experience pressure to avoid public disclosure of abuse. Such circumstances can affect reporting and access to formal justice mechanisms.

The concept of family honour, commonly expressed through ideas such as izzat, can become particularly significant where sexual offences are perceived as bringing stigma upon the family. From a child-rights perspective, however, the priority must remain the safety, dignity and welfare of the child rather than the preservation of social reputation (Bajpai, 2019; Sharma, 2022).

The rural and socio-economically diverse context also creates institutional challenges. Informal community mechanisms may sometimes influence the manner in which families respond to allegations of sexual offences. Such informal approaches must be distinguished from the formal statutory framework governing offences under POCSO.

POCSO offences are governed by statutory criminal procedures and cannot simply be converted into private settlements outside the legal framework (Government of India, 2012; Sidhva, 2013).

Another major challenge is institutional capacity. Effective implementation requires trained police personnel, functioning Special Juvenile Police Units (SJPUs), Child Welfare Committees, Special Courts, support persons and coordinated victim-support mechanisms. Studies on POCSO implementation have identified institutional and procedural challenges that may affect the delivery of timely and effective justice (Kumar, 2022; Aggarwal & Rawat, 2025).

The problem becomes even more complex when digital evidence is involved. Contemporary POCSO investigations increasingly intersect with electronic communication, social media, smartphones and online platforms. Research concerning digital surveillance and POCSO investigations in Rajasthan has highlighted the need to balance investigative efficiency with procedural fairness (Suroliya & Nuwal, 2026).

3. How We Studied This

3.1. Research Design : To understand this complex issue, we used a descriptive, cross-sectional socio-legal survey. It’s a "deductive" approach, meaning we started with a broad idea of the

problems and tested them in the field. To make sure our findings were statistically sound, we calculated our sample size using Cochran's formula. This gave us a target of 384 respondents, which we rounded up to 400 to allow for a margin of error.

We selected these 400 people through "purposive sampling"—meaning we deliberately chose people from specific stakeholder groups who are central to the child protection system in Rajasthan:

Stakeholder Category	Role in Child Protection	Sample Size
Police Personnel	Registering FIRs, investigating (SJPU), handling digital evidence, questioning children	200
CWC & NGO Representatives	Issuing protection orders, providing psychological support, rehabilitation	100
Community Stakeholders (Teachers & Parents)	Identifying abuse, reporting, and community-level sensitization	100
Total		400

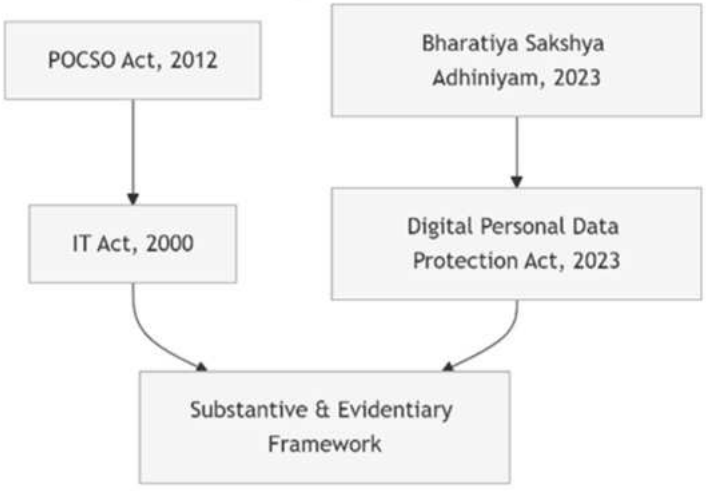
The sample-size determination is based on the conventional application of Cochran's sampling formula, with the proposed sample increased to 400 respondents to provide an appropriate margin for empirical analysis (Cochran, 1977).

3.2. A Note on Methodology : Our main survey tool used a 5-point Likert scale to measure four key things: Legal Awareness, Institutional Preparedness, Gender Sensitivity, and Perceived Implementation Effectiveness.

There's an important point to clarify here. The original survey was designed before we decided to focus on AI. So, we don't have hard empirical data on AI literacy from these respondents. Instead, our analysis of the AI dimension is built on legal and doctrinal research, international technical standards, and child rights benchmarks. This provides a solid blueprint for a future, more focused study to test our AI-related proposals in the field.

4. AI and the Law: A Complex Interface : The Indian legal system is starting to grapple with technology-facilitated crimes against children. The framework is made up of several key acts.

The POCSO Act specifically addresses the use of children for pornographic purposes through Sections 13, 14 and 15 (Government of India, 2012). Section 67B of the Information Technology Act, 2000 separately addresses material depicting children in sexually explicit acts or conduct in electronic form (Government of India, 2000).



But this is where it gets tricky. The existing laws were written for a world where child abuse material was physically recorded or shared over traditional digital media. Generative AI completely upends that. We now have to think about three new categories:

1. Altered Imagery: Real photos of children being manipulated into sexually explicit scenes (deepfakes).
2. Wholly Synthetic CSAM: AI-generated images of children who don't even exist.
3. Automated Exploitation: "Grooming bots" that can manipulate children on a massive scale.

AI may potentially be used to automate or scale forms of online manipulation and grooming. Generative systems can produce highly adaptive conversational content, creating new challenges for online child safety and detection.

These emerging developments demonstrate why traditional approaches to digital child protection may require technological and legal adaptation (UNICEF Innocenti, 2025).

5. AI, Digital Evidence and POCSO Justice

The increasing use of digital evidence in criminal investigations makes the relationship between AI and evidentiary law particularly important.

The Bharatiya Sakshya Adhiniyam, 2023 provides the contemporary statutory framework governing electronic and digital records in evidence (Government of India, 2023a). Consequently, AI-assisted forensic analysis must operate within the broader requirements applicable to the identification, preservation, authentication and proof of electronic evidence.

It would therefore be inappropriate to treat an AI-generated forensic output automatically as conclusive evidence.

Questions concerning AI-assisted evidence include:

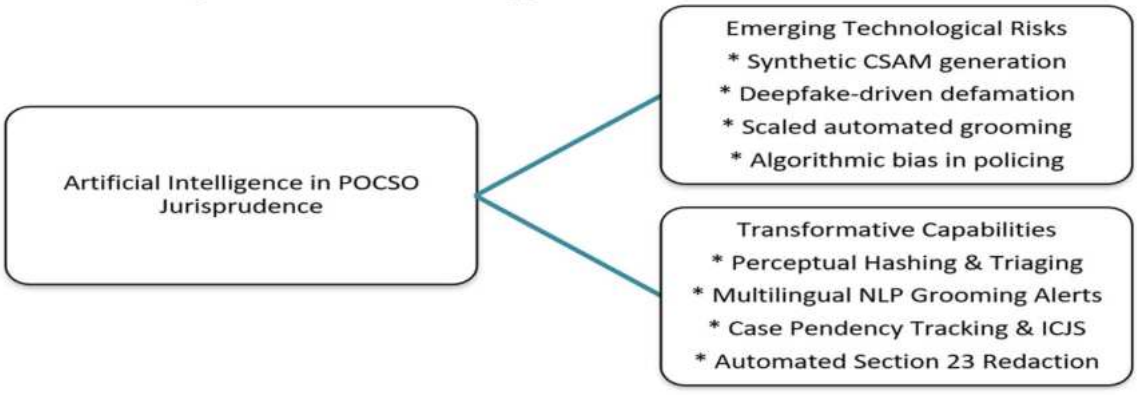
1. What data was supplied to the AI system?
2. What methodology or model was used?
3. What are the known limitations and error rates?
4. Was the original evidence preserved?
5. Can the analytical process be independently examined?
6. Has the chain of custody been maintained?
7. Can the opposing party meaningfully challenge the result?

Recent scholarship concerning trustworthy AI in legal systems emphasises the importance of reliability, accountability and legal trustworthiness when AI is incorporated into legal decision-making (Kennedy et al., 2026).

The appropriate principle is therefore:

AI may assist in the analysis of evidence, but AI output should not replace legally required human assessment of evidence.

6. AI's Double-Edged Sword: Risks vs. Opportunities



6.1. The Growing Danger of Generative AI : Generative AI has substantially lowered the technical barriers to producing realistic synthetic content. UNICEF has specifically identified AI-generated child sexual abuse material and non-consensual intimate imagery among emerging risks requiring child-centred AI governance (UNICEF Innocenti, 2025).

Deepfake sexual imagery involving a real child presents a particularly serious concern. Even if the material is digitally fabricated, the child's identity, dignity and social life may be affected.

AI may also potentially increase the scale and sophistication of online grooming and manipulation. This creates a need for stronger digital awareness among children, parents, teachers and professionals working within child-protection systems.

Research on social-media-related crime in India has already highlighted the difficulties that networked digital environments create for conventional legal and regulatory mechanisms (Pareek & Sole, 2021).

6.2. AI's Potential to Help : But there's another side to this coin. When used ethically and with strong governance, AI can be a game-changer for justice.

- Digital Forensics: Perceptual hashing and computer vision tools can scan vast amounts of digital storage quickly. They can flag abusive content without an officer having to manually view every single horrific image.
- Threat Detection: Natural Language Processing (NLP) models can be trained to spot the linguistic patterns of grooming, helping to identify predators before they can cause harm.
- Privacy Protection: POCSO places significant emphasis on protecting the identity of child victims. Section 23 restricts the disclosure of information that may reveal the identity of a child involved in a POCSO case (Government of India, 2012).
- Case Management: AI-assisted analytics could potentially support the identification of procedural bottlenecks, pending investigations and administrative delays. Such applications may contribute to more efficient case management without transferring legal decision-making to automated systems.

  The concept of Justice 5.0 is relevant here because contemporary scholarship increasingly considers how AI and advanced technologies may reshape justice systems while raising questions of accountability, human agency and fairness (Borgesano et al., 2025).

7. A New Vision for Institutional Preparedness : Our research is built on the idea of "Institutional Preparedness." In today's world, this means more than just having a building and some staff. It's about being ready for the digital age.

We see it as a formula:

Institutional Preparedness = Human Sensitization + Physical Infrastructure + Procedural Safeguards + AI/Digital Forensics Capacity

Based on this, we've developed a conceptual framework for how AI could be integrated into the POCSO system in Rajasthan.

The technological component should not replace the human component.

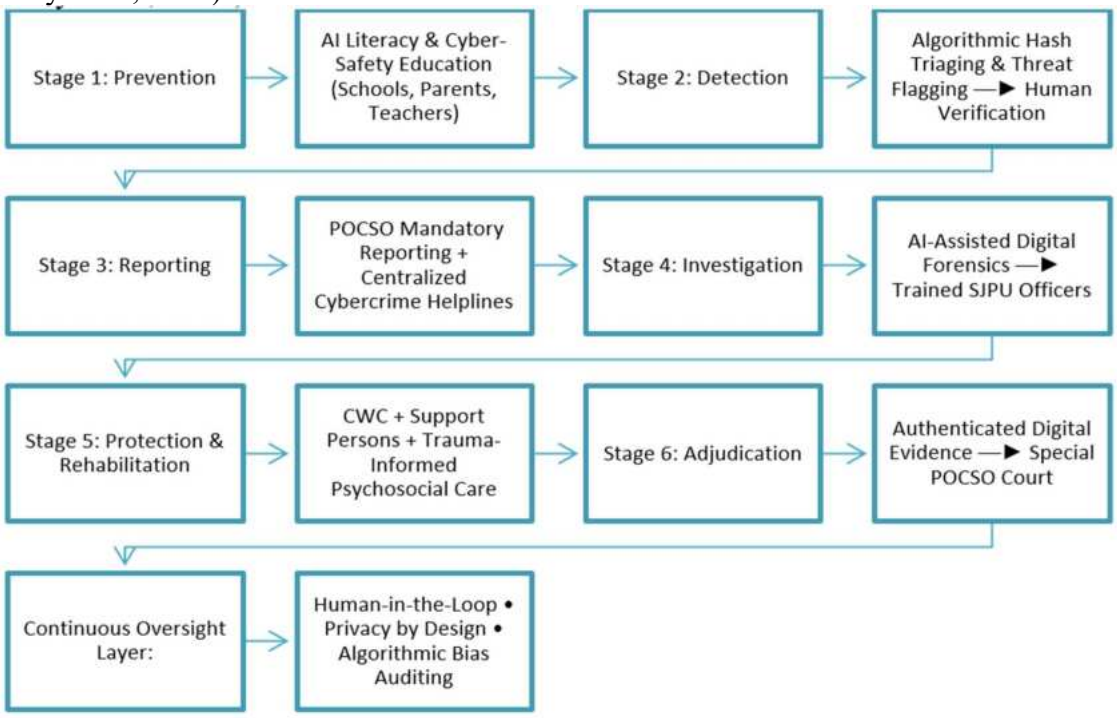
Rather:

AI Readiness should become an additional dimension of institutional preparedness. This means that an institution should possess not merely AI tools but also:

- trained personnel;
- secure digital infrastructure;
- appropriate forensic capabilities;
- clear operational protocols;

- data-protection safeguards;
- evidence-preservation mechanisms;
- mechanisms for human verification; and
- accountability arrangements.

This approach is consistent with the broader principle of trustworthy AI in legal systems (Kennedy et al., 2026).



8. Mapping the Future: Extending Our Research : To test this framework, we propose extending our survey. We need to gather real data on stakeholder perceptions of AI and digital justice.

Here are some example questions that could be added to the survey:

Construct A: AI & Digital Threat Awareness

- I'm aware of the risks of AI-generated deepfakes involving children.
- I understand how people use online platforms and automated tools for cyber-grooming.
- I know that automated detection tools have operational limits and can make mistakes.

Construct B: Institutional AI & Forensic Readiness

- The police handling POCSO cases have the right tech to analyze digital evidence.
- Investigating officers need more training on digital forensics and how to authenticate electronic evidence.
- There are clear procedures for dealing with complaints involving synthetic or digital CSAM.

Construct C: Evidentiary Integrity & Human-Centric Justice

- AI reports should only be used as a guide for investigators, never as the sole basis for a judge's decision.
- Automated evidence systems must have a strictly verifiable and secure chain of custody.
- AI could help speed up the often slow process of forensic evidence evaluation.

Construct D: Ethical Governance & Child Privacy

- Any AI used in POCSO cases must strictly protect the child's identity and privacy.
- These computational tools need regular audits to make sure they aren't biased against certain

groups.
- Direct counseling and support for victims must always be provided by human professionals, not AI bots.

9. Recommendations for Rajasthan

1. Set Up Regional Cyber-Forensic Units: Create specialized digital forensic hubs in major cities like Jaipur, Udaipur, and Jodhpur. This would stop cases from being delayed while they're waiting for analysis at a single, overburdened state lab.
2. Make Training a Priority: Develop comprehensive training for SJPU officers, lawyers, and CWC members. They need to understand how to handle synthetic media, preserve digital evidence, and conduct trauma-informed interviews. Training and professional capacity are central to effective implementation of POCSO (Kumar, 2022).
3. Strengthen the Support Person System: Create a dedicated, well-compensated cadre of Support Persons through the District Child Protection Units (DCPUs). This ensures victims and their families get consistent, professional help from the investigation through the trial (Aggarwal & Rawat, 2025). AI should supplement administrative and informational processes where appropriate but should not replace trained human support.
4. Mandate Human Oversight for AI: Make it a rule that algorithms are only investigative aids. All final decisions on victim protection, custody, and sentencing must rest with a judge or the CWC. AI cannot decide a child's fate. This principle is consistent with the broader requirements of trustworthy and accountable AI in legal systems (Borgesano et al., 2025; Kennedy et al., 2026).
5. Boost Community Awareness: Integrate child protection and digital safety into school curricula. Run programs in villages and Panchayats to break the silence around sexual abuse and demystify the threats children face online.

9. Conclusion : The POCSO Act represents a significant legal commitment to protecting children from sexual offences. However, its effectiveness depends upon the ability of institutions and communities to translate statutory protections into effective practice (Bajpai, 2019; Kumar, 2022; Sharma, 2022). This is a powerful and necessary law, but its success in Rajasthan depends on closing the gap between the written law and its execution. As exploitation evolves with generative technologies and new cyber threats, the system must evolve with it. Integrating AI into child protection isn't about creating a robotic, automated justice system. It's about building a capable, human-centered system that uses smart tools to help people do their jobs better. By combining cultural and social awareness, robust institutional capacity, and ethically governed technology, we can work towards a justice system that provides timely, compassionate, and effective protection for every child in Rajasthan. Generative AI may create new forms of exploitation through synthetic media and deepfakes, while AI-assisted technologies may simultaneously strengthen digital forensics, evidence analysis and case management. UNICEF's child-centred AI framework accordingly places emphasis on safety, privacy, fairness, transparency, accountability and the best interests of children (UNICEF Innocenti, 2025).

The appropriate response is therefore neither unconditional technological optimism nor rejection of AI. The most important principle is that AI should assist the child-protection system, not replace the human beings responsible for protecting children. The future of POCSO implementation should consequently not be a model of automated justice, but a model of responsible technological assistance in the service of child safety, dignity, privacy and access to justice.

References:

1. Government of India. (2000). *The Information Technology Act, 2000* (Act No. 21 of 2000).
2. Government of India. (2012). *The Protection of Children from Sexual Offences Act, 2012*. Ministry of Law and Justice.
3. Government of India. (2023). *The Bharatiya Sakshya Adhiniyam, 2023*. Ministry of Law and Justice.
4. Government of India. (2023). *The Digital Personal Data Protection Act, 2023* (Act No. 22 of 2023). Ministry of Law and Justice.
5. Aggarwal, M., & Rawat, A. R. (2025). Analysis of POCSO Act's effectiveness in supporting and rehabilitating child victims of sexual offences in Rajasthan. *International Journal of Research Publication and Reviews, 6*(4), 12733–12737.
6. Albrecht, E. (2025). India. In *Political Automation*. Oxford University Press. https://doi.org/10.1093/9780197696989.003.0011
7. Bajpai, A. (2019). *Child Rights in India: Law, Policy, and Practice* (3rd ed.). Oxford University Press.
8. Bhoite, D. S. (2024). Critical analysis of Digital Personal Data Protection Act 2023. In *Personal Data Protection in Digital Age: Issues and Challenges*. San International Scientific Publications. http://dx.doi.org/10.59646/dataprotectionc11/125
9. Borde, D. M. P. (2024). An evaluation of Digital Personal Data Protection (DPDP) Act, 2023. In *Personal Data Protection in Digital Age: Issues and Challenges*. San International Scientific Publications. http://dx.doi.org/10.59646/dataprotectionc18/125
10. Borgesano, F., De Maio, A., Laghi, P., & Musmanno, R. (2025). Artificial intelligence and justice: A systematic literature review and future research perspectives on Justice 5.0. *European Journal of Innovation Management, 28*(11), 349–385. https://doi.org/10.1108/EJIM-05-2024-0423
11. Choudhry, V., Dayal, R., Pillai, D., Kalokhe, A. S., Beier, K., & Patel, V. (2018). Child sexual abuse in India: A systematic review. *PLoS ONE, 13*(10), e0205086. https://doi.org/10.1371/journal.pone.0205086
12. Cochran, W. G. (1977). *Sampling Techniques* (3rd ed.). John Wiley & Sons.
13. Kennedy, A. J., Raj, A. D., Sivanandam, A., Padala, K. K., Chellappan, C. P., & Sreeja, B. G. (2026). A legally trustworthy and sustainable AI framework for automated legal systems. In *2026 IEEE International Conference on AI Engineering and Innovations (AIEI)*. IEEE.
14. Kshirsagar, J. (2020). POSCO: An effective act of the era. *Supremo Amicus, 18*, 428–435.
15. Kumar, S. (2022). Child sexual abuse cases in India and judicial officers' perceptions and experiences of POCSO-related special training. *Socio-Legal Review, 18*(2), 264–289.
16. Kumari, N. (2025). POCSO and digital crimes: A legal analysis of child sexual abuse in the digital era. *Legal Research Journal, 4*(2), 88–104.
17. Lal, D., & Kapoor Lal, K. (2025). From vulnerability to empowerment, strengthening adolescent protection with POCSO Act in India. *Discover Public Health, 22*, 818.
18. National Crime Records Bureau. (2023). *Crime in India 2022: Statistics*. Ministry of Home Affairs, Government of India.
19. Pareek, U., & Sole, N. A. (2021). Seizing the networked crime: Legal framework for the governance of social media crimes in India. In *Big Data Analytics in Cognitive Social Media and Literary Texts: Theory and Praxis* (pp. 165–182). Springer Nature. https://doi.org/10.1007/978-981-16-4729-1_9

20. Rincy, P. (2023). *Awareness on protection of children from sexual offences (POCSO) Act 2012 among tribal adolescent school students in Wayanad* [Master's thesis, University of Calicut].
21. Sanyal, A. (2026). Child sexual abuse in India: Constitutional obligations, POCSO enforcement, and institutional failures. *International Journal of Leading Research Publication, 7*(1), 45–58.
22. Sharma, P. (2022). *Decoding child sexual abuse: A socio-legal analysis of Protection of Children from Sexual Offences Act, 2012*. Naveen Publications.
23. Sidhva, P. (2013). *A ready referencer for procedure, caselaw and recent amendments: The Protection of Children from Sexual Offences Act, 2012, Criminal Law Amendment Act, 2013*.
24. Soni, R. (2026). A legal study on child sexual abuse in India: Implementation of the POCSO Act, 2012. *Indian Journal of Legal Review, 6*(1), 131–144.
25. Suroliya, A., & Nuwal, N. (2026). Digital surveillance in POCSO investigations: Balancing efficiency and procedural fairness–a study with special reference to Shekhawati region of Rajasthan. *Journal of Advances and Scholarly Research in Allied Education, 23*(3), 112–120.
26. UNICEF Innocenti. (2025). *Guidance on AI and children: Recommendations for AI policies and systems that uphold child rights* (Version 3.0). https://www.unicef.org/innocenti/reports/policy-guidance-ai-children
27. Vaishalli, P. (2024). Examining DPDP Act 2023 and GDPR's approach to data subjects and fiduciaries. In *Personal Data Protection in Digital Age: Issues and Challenges*. San International Scientific Publications. http://dx.doi.org/10.59646/dataprotectionc4/125
28. Verma, S. P., & Malviya, M. (2026). Legal responses to child sexual abuse in Rajasthan: Evaluating the effectiveness of the POCSO Act. In *Proceedings of International Conference on Recent Innovations in Engineering, Technology & Science for Sustainable Development (RIETSSD-2026)*.

•