

Constructing Adolescent Sexual Education in Algorithmic Social Media Ecosystems: Family as a Socializing Agent

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Abstract

Digital transformation has fundamentally altered how adolescent access, process, and internalize sexual information, with algorithmic social media platforms emerging as dominant agents of sexual knowledge construction. This study examines the social construction of adolescent sexual education within algorithmic social media ecosystems and analyzes the role of the family as a primary socialization agent in a digital society. A Systematic Literature Review (SLR) guided by the PRISMA framework was conducted, identifying 450 records from Scopus, Web of Science, ERIC, and SINTA (2019–2026). After duplicate removal (n=312), screening (n=87), and full-text eligibility assessment (n=52), 32 articles met the inclusion criteria and were subjected to thematic synthesis. Three key themes emerged: (1) algorithmic social media platforms particularly Instagram, TikTok, and YouTube function as both information channels and emerging socialization agents that shape adolescents' sexual knowledge, attitudes, and behaviors; (2) the family continues to serve as the primary socialization agent, transmitting values, norms, and moral-religious orientations through interpersonal communication and supervision, which perform a protective function against risky sexual behavior; and (3) a dynamic tension exists between familial authority and algorithmic structures, wherein algorithmic opacity and adolescents' growing digital autonomy constrain the effectiveness of parental control. The study concludes that adolescent sexual education is co-constructed through the interplay of algorithmic structures and family-mediated values. Families must shift from directive to dialogical, participatory, and digital literacy-based socialization strategies to strengthen adolescent resilience within algorithmically mediated sexual information environments.

ARTICLE HISTORY

Received : 5 February 2026

Revised : 11 May 2026

Accepted : 20 May 2026

KEYWORDS

Adolescent sexual education; Algorithmic social media; Digital socialization; Family; Social construction.

PUBLISHER'S NOTE

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Introduction

Digital social transformation has reshaped the patterns through which individuals and social groups interact and construct social relationships within society (Yeti Rohayati, Abdillah Abdillah, 2024). In the era of disruption, digital technology no longer functions merely as a means of communication; rather, it has evolved into a social infrastructure that shapes behavioral patterns, social norms, and emerging social institutions. Digital platforms are capable of integrating data, algorithmic systems, and social practices into an interconnected ecosystem, thereby rendering social relations increasingly mediated by complex technological systems (Heitmayer & Schimmelpfennig, 2024). Previous studies further demonstrate that digital platforms, through their algorithmic mechanisms in regulating interactions, values, and social life, have significantly diminished the role of traditional social structures and institutions (Rilinger, 2024).

Algorithmic systems in digital media function as structural agents that systematically organize information and social interaction. Algorithmic recommendation systems possess the capacity to collect and analyze data in order to generate content and influence individual perceptions, social beliefs, and behavioral actions (Wei Wu, Youlin Huang, 2024). From a sociotechnical perspective, algorithmic systems are not socially neutral; rather, they are shaped by power relations, institutional norms, and cultural structures that interact dynamically with technological systems (Dolata, M., Feuerriegel, S., & Schwabe, 2021). Consequently, algorithmic systems may be understood

as a new form of social structure that regulates the distribution of information, the reproduction of norms, and the construction of social identity within digital society. At the same time, these systems may also create spaces for sexual deviance and generate new social dynamics within contemporary social life.

Algorithm-driven social media within contemporary society has transformed the ways adolescents acquire knowledge, construct values, and develop social identities. Algorithmic social media platforms provide automatically curated information that shapes adolescents' patterns of social interaction in everyday life. The algorithms embedded within digital platforms mediate content distribution, direct users' attention, and shape adolescents' learning experiences concerning issues of sexuality.

Based on the findings of Sri Nasokha et al., cases of violence and sexual deviance among adolescents remain alarmingly high, with 2,044 reported cases throughout 2024, predominantly involving individuals aged 13–17 years (Sri Nasokha, 2025). This condition is closely associated with inadequate understanding of sexuality, limited access to comprehensive sexual education, and the persistence of strong social stigma surrounding discussions of sexual issues. The consequences include unintended pregnancies, early marriage, and various other social risks. Therefore, strengthening sexual education integrated with social-emotional intelligence constitutes an essential preventive strategy for adolescents (Zubaidah et al., 2023).

Furthermore, Indonesia's current demographic structure is predominantly composed of adolescents aged 10–24 years, totaling approximately 67.1 million individuals or around 24.8% of the national population. This substantial proportion positions Indonesia within a trajectory toward a demographic bonus by 2035, a period in which the productive-age population is projected to surpass the non-productive-age population. Such conditions indicate that adolescents occupy a strategically significant position in determining the quality and future trajectory of Indonesia's next generation (Nurriszka et al., 2025).

This phenomenon underscores the importance of adolescent sexual education in Indonesia in shaping adolescents' understanding of reproduction, social relationships, and moral norms by providing accurate and relevant information concerning behavioral changes and health risks during adolescence. Previous studies have demonstrated that comprehensive sexual education can reduce the risk of sexually deviant behavior while strengthening adolescents' understanding of reproductive health and healthy interpersonal relationships (Rodríguez-García et al., 2025). However, access to sexual information through social media also entails significant risks when the available content is uncontrolled or unverified, as exposure to inaccurate, misleading, or socially inappropriate information may negatively influence adolescents' sexual practices and health-related behaviors (L. Wang et al., 2025).

Adolescents face significant social and health risks resulting from sexual misinformation and exposure to explicit content when social media algorithms accelerate the dissemination of information without effective control mechanisms, thereby enabling inaccurate and sensitive information to spread rapidly and be accepted as factual by young users (L. Wang et al., 2025). Furthermore, algorithmic recommendation systems on social media tend to prioritize high-impact content, including permissive or explicit materials, which may intensify the potential for sexual deviance and exacerbate social inequalities in the construction of adolescent identity (Regehr et al., 2025).

Furthermore, the family constitutes the primary socialization environment that plays a central role in transmitting values, norms, and sexual knowledge to adolescents, as family interactions serve as one of the earliest sources of information influencing adolescents' behaviors and beliefs regarding reproductive health issues and interpersonal relationships (Santoso, 2022; Yadav & Kumar, 2023). Research on parent-based sexual health education demonstrates that family-centered sexual education interventions significantly increase the frequency of communication between parents and adolescents concerning sexual health, which subsequently contributes to adolescents' decisions toward healthier and more responsible sexual behaviors (Gutu et al., 2025).

Open communication between parents and adolescents regarding sexual and reproductive issues assists adolescents in developing a more comprehensive understanding of physical changes and the social implications of sexual behavior, thereby reducing the dominance of less reliable sources of information such as myths and stereotypes derived from peer groups or popular culture (Gatheru et al., 2024). Accordingly, the role of parents as the primary agents of socialization extends beyond the provision of factual information, encompassing the transmission of moral norms and cultural values that shape adolescents' attitudes toward interpersonal relationships and sexual health.

Parents shape adolescents' sexual attitudes through effective interpersonal communication and continuous supervision of their behavior both within the household and in broader social settings, as the quality of family relationships significantly influences adolescents' ability to critically process sexual information (Yusuf & Siswari, 2025). Other studies further indicate that parenting practices that encourage open discussions regarding sensitive topics such as sexuality and reproductive health risks contribute to adolescents' understanding of social boundaries, personal responsibility, and more conscious behavioral choices (Anthony Senanu Agbeve, Daniel Yaw Fiaveh, 2022).

Beyond verbal communication, the internalization of cultural and religious values through everyday family practices enriches the normative framework adolescents use to evaluate the content they encounter outside the home, particularly in the context of rapidly changing social norms. When parents consistently reinforce these cultural and religious values through parenting practices, adolescents develop a stronger moral foundation for critically reassessing exposure to information that may be misleading or contradictory to principles of health, social ethics, and religion (Andrianto et al., 2024).

Families currently face significant structural challenges in controlling adolescents' exposure to algorithmically mediated sexual content, as adolescents are becoming increasingly autonomous in their digital practices, while social media algorithms automatically curate content based on browsing patterns that frequently intensify exposure to sexual material without appropriate educational context (Yusuf & Siswari, 2025). Although the dominant literature on family communication emphasizes the importance of parent-adolescent dialogue, empirical evidence also demonstrates that barriers such as parents' limited knowledge of digital media and the growing sophistication of algorithmic systems reduce the effectiveness of parental supervision and guidance in directing adolescents toward relevant and accurate content. This situation implies that the parental role can no longer be confined solely to direct communication; rather, it also requires the enhancement of digital media literacy skills to effectively guide adolescents in selecting healthy and meaningful content (Gatheru et al., 2024).

Therefore, family-based educational approaches need to expand adaptive socialization strategies in response to the dynamics of digital media, including active supervision of adolescents' online activities and the reinforcement of family values and norms as social filters in confronting the algorithmic exposure of sexual content.

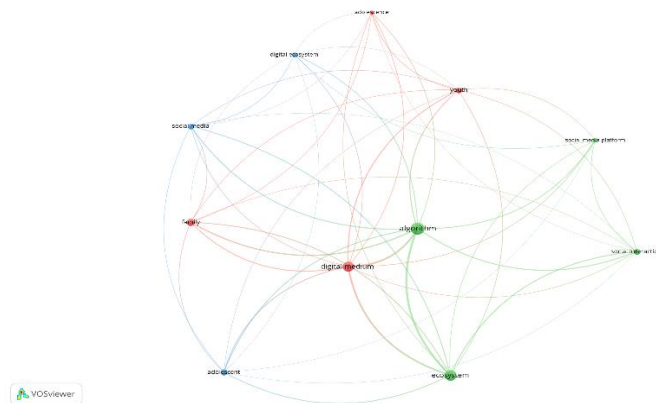


Figure 1. VOS viewer Analysis of Research Feasibility

A bibliometric co-occurrence analysis was conducted using VOSviewer (version 1.6.20) to map the intellectual landscape of this study's research domain. Using data retrieved from Scopus and Web of Science (total of 1,124 documents, search date: March 2026, keywords: "adolescent" AND "social media" AND "family" AND "algorithm" OR "sexual education"), a keyword co-occurrence network was generated with a minimum threshold of 5 co-occurrences, yielding 68 qualifying keywords organized into three principal clusters (Figure 1). The first cluster (red) centers on youth, adolescence, family, and digital medium, representing primary socialization dimensions. The second cluster (green) encompasses algorithm, ecosystem, social media platform, and social interaction, reflecting the technological structures of meaning-making. The third cluster (blue) bridges social media, digital ecosystem, and adolescent, connecting individual development and digital infrastructure. The centrality of the nodes algorithm and ecosystem confirms the structural significance of algorithmic mechanisms in shaping adolescent digital experiences, and validates the conceptual space for examining family algorithm interactions in adolescent sexual education a nexus not yet addressed in prior systematic reviews.

The results of this analysis demonstrate the relevance and feasibility of the study entitled *The Social Construction of Adolescent Sexual Education in Algorithmic Social Media Ecosystems: The Role of Family as a Socializing Agent*, as the network reveals the intersection of three major domains, namely adolescents, social media algorithms, and family. The distinction lies in the thematic focus: the VOS viewer mapping remains relatively general in illustrating the relationship between adolescents, social media, and algorithms, without explicitly incorporating the keyword *sexual education*. Nevertheless, the strong interconnectedness among *family*, *youth*, and *algorithm* indicates a significant conceptual space for examining the role of the family as the primary socialization agent in constructing adolescent sexual education amid the growing dominance of algorithmic systems.

Previous studies have extensively examined adolescent sexual education within the contexts of schooling, public health, and digital communication. However, earlier research has not integrated the perspectives of social construction, family sociology, and digital sociology within a unified conceptual framework. Furthermore, prior studies have not systematically analyzed how families

and social media algorithms interact as agents of socialization in shaping adolescent sexual education.

The novelty of this study lies in its integrative analytical framework that brings together social construction theory (Berger & Luckmann), family sociology, and digital sociology to examine, for the first time in a systematic literature review, the tri-dimensional interaction among algorithmic structures, family mediation, and adolescent sexual knowledge construction. This study moves beyond describing media use patterns to theorizing the power dynamics and contestations that define how adolescent sexual education is produced and reproduced within digitally mediated social environments.

Accordingly, this study aims to: (1) analyze the social construction of adolescent sexual education within algorithmic social media ecosystems; (2) examine the role of the family as the primary socialization agent in a digital society; and (3) develop an integrative conceptual framework combining social construction theory, family sociology, and digital sociology, with implications for educational policy, family digital literacy, and sexual education curriculum design.

Method

This study employed the Systematic Literature Review (SLR) method, which began with the development of a search string based on the core research keywords to ensure a comprehensive and replicable literature search process. The researchers formulated search strings incorporating Boolean combinations of key terms such as “social construction,” “adolescent sexual education,” “algorithmic social media,” “family socialization,” and “systematic review,” integrated through the AND/OR operators across major databases, including Scopus, Web of Science, ERIC, and SINTA (Rethlefsen et al., 2021).

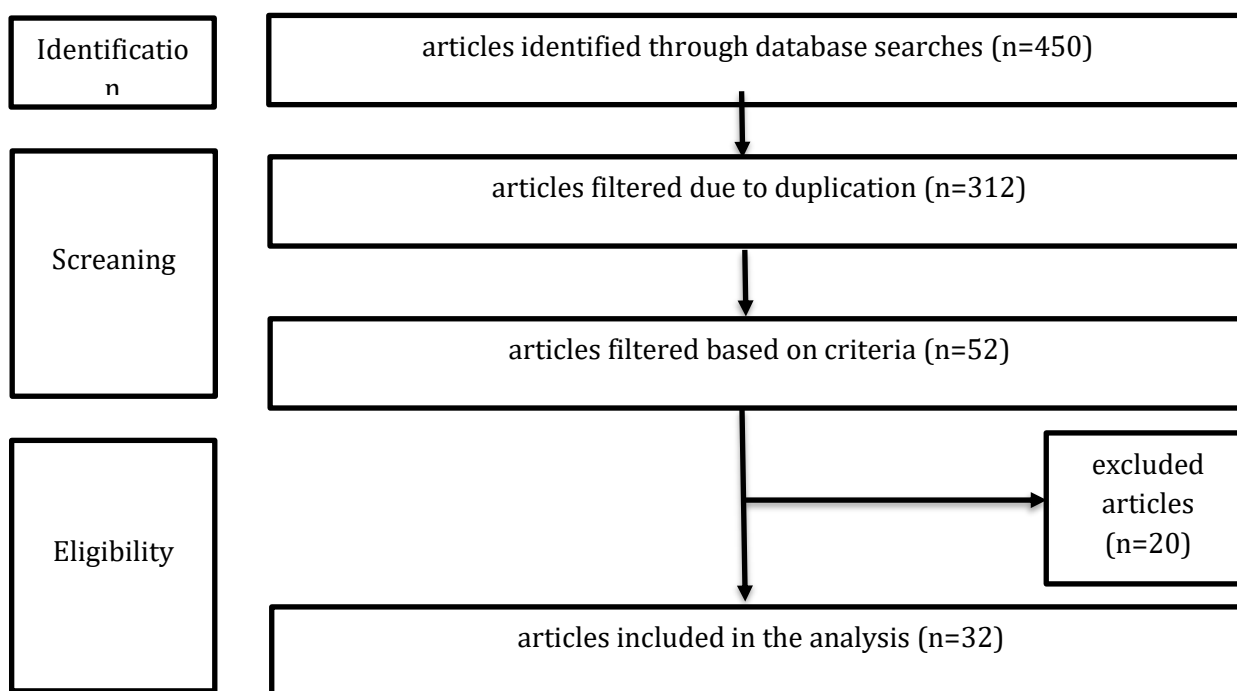
The method subsequently established explicit inclusion criteria to filter relevant studies, including peer-reviewed articles published between 2019 and 2026 in either Indonesian or English, as well as exclusion criteria such as non-peer-reviewed publications or studies not explicitly relevant to the central research theme. The selection process was conducted systematically through successive reviews of titles, abstracts, and full texts to determine each article’s suitability according to the predefined criteria. This procedure aligns with the guidelines of the *Preferred Reporting Items for Systematic Reviews and Meta-Analyses* (PRISMA), which emphasize the importance of transparency in defining and reporting inclusion–exclusion criteria and study selection outcomes (Page & Moher, 2017; Rethlefsen et al., 2021). The inclusion and exclusion criteria applied to determine article eligibility are presented in Table 1.

Table 1. Inclusion and Exclusion Criteria for Article Selection

Inclusion Criteria	Exclusion Criteria
Peer-reviewed articles indexed in Scopus, Web of Science, ERIC, or SINTA.	Non-peer-reviewed publications (editorials, opinion pieces, conference abstracts).
Published between 2019 and 2026.	Studies published before 2019.
Written in English or Indonesian.	Studies not written in English or Indonesian.
Addresses at least one of the three core themes: adolescent sexual education, algorithmic social media, or family socialization.	Studies not explicitly addressing any of the three core research themes.

Furthermore, once the relevant articles had been identified, they were screened based on their titles and abstracts, followed by full-text reviews, while the final number of articles included in the Systematic Literature Review (SLR) analysis was documented using the PRISMA flow diagram. This diagram facilitated the visual recording of each stage of the selection process and minimized the risk of selection bias. At the final stage, data from the articles that met the established criteria were processed through thematic data extraction to comprehensively and systematically analyze the findings of previous studies in accordance with the objectives of the research (Sortwell et al., 2024; S. Wang et al., 2024). The number of articles at each PRISMA stage is reported in Table 2 to ensure transparency and replicability

Table 2. PRISMA Article Selection Flow



A total of 32 articles met the final inclusion criteria and were subjected to thematic data extraction. Each article was analyzed for its theoretical orientation, methodological approach, thematic focus, and key findings. Thematic synthesis was employed to group findings inductively into themes and sub-themes, allowing for a comprehensive and systematic analysis of the existing literature in relation to the research objectives (Sortwell et al., 2024; S. Wang et al., 2024).

Result and Discussion

The thematic synthesis of the 32 included articles yielded three principal themes: (1) algorithm-driven social media as a source of information and emerging socialization agent; (2) the family as the primary agent of sexual education socialization; and (3) the dynamic conflict between familial authority and algorithmic structures. Each theme comprises distinct sub-themes, as summarized in Table 3.

Table 3. Thematic Synthesis of Included Articles

Theme	Sub-Theme	Key Sources (n)	Principal Findings
Algorithm-Driven Social Media as Information Source and Socialization Agent	Digital platforms as primary channels of sexual information	11 articles	45.4%-68% of adolescents reported social media as the main source of reproductive/sexual health information; Instagram, TikTok, and YouTube dominate content consumption.
	Algorithmic recommendation mechanisms shaping knowledge construction	8 articles	Algorithms curate personalized, repetitive content that influences adolescent beliefs, attitudes, and identity formation; high-impact and explicit content is disproportionately amplified.
Family as Primary Agent of Sexual Education Socialization	Parent-adolescent communication and its protective function	9 articles	Open parent-adolescent sexual communication significantly reduces risk sexual behavior and supports safer sexual decision-making; communication quality is a stronger predictor than frequency alone.
	Internalization of religious and cultural values	4 articles	Family-transmitted moral-religious norms serve as cognitive filters, enabling adolescents to critically evaluate digital sexual content.
Dynamic Conflict between Family Authority and Algorithmic Structures	Adolescent digital autonomy beyond parental reach	7 articles	Adolescents develop privacy strategies in digital spaces; algorithmic opacity limits parents' capacity to supervise exposure, widening the gap between family authority and digital reality.
	Shift toward dialogical and digital literacy-based parenting	5 articles	Families that adopt dialogical, participatory, and digital-literacy-informed approaches are more effective in countering harmful algorithmic influence compared to

Theme 1 (11 articles on platform access; 8 on algorithmic curation) demonstrates that adolescents predominantly access sexual information through Instagram, TikTok, and YouTube, with 45.4% to 68% of adolescents in sampled populations reporting social media as their primary source of reproductive health information (Rahma Salifu, Abdulai Abubakari, 2024; Agustin et al., 2026; Aristawidya & Waliyanti, 2025). Algorithmic recommendation mechanisms curate personalized, repetitive sexual content that amplifies high-impact or explicit materials and influences adolescents' perceptions, attitudes, and identity formation beyond conscious awareness (Regehr et al., 2025).

Theme 2 (9 articles on communication; 4 on value internalization) affirms that open parent-adolescent sexual communication significantly reduces risky sexual behavior (Gutu et al., 2025). Communication quality defined by openness, consistency, and the absence of stigma predicts adolescent sexual knowledge and responsible decision-making more strongly than communication frequency alone (Maimunah et al., 2025). The internalization of religious and cultural values through daily family practices provides adolescents with a normative filter for critically evaluating digital sexual content (Andrianto et al., 2024).

Theme 3 (7 articles on digital autonomy; 5 on dialogical strategies) reveals that adolescents develop deliberate privacy strategies in digital environments, enabling them to circumvent direct parental oversight (Pasqualini & Rose, 2020; Febriana & Mulyono, 2019). Parents' limited algorithmic literacy further constrains supervisory effectiveness (Gatheru et al., 2024). Families adopting dialogical, participatory, and digital-literacy-informed approaches demonstrate superior outcomes in countering harmful algorithmic influence compared to those relying on restrictive or prohibitive strategies (Yusuf & Siswari, 2025).

Adolescent Sexual Information within the Ecosystem of Algorithmic Social Media

This study found that adolescents predominantly obtain sexual information through algorithm-driven social media platforms such as Instagram, TikTok, and YouTube (Agustin et al., 2026; Aristawidya & Waliyanti, 2025). A study conducted in Ghana revealed that 45.4% of adolescents accessed reproductive health information through social media, indicating that digital platforms have become significant sources of information for young people (Rahma Salifu, Abdulai Abubakari, 2024). Furthermore, the findings of Freeman explain that adolescents utilize social media as a platform for accessing health-related information, including sexual and reproductive health information, while also evaluating the credibility of such information within the context of digital platforms (Freeman et al., 2023).

According to the study conducted by Luo, social media serves as an important medium through which adolescents access sexual and reproductive health information, while simultaneously presenting both positive and negative implications (Luo et al., 2024). Research findings in Indonesia further indicate that social media can effectively enhance adolescents' knowledge, attitudes, and positive behaviors related to reproductive health, while emphasizing the ease of access provided through Instagram, YouTube, and other digital media platforms (Adha et al., 2026). Other studies also demonstrate that adolescents who are actively engaged in social media frequently access sexual issues and related behaviors; although these studies primarily focus on risk behaviors, their findings support the argument that adolescents extensively seek and are exposed to sexual information through social media platforms (Aristawidya & Waliyanti, 2025).

Based on the data analysis, adolescents predominantly obtain sexual and reproductive health information through algorithm-driven social media platforms such as Instagram, TikTok, and YouTube. Social media provides rapid, interactive, and easily accessible information, thereby encouraging adolescents to utilize digital platforms as primary sources of sexual knowledge. Adolescents also actively seek and consume various forms of content related to sexual issues within digital spaces, which subsequently influence their understanding, attitudes, and behaviors regarding reproductive health. Therefore, algorithmic social media plays a significant role in shaping the social construction of adolescents' sexual knowledge within the context of a digital society.

The Role of the Family as an Agent of Sexual Education Socialization

This study found that the family continues to function as the primary agent of socialization in shaping adolescents' sexual values and norms. According to the study conducted by Pasqualini, the family serves as the principal environment of socialization that influences adolescents' sexual behavior and emotional development, while parental communication plays a crucial role in preventing risky sexual behavior (Pasqualini & Rose, 2020). According to Astle, open communication between parents and children regarding sexuality is essential in fostering more positive adolescent sexual health outcomes. (Shelby M. Astle, Meg O. Jankovich, 2023). Parents shape adolescents' sexual attitudes through interpersonal communication, digital supervision, and the internalization of religious and cultural values. The quality of communication between parents and adolescents significantly influences adolescents' ability to manage exposure to digital sexual content (Febriana & Mulyono, 2019).

The findings of Febriana conclude that the family constitutes the primary factor influencing adolescents' knowledge and attitudes regarding reproductive health and sexuality through communication between parents and children (Febriana & Mulyono, 2019). According to Laura Widman, communication about sexuality between parents and adolescents has a protective effect against risky sexual behavior and contributes to safer sexual practices among adolescents (Widman L, Choukas-Bradley S, Noar SM, Nesi J, 2019). Similarly, Maimunah argues that sexual communication between parents and adolescents helps cultivate responsibility in sexual decision-making and reduces risky sexual behavior among adolescents (Maimunah et al., 2025).

Based on the data analysis, the family functions as the primary agent of socialization in shaping adolescents' sexual values, norms, and attitudes. The family serves as the principal environment influencing adolescents' sexual behavior and emotional development through open interpersonal communication, supervision, and the internalization of religious and cultural values. The quality of communication between parents and children determines adolescents' ability to understand, filter, and manage sexual information, including within the context of exposure to digital media. Furthermore, effective sexual communication within the family has been shown to perform a protective function by preventing risky sexual behavior, promoting responsible decision-making, and fostering more positive reproductive health behaviors among adolescents. **The**

Dynamics of Conflict between Familial Roles and Algorithmic Structures

This study identified the existence of a dynamic conflict between the role of the family and the power of algorithmic structures. Algorithm-driven social media creates new spaces of autonomy for adolescents that frequently operate beyond familial control. Adolescents construct digital sexual identities that are at times distinct from the identities they display within the family environment.

Social media algorithms shape patterns of information exposure that are personalized, curated, and repetitive, thereby influencing adolescents' perceptions, preferences, and social experiences within digital spaces (Candice L. Odgers, Michaeline R. Jensen, 2020).

These algorithmic structures operate autonomously through recommendation mechanisms that are difficult for parents to access and control, thereby expanding adolescents' digital autonomy in consuming information, including sexual content (Tucker, 2021). This condition demonstrates that social media functions not merely as a medium of communication, but also as a new agent of socialization possessing substantial power in shaping adolescents' social realities (Sala et al., 2024). Consequently, algorithmic structures introduce new dynamics into social relations that were previously dominated by the family as the primary agent of socialization (Rahma Salifu, Abdulai Abubakari, 2024).

This study emphasizes that the family continues to play a significant role in shaping adolescents' sexual values and norms despite facing structural challenges in controlling digital exposure. Parents attempt to maintain their authority through interpersonal communication, supervision, and the internalization of cultural and religious values; however, the effectiveness of these efforts is often constrained by the personalized and non-transparent nature of algorithmic systems (Febriana & Mulyono, 2019). Adolescents also develop strategies of autonomy and privacy in their use of social media, enabling them to avoid direct familial control (Pasqualini & Rose, 2020).

This condition gives rise to a dynamic conflict between familial authority and the power of algorithmic structures, in which the family no longer functions as the sole source of socialization, but instead must negotiate with digital systems that simultaneously shape adolescents' experiences (Shelby M. Astle, Meg O. Jankovich, 2023). Therefore, the transformation of the family's role from direct control toward dialogical approaches and digital literacy-based strategies has become essential in responding to the dominance of algorithmic structures in adolescents' lives, particularly when compared to families that rely on repressive approaches.

Discussion

The finding that algorithmic social media functions not merely as an information channel but as an autonomous socialization agent extends and enriches prior theorizations of digital media influence (Sala et al., 2024; Tucker, 2021). From a sociotechnical perspective (Dolata, M., Feuerriegel, S., & Schwabe, 2021), algorithmic systems are structurally embedded in power relations that systematically prioritize engagement-maximizing content, including sexually permissive materials, without regard for educational accuracy or developmental appropriateness. This study's synthesis reveals that the personalized and non-transparent nature of algorithmic curation creates an asymmetric information environment in which adolescents are exposed to sexual content curated by automated systems operating beyond the reach of educational institutions or familial oversight.

This finding aligns with Berger and Luckmann's social construction framework, which posits that social reality is constructed through repeated, institutionalized interactions. In the digital context, the algorithm constitutes a new institutional structure that repetitively reinforces particular sexual scripts, norms, and identity narratives, thereby shaping adolescents' constructed understanding of sexuality in ways that may diverge from family-transmitted values. This integration of social constructionism with digital sociology represents the theoretical contribution of this study, distinguishing it from prior empirical surveys that document media use patterns without theorizing the underlying constructive mechanisms.

The persistent centrality of the family as a socialization agent, even in an algorithmically saturated environment, is a significant finding of this review. Earlier research tends to treat the family's role as diminishing in the face of digital media (Rilinger, 2024). However, this synthesis demonstrates that family-mediated sexual education retains its protective efficacy when delivered through quality communication rather than restrictive control. The finding that communication quality outweighs frequency aligns with Maimunah et al. (2025), and extends the literature by contextualizing this relationship within the competing influence of algorithmic socialization.

Critically, this study reveals that the family's role has transformed from a position of direct informational authority to one of normative mediation. Parents are no longer the primary providers of sexual facts a role now largely assumed by digital platforms but remain irreplaceable as transmitters of moral-religious values, relational ethics, and critical evaluation frameworks. This repositioning of the family's function within sexual socialization is a conceptually novel contribution that carries direct implications for parent education programs and family-based interventions.

The dynamic conflict identified between algorithmic structures and family authority represents the most conceptually generative finding of this study. This tension cannot be resolved through simple prescriptions of increased parental monitoring; rather, it demands a structural reconceptualization of how sexual education is organized across family, digital, and institutional contexts. The effectiveness of dialogical and digital-literacy-based parenting strategies, as evidenced across multiple included studies, points toward a hybrid socialization model in which families serve as critical-interpretive guides rather than gatekeepers.

The theoretical framework developed in this study integrating social construction theory, family sociology, and digital sociology offers a foundation for future empirical research examining how specific family communication practices moderate the effects of algorithmic exposure on adolescent sexual knowledge and behavior. Practically, it supports the design of family digital literacy programs, the development of school-based sexual education curricula that explicitly address algorithmic influences, and the formulation of platform governance policies requiring greater transparency and educational accountability in algorithmic content recommendation systems.

Conclusion

This study makes three principal contributions to the literature. First, it establishes that algorithmic social media has transitioned from a communication tool to a structural socialization agent that actively shapes adolescent sexual knowledge, attitudes, and identity through personalized curation mechanisms operating beyond conventional educational or familial supervision. Second, it reframes the family's role not as a declining authority but as an evolving normative mediator whose protective efficacy depends on communication quality and the integration of digital literacy competencies. Third, it advances an integrative sociotechnical-constructivist framework that theorizes the dynamic tension between algorithmic structures and family mediation as the central mechanism through which adolescent sexual education is co-constructed in contemporary digital societies.

These findings carry urgent implications for educational policy, family intervention design, and platform governance. Sexual education must be reconceived as a multi-agent, dialogically structured process that equips both adolescents and their families with the critical digital literacy

skills necessary to navigate algorithmically mediated information environments. Future research should pursue longitudinal and cross-cultural empirical studies that test the causal pathways identified in this review and examine intersectional variables including gender, socioeconomic status, and religiosity that moderate the family–algorithm dynamic.

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