

Effectiveness of comprehensive reproductive health education on adolescent sexual risk behavior and health literacy: quasi-experimental study

Zumrotul Ula^{1✉}, Awatiful Azza², Sitti Zakiyyah Putri³, Risna Ayu Rahmadani⁴, Indryani⁵

¹ Department of Midwifery, Institut Kesehatan dan Bisnis Surabaya, East Java, Indonesia

² Department of Nursing, Universitas Muhammadiyah Jember, East Java, Indonesia

³ Department of Nursing, Faculty of Medicine and Health Sciences, Universitas Muhammadiyah Makassar, South Sulawesi, Indonesia

⁴ Department of Midwifery, University of Muhammadiyah Manado, North Sulawesi, Indonesia

⁵ Department of Midwifery, Institusi Universitas Sibatokkong, South Sulawesi, Indonesia

Received: 04 March 2026 ◊ Revised: 01 June 2026 ◊ Accepted: 07 July 2026 ◊ Published: 12 December 2026

ABSTRACT

Introduction: Adolescent sexual risk behavior remains a significant concern in resource-limited settings, often driven by inadequate reproductive health literacy and limited access to accurate information. Comprehensive reproductive health education (CRHE) has been proposed as an integrated approach to address both behavioral and cognitive determinants. This study aimed to evaluate the effectiveness of CRHE in reducing sexual risk behavior and improving health literacy among adolescents.

Research Methodology: A quasi-experimental study with a non-equivalent control group design was conducted among 156 adolescents aged 15–19 years. Participants were equally allocated into intervention and control groups. The intervention consisted of structured CRHE sessions delivered over eight weeks. Data were collected using validated questionnaires and analyzed using descriptive statistics, bivariate tests, and multivariate regression models. Statistical significance was set at $\alpha = 0.05$.

Results: The intervention group demonstrated a significantly higher likelihood of reducing sexual risk behavior compared to the control group (OR = 3.12; 95% CI: 1.52–6.38; $p = 0.001$). Health literacy scores were also significantly improved ($\beta = 11.4$; 95% CI: 8.2–14.6; $p < 0.001$). These findings remained robust after adjusting for potential confounders.

Conclusion: CRHE is effective in improving both behavioral and cognitive outcomes among adolescents in resource-limited settings. Integrating such interventions into school-based programs may enhance adolescent health literacy and reduce risky sexual practices. The findings support the implementation of comprehensive, context-sensitive educational strategies as part of broader public health initiatives.

Keywords: Adolescent Behavior; Health Literacy; Reproductive Health; Sexual Education; Risk-Taking.



✉Corresponding author. Email: zumrotul.ula18@gmail.com

Department of Midwifery, Institut Kesehatan dan Bisnis Surabaya, East Java, Indonesia



Author@ This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (<https://creativecommons.org/licenses/by/4.0/>)

INTRODUCTION

Adolescent sexual risk behavior remains a critical public health challenge, particularly in resource-limited settings where structural, cultural, and educational constraints intersect. Globally, adolescents account for a substantial proportion of new sexually transmitted infections (STIs) and unintended pregnancies, with disproportionate burdens observed in low- and middle-income countries (LMICs) (D. J. Anderson et al., 2025). Recent estimates indicate that adolescents aged 15–19 contribute significantly to new HIV infections and unsafe sexual practices, often linked to inadequate reproductive health knowledge and limited access to youth-friendly services (Abdul Hamid Alhassan et al., 2025). In such contexts, misinformation, stigma, and restrictive sociocultural norms further impede adolescents' ability to make informed decisions, thereby reinforcing cycles of vulnerability (Allstrom et al., 2026). Evidence suggests that low health literacy is a key determinant of risky sexual behavior, influencing condom use, negotiation skills, and healthcare-seeking behavior (Ahamed et al., 2026). Consequently, addressing both behavioral and cognitive dimensions is essential for effective intervention.

The existing literature highlights comprehensive reproductive health education (CRHE) as a promising strategy to mitigate these risks. Unlike traditional didactic approaches, CRHE integrates knowledge dissemination with life skills, critical thinking, and socio-emotional competencies (P. M. Anderson et al., 2026). Systematic reviews and meta-analyses conducted over the past five years consistently report that comprehensive sexuality education improves knowledge, attitudes, and selected behavioral outcomes, including delayed sexual initiation and increased contraceptive use (Bassi et al., 2025). School-based interventions, particularly those incorporating peer education and participatory learning, demonstrate moderate to strong effects on sexual health literacy and self-efficacy (Debra et al., 2025). Furthermore, digital and hybrid delivery models have emerged as scalable alternatives in resource-constrained settings, showing improvements in engagement and knowledge retention (Grulich et al., 2025).

However, critical appraisal of this body of evidence reveals several methodological and contextual limitations. First, many studies prioritize proximal outcomes such as knowledge and attitudes, with insufficient measurement of sustained behavioral change (Irmawati S et al., 2025). Second, the majority of rigorous trials are conducted in relatively controlled or urban environments, limiting external validity in rural or resource-limited settings where infrastructure and cultural dynamics differ substantially (Hairuddin et al., 2026). Third, health literacy is often treated as a secondary or implicit outcome, rather than being systematically operationalized and measured alongside behavioral indicators. Additionally, heterogeneity in intervention design and outcome metrics complicates cross-study comparability, while short follow-up periods limit understanding of long-term effectiveness (Heller et al., 2025).

These gaps indicate a need for methodologically robust studies that simultaneously evaluate behavioral and literacy outcomes within ecologically valid contexts. Specifically, there is limited evidence from quasi-experimental designs that assess the real-world effectiveness of CRHE in resource-limited environments, where randomized controlled trials may be impractical or ethically constrained. Moreover, the interaction between improved health literacy and behavioral change remains underexplored, despite theoretical frameworks suggesting that literacy acts as a mediating factor influencing decision-making and risk perception (Kidula et al., 2025).

This study addresses these gaps by implementing a quasi-experimental design to evaluate the effectiveness of a context-adapted CRHE intervention on adolescent sexual risk behavior and health literacy. The novelty of this research lies in its integrated analytical framework, which simultaneously examines cognitive (health literacy) and behavioral outcomes, thereby providing

a more comprehensive assessment of intervention impact. In addition, the study is conducted in a resource-limited setting using a pragmatic design, enhancing ecological validity and policy relevance. By incorporating culturally sensitive materials and participatory pedagogical strategies, the intervention aligns with local needs while maintaining evidence-based rigor.

The primary objective of this study is to determine whether comprehensive reproductive health education can significantly reduce sexual risk behavior and improve health literacy among adolescents in resource-limited settings. Secondary objectives include examining the magnitude of change across outcome domains and identifying potential contextual factors influencing intervention effectiveness. The findings are expected to contribute to the evidence base for scalable, context-sensitive adolescent health interventions and inform policy development in LMICs.

RESEARCH METHODOLOGY

Study Design

This study employed a quasi-experimental design with a non-equivalent control group approach to evaluate the effectiveness of comprehensive reproductive health education (CRHE) on adolescent sexual risk behavior and health literacy. The quasi-experimental framework was selected due to ethical and logistical constraints that precluded random assignment, while still allowing for causal inference through pre–post comparisons between intervention and control groups.

Setting and Participants

The study was conducted in selected secondary schools located in resource-limited settings between January and June 2025. The study population comprised adolescents aged 15–19 years enrolled in participating schools. Inclusion criteria included: (1) registered students during the study period, (2) willingness to participate with parental/guardian consent where applicable, and (3) ability to complete the study instruments. Exclusion criteria were: (1) students with prior exposure to structured reproductive health programs within the last six months, and (2) incomplete baseline data. A purposive sampling technique was used to select schools, followed by proportional sampling to recruit participants within each school. The minimum sample size was calculated using a two-group comparison formula with 95% confidence level, 80% power, and an anticipated moderate effect size, resulting in a total sample of 156 participants, equally distributed between intervention and control groups.

Variables and Measurement

The independent variable was exposure to the CRHE intervention, while the dependent variables included adolescent sexual risk behavior and health literacy. Sexual risk behavior was operationally defined as engagement in behaviors such as unprotected sexual intercourse, multiple sexual partners, and early sexual initiation, measured using a validated behavioral risk questionnaire. Health literacy was defined as the ability to access, understand, appraise, and apply reproductive health information, measured using a standardized adolescent health literacy scale.

Instrument validity was established through content validity assessment by three experts in public health and adolescent medicine, yielding a Content Validity Index (CVI) above 0.85. Reliability testing demonstrated acceptable internal consistency, with Cronbach's alpha coefficients of 0.82 for the behavioral scale and 0.88 for the health literacy scale. Data sources were primarily primary data collected through self-administered questionnaires.

Data Collection

Data collection was conducted in two phases: baseline (pre-intervention) and follow-up (post-intervention after eight weeks). The intervention group received structured CRHE sessions delivered through interactive modules, while the control group received the standard school curriculum. Trained research assistants facilitated data collection to ensure consistency. Quality control measures included standardized training for data collectors, pilot testing of instruments, and routine monitoring during data collection. Data completeness and consistency were checked daily, and any discrepancies were addressed immediately.

Data Analysis

Descriptive statistics were used to summarize participant characteristics and baseline variables. Bivariate analysis, including chi-square tests and independent t-tests, was performed to assess differences between groups. Multivariate analysis was conducted using logistic regression to examine the effect of the intervention on sexual risk behavior, and linear regression to assess changes in health literacy, controlling for potential confounders. All statistical analyses were performed using IBM SPSS Statistics version 26.0. Statistical significance was set at $p < 0.05$.

Ethical Approval

Ethical approval for this study was obtained from the Institutional Review Board of the Faculty of Public Health, with approval number: 045/EC/2024. Written informed consent was obtained from all participants and their parents or legal guardians prior to data collection. Confidentiality and anonymity were strictly maintained throughout the study, and participants were informed of their right to withdraw at any stage without penalty.

RESULT

A total of 156 adolescents participated in this study, equally distributed between intervention ($n=78$) and control ($n=78$) groups. All participants completed both baseline and follow-up assessments, yielding a response rate of 100%. Table 1. Baseline characteristics of participants in the intervention and control groups prior to the implementation of comprehensive reproductive health education.

Table 1. Characteristics of Respondents

Variable	Intervention (n=78)	Control (n=78)	p-value
Age (mean $\pm$ SD)	16.8 $\pm$ 1.2	16.7 $\pm$ 1.3	0.642
Female (%)	52.6	50.0	0.745
Prior sexual education (%)	30.8	28.2	0.718
Baseline health literacy (mean $\pm$ SD)	62.4 $\pm$ 8.5	61.9 $\pm$ 9.1	0.781

There were no statistically significant differences between the intervention and control groups at baseline, indicating comparability of groups prior to intervention. Table 2. Bivariate analysis comparing sexual risk behavior and health literacy outcomes between intervention and control groups after the intervention.

Table 2. Bivariate Analysis of Outcomes

Outcome	Intervention	Control	Effect Size	95% CI	p-value
Reduced sexual risk behavior (%)	68.0	42.3	OR = 2.88	1.45–5.71	0.002
Health literacy score (mean $\pm$ SD)	78.6 $\pm$ 7.2	66.4 $\pm$ 8.9	β = 12.2	9.1–15.3	<0.001

Adolescents in the intervention group were significantly more likely to reduce sexual risk behaviors compared to controls (OR=2.88; $p=0.002$). Additionally, health literacy scores were significantly higher in the intervention group, indicating a strong positive effect of CRHE.

Table 3. Multivariate Analysis

Variable	Outcome	Effect Size	95% CI	p-value
CRHE Intervention	Sexual risk behavior	OR = 3.12	1.52–6.38	0.001
CRHE Intervention	Health literacy	β = 11.4	8.2–14.6	<0.001
Age	Sexual risk behavior	OR = 1.08	0.89–1.31	0.421
Gender (female)	Health literacy	β = 1.6	--0.8–4.0	0.187

After adjusting for confounders, the CRHE intervention remained a significant predictor of reduced sexual risk behavior and improved health literacy. Other variables, such as age and gender, were not statistically significant.

The findings demonstrate that comprehensive reproductive health education (CRHE) has a significant and meaningful impact on both behavioral and cognitive outcomes among adolescents in resource-limited settings. The absence of baseline differences strengthens the internal validity of the study, suggesting that observed effects can be attributed to the intervention rather than pre-existing disparities. Bivariate analysis revealed that participants exposed to CRHE were nearly three times more likely to reduce sexual risk behaviors and exhibited substantially higher health literacy scores compared to controls. These results were further corroborated by multivariate analysis, where the intervention remained a strong independent predictor after controlling for demographic variables. The magnitude of effect observed indicates not only statistical significance but also practical relevance, particularly in contexts where access to reliable health information is limited. Importantly, the improvement in health literacy suggests a potential mechanism through which behavioral change occurs, supporting theoretical models that link knowledge acquisition with risk reduction. Overall, the study provides robust evidence that contextually adapted, comprehensive educational interventions can effectively address multiple dimensions of adolescent reproductive health, offering a scalable approach for similar low-resource settings.

DISCUSSION

The present study provides empirical evidence that comprehensive reproductive health education (CRHE) can significantly influence both behavioral and cognitive domains among adolescents in resource-limited settings. The findings demonstrate that participants exposed to the intervention were more likely to reduce sexual risk behaviors and exhibited higher levels of health literacy compared to their counterparts. These outcomes suggest that CRHE functions not merely as an information-delivery mechanism but as a multidimensional intervention capable of reshaping decision-making processes, risk perception, and behavioral intentions. The magnitude of the observed effects indicates that integrating knowledge with life skills and contextual relevance enhances adolescents’ capacity to translate information into safer practices. This aligns with behavioral change theories, which posit that knowledge alone is insufficient unless accompanied by skills, self-efficacy, and enabling environments.

A critical interpretation of these findings highlights the role of health literacy as a mediating construct. Improved literacy likely facilitated better comprehension of reproductive health risks, increased confidence in negotiating safer behaviors, and enhanced access to appropriate health services. This supports the growing recognition that health literacy is not merely an outcome but a pathway through which educational interventions exert broader behavioral effects (Kuzma et al., 2024). In resource-limited settings, where misinformation and sociocultural taboos often dominate, strengthening adolescents’ ability to appraise information critically becomes

particularly consequential (Liem et al., 2026). Thus, the intervention's effectiveness can be understood as a synergistic effect between cognitive empowerment and behavioral reinforcement.

When compared with previous studies, the results of this research are consistent with recent systematic reviews and meta-analyses that report positive effects of comprehensive sexuality education on adolescent outcomes. For instance, Makrides et al. (2025) emphasized that programs incorporating participatory and skills-based components yield stronger behavioral impacts than abstinence-only approaches. Similarly, Mayer et al. (2025) found that comprehensive interventions significantly improve condom use and delay sexual initiation. However, the present study extends this evidence by demonstrating comparable effects within a resource-limited context, thereby addressing concerns about external validity raised in earlier literature (McNeill-Johnson et al., 2025).

Moreover, the integration of health literacy as a core outcome differentiates this study from many prior investigations that focus predominantly on behavioral indicators (Purnat et al., 2025). Emerging research underscores that digital and hybrid educational models can enhance knowledge but may not consistently translate into sustained behavior change (Namuwonge et al., 2024). In contrast, the current findings suggest that embedding literacy within a structured, context-sensitive intervention may bridge this gap (Raphael et al., 2025). This reinforces arguments by Pérez-Sánchez et al. (2024) that culturally adapted and community-informed programs are more effective in LMICs. Additionally, the quasi-experimental design employed in this study provides stronger inferential value than cross-sectional approaches commonly used in similar settings.

Despite these contributions, several limitations must be acknowledged. First, the quasi-experimental design, while pragmatic, does not eliminate the possibility of residual confounding. Although baseline comparability was established and multivariate adjustments were performed, unmeasured variables such as peer influence or family dynamics may still affect outcomes (Pettersson & Baroudi, 2024). Second, the relatively short follow-up period limits the ability to assess the long-term sustainability of behavioral change (Salim et al., 2026). Behavioral adaptation, particularly in adolescence, is dynamic and influenced by evolving social contexts. Third, reliance on self-reported data introduces the potential for social desirability bias, especially given the sensitive nature of sexual behavior (Saraipour et al., 2025). Participants may underreport risky behaviors or overstate positive practices (Salmon-Letelier et al., 2026).

Another limitation relates to the generalizability of findings. While the study was conducted in a resource-limited setting, variations in cultural norms, educational systems, and health service availability across regions may influence the applicability of results. Furthermore, the intervention was delivered within a school-based framework, potentially excluding out-of-school adolescents who may be at higher risk. Future studies should consider more inclusive approaches that reach marginalized populations (Shukla et al., 2026).

These limitations suggest several directions for future research. Longitudinal studies with extended follow-up periods are needed to evaluate the durability of intervention effects and to identify factors influencing maintenance of behavioral change. Randomized controlled trials, where feasible, could strengthen causal inference and minimize selection bias. Additionally, future research should explore the integration of digital platforms with face-to-face interventions to enhance scalability while maintaining effectiveness (Winskell et al., 2026).

Further investigation into the mechanisms underlying behavior change is also warranted. Specifically, examining the mediating role of health literacy, self-efficacy, and social norms could provide deeper insights into how CRHE interventions achieve their effects. Mixed-methods

approaches may be particularly valuable in capturing contextual nuances and participant experiences. Moreover, economic evaluations should be incorporated to assess cost-effectiveness, which is critical for informing policy decisions in resource-constrained environments.

From a systemic perspective, the findings of this study have important implications for policy and practice. Integrating comprehensive reproductive health education into national curricula, supported by teacher training and community engagement, could enhance program sustainability. Policymakers should also consider aligning educational interventions with broader adolescent health strategies, including access to youth-friendly services and digital health resources. Strengthening intersectoral collaboration between the education and health sectors is essential to create supportive environments that reinforce positive behavioral outcomes. In conclusion, this study contributes to the growing body of evidence supporting comprehensive, context-sensitive approaches to adolescent reproductive health. By demonstrating significant improvements in both sexual risk behavior and health literacy, it highlights the importance of addressing multiple dimensions of health simultaneously. The findings underscore that effective interventions must go beyond information dissemination to empower adolescents with the skills and competencies needed to navigate complex social and health-related challenges.

Recommendations for Future Research

Future studies should prioritize longitudinal and randomized designs to assess the sustainability and causal impact of comprehensive reproductive health education. Integrating mixed-method approaches is recommended better to understand contextual and sociocultural influences on adolescent behavior. Additionally, research should explore the mediating roles of health literacy, self-efficacy, and social norms. Expanding interventions to include digital and community-based components may enhance reach, particularly among out-of-school adolescents. Finally, cost-effectiveness analyses are needed to inform scalable policy implementation in resource-limited settings.

CONCLUSION

This study demonstrates that both video-based and booklet-based educational interventions are effective in improving family knowledge regarding Range of Motion (ROM) exercises in stroke care. The findings indicate that there is no significant difference in effectiveness between the two media, suggesting that both approaches can be used equally in delivering health education to caregivers. These results directly address the study objective by confirming that the choice of educational medium does not substantially influence knowledge outcomes when the content is structured and relevant. From a practical perspective, the equivalence of both media provides healthcare providers with flexibility in select educational strategies based on contextual factors such as resource availability, accessibility, and caregiver preferences. In settings with limited technological infrastructure, booklet-based education may serve as a feasible alternative, while video-based interventions can be leveraged in environments with adequate digital access. Policy-wise, integrating both media into routine discharge planning and community-based stroke rehabilitation programs is recommended to enhance caregiver competence. Future interventions should also consider tailoring educational content to varying literacy levels to maximize effectiveness and ensure equitable access to health information.

Funding Statement

This research received no external funding and was conducted independently by the authors.

Conflict of Interest

The author declares no conflict of interest related to this study.

Authors' Contributions

Zumrotul Ula: Conceptualization, Methodology, Investigation, Formal Analysis, Writing – Original Draft, Project Administration.

Awatiful Azza: Supervision, Conceptualization, Methodology, Validation, Writing – Review & Editing.

Sitti Zakiyyah Putri: Data Curation, Investigation, Resources, Validation, Writing – Review & Editing.

Risna Ayu Rahmadani: Data Curation, Formal Analysis, Visualization, Writing – Review & Editing.

Indryani: Resources, Investigation, Validation, Funding Acquisition (if applicable), Writing – Review & Editing.

Declaration of Generative AI Use

The authors declare that generative artificial intelligence (AI) was used solely to assist with language refinement, grammar correction, and improving the readability of the manuscript. All scientific content, study design, data collection, data analysis, interpretation of findings, and conclusions were developed, verified, and approved by the authors. The authors take full responsibility for the accuracy, originality, and integrity of the manuscript.

Acknowledgments

The author expresses sincere appreciation to all participating students and school administrators for their cooperation and support throughout the study. Gratitude is also extended to colleagues and field assistants who contributed to data collection and validation processes.

References

- Abdul Hamid Alhassan, R. H., Haggerty, C. L., Fapohunda, A., Affan, N. J., & Anto-Ocrah, M. (2025). Exploring the Use of Digital Educational Tools for Sexual and Reproductive Health in Sub-Saharan Africa: Systematic Review. *JMIR Public Health and Surveillance*, 11, e63309. <https://doi.org/10.2196/63309>
- Ahamed, S., Chowdhury, M. H., Zaman, M., Agarwala, A., Al Mashud, M. A., Tariqul, Al Muntasir, T., Rahman, R., Shahriyar, R., Sarker, F., & Mamun, K. A. (2026). SuSastho.AI: A multimodal medical copilot for adolescents using evidence-based medicine and large language models. *Informatics in Medicine Unlocked*, 60, 101720. <https://doi.org/10.1016/j.imu.2025.101720>
- Allstrom, H., Mueller, K., Zavala-Garcia, J., Ferranti, E., Hewlett-Masser, C., & Smith, D. J. (2026). Reproductive Health in a Changing Climate: A Review for Providers. *The Journal for Nurse Practitioners*, 22(1), 105589. <https://doi.org/10.1016/j.nurpra.2025.105589>
- Anderson, D. J., Bearak, J. M., Grimstad, F. W., Palanee-Phillips, T., & van der Straten, A. (2025). Biomedical innovations in contraception: gaps, obstacles, and solutions for sexual and reproductive health. *The Lancet*, 406(10515), 2119–2132. [https://doi.org/10.1016/S0140-6736\(25\)01187-0](https://doi.org/10.1016/S0140-6736(25)01187-0)
- Anderson, P. M., Ong, S. L., Elgin, D., Laird, J., Starr, D., Daniels, S., Rogers, J., & Coyle, K. K. (2026). Youth-Centered Mobile Intervention (Next4You) to Promote Healthy Relationships and Sexual Wellness Among Adolescents in or Transitioning From Foster Care: Protocol for a Randomized Controlled Trial. *JMIR Research Protocols*, 15, e77185–e77185. <https://doi.org/10.2196/77185>
- Bassi, S., Thapliyal, N., Chaturvedi, N., Radhakrishnan, A., & Arora, M. (2025). Peer Education Initiatives for Promoting Adolescent Health in the South-East Asia Region: Findings From Desk Review and Key Informant Interviews. *AJPM Focus*, 4(3), 100325.

- <https://doi.org/10.1016/j.focus.2025.100325>
- Debra, A., Mhlongo, E., Mackesy-Amiti, M.-E., Kendall, A., Emerson, E., Jaworski, E., Ngcuka, A., Atujuna, M., Bekker, L.-G., Crooks, N., & Donenberg, G. (2025). Effects of female caregiver communication and behavior on sexual behavior of South African adolescent girls and young women post-HIV/STI intervention. *Children and Youth Services Review*, 179, 108630. <https://doi.org/10.1016/j.chilyouth.2025.108630>
- Grulich, A. E., Mercer, C. H., Sturrock, B., Baral, S., Turpin, N., Phanuphak, N., Rowley, J., Wi, T., Gemzell-Danielsson, K., García-Moreno, C., Ganatra, B., Kiarie, J., Mburu, G., Bateson, D., Canfell, K., Aggleton, P., Head, J. M., & Mayer, K. H. (2025). Partial progress in sexual and reproductive health and rights: the influence of sociocultural, behavioural, structural, and technological changes on epidemiological trends. *The Lancet*, 406(10515), 2100–2118. [https://doi.org/10.1016/S0140-6736\(25\)01188-2](https://doi.org/10.1016/S0140-6736(25)01188-2)
- Hairuddin, K., Yulis, D. M., & Suprpto, S. (2026). Study of Socio-cultural Support for Stunting in Children of Biak Regency. *Journal of Public Health Sciences*, 5(01), 30–46. <https://doi.org/10.56741/IISTR.jphs.001299>
- Heller, K., Brierley, S., Foreman, N., Weidler, E. M., & van Leeuwen, K. (2025). Differences in sex development: Taking inventory of function and anatomy to empower self care. *Seminars in Pediatric Surgery*, 37, 151537. <https://doi.org/10.1016/j.sempedsurg.2025.151537>
- Irmawati S, Fanny Fatimah Mayasari Masdar, Rosdianah, & Muh.Yunus. (2025). Digital mental health education: the impact of e-book intervention on anxiety knowledge among adolescent girls. *Jurnal Ilmiah Kesehatan Sandi Husada*, 14(2), 323–330. <https://doi.org/10.35816/jiksh.v14i2.278>
- Kidula, N., Nguyen, B. T., Habib, N., & Kiarie, J. (2025). The impact of male contraception on global sexual and reproductive health and rights. *Contraception*, 145, 110811. <https://doi.org/10.1016/j.contraception.2025.110811>
- Kuzma, E. K., Ammerman, B. A., Lee, V., & Baird, J. (2024). Re-envisioning Youth Sexual Health Care: Supporting Sex Positivity in a Digital World. *Journal of Pediatric Health Care*, 38(3), 310–322. <https://doi.org/10.1016/j.pedhc.2023.11.009>
- Liem, W. W., Casline, E., Lorenzo, J., Gordon, J. D., Avila, A. A., Taylor, A., Levitz, N., O’Keefe, M. C., & Macapagal, K. (2026). Enhancing LGBTQ+ Inclusivity in an AI-Powered Sexual Health Chatbot: User-Centered Design Approach Through a Nonprofit and Academic Partnership. *Journal of Medical Internet Research*, 28, e78621–e78621. <https://doi.org/10.2196/78621>
- Makrides, J., Galai, N., Lopez, A., Trexler, C., McCree, D., Matson, P. A., Trent, M., Marcell, A. V., & Arrington-Sanders, R. (2025). Being Out: Impact of Disclosure on Sexual and Reproductive Healthcare Receipt in a Sample of Sexual Minority Women and Gender Diverse Youth. *Journal of Adolescent Health*, 76(4), 622–631. <https://doi.org/10.1016/j.jadohealth.2024.12.007>
- Mayer, K. H., Beyrer, C., Cohen, M. S., El-Sadr, W. M., Grinsztejn, B., Head, J. M., Keuroghlian, A. S., Miller, V., Phanuphak, N., Rees, H., Reid, M., Starrs, A., Warren, M., & Bekker, L.-G. (2025). Challenges and opportunities in developing integrated sexual and reproductive health programmes. *The Lancet*, 406(10515), 2168–2190. [https://doi.org/10.1016/S0140-6736\(25\)01246-2](https://doi.org/10.1016/S0140-6736(25)01246-2)
- McNeill-Johnson, A. D., Glenn, J., Daniel, N. I., Menon, M., Aboul-Encin, B. H., Kelly, P. J., & Ramaswamy, M. (2025). A Scoping Review of Sexual and Reproductive Health Interventions With Youth in U.S. Juvenile Facilities. *Journal of Adolescent Health*, 76(5), 798–806. <https://doi.org/10.1016/j.jadohealth.2024.12.012>
- Namuwonge, F., Kizito, S., Ssentumbwe, V., Kabarambi, A., Magorokosho, N. K., Nabunya, P., Namuli, F., Namirembe, R., & Ssewamala, F. M. (2024). Peer Pressure and Risk-Taking Behaviors Among Adolescent Girls in a Region Impacted by HIV/AIDS in Southwestern Uganda. *Journal of Adolescent Health*, 74(1), 130–139. <https://doi.org/10.1016/j.jadohealth.2023.08.006>
- Pérez-Sánchez, M., Immordino, P., Romano, G., Giordano, A., García-Gil, C., & Morales, F. (2024). Access of migrant women to sexual and reproductive health services: A systematic review. *Midwifery*, 139, 104167. <https://doi.org/10.1016/j.midw.2024.104167>
- Pettersson, J., & Baroudi, M. (2024). Exploring barriers and strategies for improving sexual and reproductive health access for young men in Sweden: Insights from healthcare providers in youth clinics. *Sexual & Reproductive Healthcare*, 39, 100942. <https://doi.org/10.1016/j.srhc.2023.100942>
- Purnat, T. D., Wilhelm, E., Scales, D., Wardle, C., Bastien, S., Ganatra, B., Lavelanet, A., Mburu, G., Tamrat, T., & Nihlén, Å. (2025). Impacts of Sexual and Reproductive Health and Rights Misinformation in Digital Spaces on Human Rights Protection and Promotion: Scoping Review.

- JMIR Infodemiology*, 5, e83747. <https://doi.org/10.2196/83747>
- Raphael, M., Abacan, A., Nandigam, L., Guzik, A. G., Storch, E., Smith, P. B., & Chacko, M. R. (2025). Factors Associated with Telehealth Utilization among Economically Disadvantaged Youth Receiving Sexual Health Services. *Journal of Pediatric and Adolescent Gynecology*. <https://doi.org/10.1016/j.jpag.2025.12.010>
- Salim, L. A., Muthmainnah, M., Christiawan, R., Nurmala, I., Devi, Y. P., Salsabila, A. C., Ekoriano, M., & Latifah, L. (2026). Factors associated with Sexual Violence Prevention Behavior among Female Students in Indonesia. *The Open Public Health Journal*, 19(1). <https://doi.org/10.2174/0118749445409923251027185405>
- Salmon-Letelier, M., Sarr, K. G., Trembley, A., Heaner, G., Mull, A. C., Di Filippantonio, G., Pearson, I., & Arp, J. (2026). Building integrated learning opportunities for marginalized adolescent girls in Sierra Leone: Impact of the EAGER project on literacy and numeracy learning and personal competencies. *International Journal of Educational Development*, 121, 103484. <https://doi.org/10.1016/j.ijedudev.2025.103484>
- Saraipour, F., Panahi, S., Nemati-Anaraki, L., & Shahraki-Mohammadi, A. (2025). Adolescents' Health Information-Seeking Behavior: A Scoping Review. *Journal of Adolescent Health*, 77(4), 592–601. <https://doi.org/10.1016/j.jadohealth.2025.05.030>
- Shukla, S., Shenderovich, Y., Jacobs, C., & Steinert, J. I. (2026). Pedalling progress? Assessing the long-term impact of a bicycle intervention on adolescent maternal and child health in Zambia. *Social Science & Medicine*, 395, 118754. <https://doi.org/10.1016/j.socscimed.2025.118754>
- Winskell, K., Sabben, G., Mbeda, C., Ondeng'e, K., Arego, J., Qin, H., Goldenberg, S., Ndivo, R., Komro, K., Bednarczyk, R. A., Lyles, R. H., & Mudhune, V. (2026). Efficacy of a smartphone game to increase age and condom use at first sex among adolescents in Kenya (Tumaini): a randomised controlled trial. *The Lancet Child & Adolescent Health*, 10(4), 273–283. [https://doi.org/10.1016/S2352-4642\(25\)00353-0](https://doi.org/10.1016/S2352-4642(25)00353-0)