

STUDY PROTOCOL

Open Access



The role of parent-adolescent communication interventions in improving sexual and reproductive health outcomes in sub-Saharan Africa: protocol for a systematic review and meta-analysis

Peter Muriuki Gatheru^{1,2*}, Hesborn Wao¹, Andamlak Alamdo^{2,3}, Peter Gyamfi Kwarteng², Michael Kwashie², Caroline W. Kabiru¹, Deda Ogum², Kwasi Torpey² and Adom Manu²

Abstract

Background Across sub-Saharan Africa, adolescents face the triple tragedy: unintended pregnancies, unsafe abortion, and sexually transmitted infections including HIV due to various reasons, among them, poor parent-adolescent communication on sexual and reproductive health. Effective interventions such as improving parent-adolescent communication has been recognized as a protective factor for adolescent sexual and reproductive health outcomes. Research shows that parent-adolescent communication is associated with reduced adolescent engagement in risky sexual behaviours, including early sexual initiation, lower rates of teenage pregnancy, sexually transmitted infections, and increased self-efficacy in decision making. Despite the potential role of parent-adolescent communication in promoting optimal adolescent sexual and reproductive health, limited research evidence exists on interventions to improve parent-adolescent communication on sexual and reproductive health in sub-Saharan African countries. The aim of this systematic review is to assess the role of parent-adolescent communication intervention programs in improving sexual and reproductive health outcomes.

Methods We will pool evidence from published literature from January 1990 up to and including February 2024 from multiple databases: PubMed, Web of Science, Scopus, African Journals Online, JSTOR, Directory of Open Access Journals, and Google Scholar. Articles published in the English language will be included. Two reviewers will conduct screening for titles, abstracts, and full texts, while a third reviewer will arbitrate in cases of lack of concurrence. Experimental, quasi-experimental and observational study designs will be included. A data extraction tool based on Microsoft Excel will be used to extract data items from different studies. We will focus on the following outcomes: initiation of sexual activity, use of condoms and contraceptives, reduced risky sexual behaviours such as unprotected sex, and lower rates of teenage pregnancy. When feasible, articles will be combined for statistical meta-analysis. Effect sizes, either reported as weighted mean differences for continuous data or as odds ratios for binary data, will be presented as proportions with 95% confidence intervals. We will use the random effects model to meta-analyse the include studies as we expect considerable variability across study designs. This will provide an average effect size

*Correspondence:
Peter Muriuki Gatheru
pmuriuki@aphrc.org
Full list of author information is available at the end of the article



© The Author(s) 2024. **Open Access** This article is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License, which permits any non-commercial use, sharing, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if you modified the licensed material. You do not have permission under this licence to share adapted material derived from this article or parts of it. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by-nc-nd/4.0/>.

that accounts for variability of results within studies. Sensitivity analysis will also be conducted to assess the robustness of the findings or conclusions of the meta-analysis. The review findings will be reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines.

Discussion This review provides insights into parent-based intervention programs that have been implemented in sub-Saharan African countries to improve adolescent sexual and reproductive health via promotion of parent-adolescent sexuality communication. The findings will guide further research on this issue as well as inform policy makers on which interventions have a potential effect in improving adolescent sexual and reproductive health.

Protocol Registration Number: CRD42024525191 (PROSPERO), Date of registration: 27/03/2024.

Keywords Parent-adolescent communication, Parent–child communication, Adolescent sexual and reproductive health, Sexual communication

Plain language summary

When parents and their adolescent children have open discussions on sexual and reproductive health, this can lead to improved sexual and reproductive health for adolescents. Studies have shown that when this communication is clear and open, it can reduce the chances of adolescents being involved in unsafe sexual activities such as being involved in sexual activity while too young, and it can also increase adolescents' use of condoms and contraceptives to avoid teenage pregnancies and sexually transmitted infections and increase their confidence in decision making. While open discussions between adolescents and their parents can improve sexual and reproductive health for adolescents, it is not clear what parent-based interventions can assist adolescents to achieve the best sexual and reproductive health outcomes. This study will review all published studies that have addressed this topic and determine which programs have shown better results in improving adolescent sexual and reproductive health via the promotion of effective communication between parents and their adolescent children.

Background

In many parts of the world, particularly in sub-Saharan Africa (SSA), it is considered taboo for parents and their children to openly discuss sexual and reproductive health (SRH) matters [1–3]. However, effective parent-adolescent communication is linked to positive adolescent sexual and reproductive health (ASRH) outcomes. For instance, it is associated with a reduction in adolescents' engagement in risky sexual behaviours, including delaying sexual intercourse, particularly for females, early pregnancies and associated consequences, and increasing adolescents' self-efficacy in decision making [4, 5].

Despite the potential role of parent-adolescent communication in improving adolescent health, evidence from studies conducted in SSA suggests that discussions on sex and other sexuality issues often tend to be one-sided, dominated by parents, dictatorial, indirect and ambiguous and largely fraught with threats and warnings instead of an open, direct dialogue [6]. Whereas various factors influence adolescent decision making and behaviours, parents have a powerful influence on the lives of adolescents [7]. Parents play a crucial role in the sexual and gender socialization of their children [8]. If parents discuss SRH issues with their adolescent children, early sexual debut, early pregnancy, and exposure to sexually transmitted infections, including HIV/AIDS, can be prevented [9].

The parent-adolescent relationship is important in shaping adolescents' path through adolescence, and a supportive parent-adolescent relationship can enable adolescents to avoid or mitigate serious risks to their SRH [10]. However, both adolescents and parents report hurdles to clear, open dialogue characterized by a lack of knowledge and skills, cultural norms and taboos and a presumption that younger adolescents are 'too young' to discuss SRH matters [6, 11]. Several studies have established that major inhibitors of efficient parent-adolescent communication on SRH include a deficiency of parental knowledge on SRHR, a lack of skill, comfort, confidence and efficacy in discussing sexual matters with their adolescent children [6, 12–20]. Therefore, interventions focused on improving parent-adolescent communication could be one way to promote optimal ASRH.

While several parent-based interventions have been implemented to improve adolescent sexual and reproductive health in SSA, individual studies have reported conflicting results. To our knowledge, there has been no systematic review conducted or registered in this area. This systematic review therefore presents an overview of interventions implemented in SSA countries and aims to:

- i) Identify parent-based intervention programs aimed on improving adolescent sexual and reproductive

health via promoting parent-adolescent communication on sexual and reproductive health.

- ii) Pool together the different effect sizes reported in individual studies and provide an overall effect estimate than that obtained from individual studies.

Research questions

This systematic review is guided by the following research questions:

1. What parent-adolescent communication intervention programs exist aimed at improving adolescent sexual and reproductive health outcomes in sub-Saharan Africa?
2. To what extent does parent-adolescent communication intervention programs improve sexual and reproductive health outcomes in sub-Saharan Africa?

Methods

Protocol registration

This review protocol has been registered in the International Prospective Register for Systematic Reviews (PROSPERO), (Registration number: CRD42024525191). The reporting will be performed according to the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) checklist [21].

Inclusion and exclusion criteria

The Population, Intervention, Comparator, Outcome and Study design (PICOS) framework will guide the selection of studies. Our search will include studies published in peer-reviewed journals in English from January 1990 up to and including February 2024 using the below inclusion criteria. The bulk of literature on this topic started appearing in the 1990s and hence the decision to include studies from that period.

Population/participants

The empirical studies included in this review will involve parents and/or their adolescents on interventions to improve parent-adolescent communication about SRH. Adolescents in this review are defined as those aged between 10 and 19 years.

Intervention and/or comparator

Studies or programs focused on improving adolescent sexual and reproductive health via promoting parent-adolescent communication on SRH, sex or sexuality matters with or without control groups will be considered. For interventions with control groups, the review will

contrast the intervention delivered to both the treatment and control groups.

Outcomes

The following outcomes will be considered in this review: (i) initiation of sexual activity, (ii) use of condoms and contraceptives, (iii) reduced risky sexual behaviours such as unprotected sex, and (iv) lower rates of teenage pregnancies.

Study design

The study designs to be considered will include experimental (e.g., randomized control trials and nonrandomized control trials), quasi-experimental (e.g., time-series and pretest-posttest), and observational (cohort, case-control, cross-sectional studies) studies in sub-Saharan Africa. A preliminary search of studies revealed a paucity of experimental studies on this topic and hence the need to include quasi-experimental and observational studies. The named study designs will allow for an appraisal of the totality of the empirical evidence in this area and the potential to provide invaluable insights regarding the concurrence (or lack thereof) of findings from the various study designs.

Data sources

This review will be based on systematic searches of published literature in multiple databases: PubMed, Web of Science, African Journals Online (AJOL), JSTOR, Directory of Open Access Journals (DOAJ), Scopus and Google Scholar. To identify possible search terms, the authors will conduct a rudimentary examination of index terms and keywords from the titles and abstracts of relevant articles in PubMed. This step will be followed by another search using all the identified search terms. We will supplement the database search with a manual review of references in each selected paper that meets the final inclusion criteria. The authors of primary interventional studies will be contacted to provide further information if necessary.

Search terms

The literature search will be conducted in the English language using the following key words: ("Interven*" AND ("Improv*" OR "Promot*" OR "Support*" OR "Enhanc*" OR "Strengthen*") AND ("Parent-child*" OR "Parent-adolescent*" OR "Parent-Offspring*" OR "Parent-Teen*" OR "Parent-youth*" OR "mother-child*" OR "father-child*" OR "mother-son*" OR "mother-daughter*" OR "father-son*" OR "father-daughter*") AND ("Communication*" OR "Discussion*" OR "Conversation*" OR "Dialogue*" OR "Talk*") AND ("Sex*" OR "Sexual*" OR "HIV/AIDS*" OR

“Sexual and reproductive health”) AND (“Africa*” OR “Sub-Saharan* Africa”) AND (“NOT America”).

Search strategy and screening

We will document the detailed search strategy for all the databases searched. After completing the search, we will export all identified citations to EndNote to remove all duplicates. All retrieved publications will be subject to review of titles, abstracts, and listed keywords after removing duplicates. A pair of reviewers will screen the titles and abstracts of the retrieved articles, and discrepancies will be resolved by discussion with a third reviewer. All articles included at this level will be subjected to full-text review by two independent reviewers to determine whether an article meets the inclusion criteria. This review will be conducted according to the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) [21] standards. We plan to start the review in March 2024 and complete it in November 2024.

Risk of bias assessment

Two reviewers will independently assess the risk of bias in all included studies, and in the case of a disagreement, a third reviewer will arbitrate. We will use the Cochrane Collaboration’s tool for assessing the risk of bias in RCTs [22]. The tool covers six categories of bias: performance bias, attrition bias, reporting bias, detection bias, selection bias and other bias. Studies are assigned a judgement of high, low, or unclear risk of material bias for each item. To assess the risk of bias for nonrandomized control trials, we will use the ROBINS-I (Risk of Bias In Nonrandomized Studies) [23] tool. The ROBINS-I tool addresses seven different domains through which bias might be introduced. A series of signalling questions are used to facilitate judgments regarding the risk of bias within each domain.

Quality assessment

We will use the Grading of Recommendations, Assessment, Development, and Evaluations (GRADE) framework [24] to rate the quality of evidence in all included studies. In deploying GRADE, pooled estimates from the included studies will be used to evaluate the certainty of evidence for each outcome measure rather than for individual studies. GRADE has four levels of evidence—also known as certainty in evidence: very low, low, moderate, and high. Very low indicates that the estimated effect and the true effect are likely very different, low indicates that the estimated effect may differ significantly with the true effect, moderate suggests that the true effect is probably close to the estimated effect, and high indicates that the authors are very certain that the true effect and the estimated effect are similar.

Data extraction and management

A data extraction tool available with Microsoft 365 (Excel) with details of the data items will be used to extract the data from different studies. The data extracted will include title, author and date, country, study setting (school, community, etc.), study design (cross-sectional, randomized controlled trials, etc.), participant characteristics (gender, age, education status, etc.), participant response rate, sample size, intervention details, outcomes, outcome measures and intervention effects.

Where numerical data are reported in either text or tables, we will extract descriptive statistics, correlations (for continuous outcomes), odds ratios (ORs) (for binary outcomes) and a summary of key findings. When both unadjusted and adjusted results are presented, we will extract and report them separately. Two reviewers will extract data from each study independently, and discrepancies will be discussed until consensus is reached; otherwise, a third reviewer will arbitrate. The data abstraction tool will be piloted using ten randomly selected studies and any relevant modifications made and detailed in the review. To address cases of missing data as guided by the Cochrane handbook for systematic reviews of interventions [25], we will, where necessary, contact authors to provide missing or additional data. Additionally, we will treat missing data as missing at random, perform sensitivity analysis to judge the risk of bias associated with missing data and address the potential impact of missing data on the review findings in the discussion section.

Data synthesis and statistical analysis

Where feasible, papers will be combined for statistical meta-analysis. The effect sizes, which can be either as weighted mean differences for continuous data or as odds ratios for dichotomous data, will be presented as a proportion with 95% confidence intervals around the summary estimate. When studies measured the same variable in different ways, the standardized mean difference will be applied for continuous data. The conventional Chi-square and I^2 tests will be used to statistically evaluate heterogeneity. Results will be summarized using the random effects model due to its flexibility in accommodating varied study designs and its ability to account for heterogeneity [26]. We will use the standard guidelines to report the predicted range of effects of the intervention programs identified. An I^2 range of 0% (no heterogeneity), 25%, 50%, and 75% indicating low, moderate and high heterogeneity respectively will be used [27].

Further rationale for using the random effects model to meta-synthesize is based on the multicriteria perspectives proposed by Tufanaru et al. [28]. The criteria include the statistical generalizability of the results, assumptions regarding the comparability of the results from both

clinical and methodological perspectives and the nature of the meta-analysis results. We will use funnel plots to assess publication bias where more than 10 studies are included and forest plots to represent the heterogeneity of results across the included studies as well as the overall result. The findings will be reported using tables and charts while including a description of all included studies. Additionally, we will conduct sensitivity analysis to gain insight into the validity of the results reported in all included studies.

Subgroup analysis

Subgroup analyses will be carried out in cases where studies are clinically similar but methodologically dissimilar to determine the effect of the variations on the overall effect size.

Discussion

This planned review will systematically document and provide insights into interventions implemented to improve parent-adolescent communication on SRH and their effectiveness or lack thereof. The findings will guide the identification of effective interventions that can potentially be adapted in various contexts to improve parent-adolescent communication on SRH. On policy implications, the findings of this review will be critical in assisting policymakers to develop evidence informed policies about which parent-based interventions have a potential effect in promoting optimal adolescent sexual and reproductive health. This review will also inform further research and interventions in this area.

Limitations

Potential limitations of this review include selection criteria and language bias.

Abbreviations

AIDS	Acquired immunodeficiency syndrome
ASRH	Adolescent sexual and reproductive health
GRADE	Grading of recommendations, assessment, development, and evaluation
HIV	Human immunodeficiency syndrome
PICOS	Population, intervention, comparator, outcome
PRISMA	Preferred reporting items for systematic reviews and meta-analyses
PROSPERO	International prospective register of systematic reviews
RCTs	Randomized control trial
SRH	Sexual and reproductive health
SSA	Sub Saharan Africa

Acknowledgements

We would like to acknowledge Maurine Ng'oda for reviewing the protocol prior to registration.

Author contributions

PMG conceived and wrote the first draft of the protocol; CWK, KT, HW and AM contributed to the concept and reviewed the draft, AA, PGK, MK, and DO, critically reviewed the draft. All authors approved the version to be published.

Funding

The lead author (PMG) is receiving funding to complete his doctoral degree at the University of Ghana from the HRP Alliance, a program funded by the UNDP/UNFPA/UNICEF/WHO/World Bank Special Programme of Research, Development and Research Training in Human Reproduction (HRP), a cosponsored programme executed by the World Health Organization. The lead author is also receiving support from the African Population and Health Research Center's Strategic Initiatives and Innovations Fund. All the other coauthors are not funded for this work. The named authors alone are responsible for the views expressed in this protocol and the funder has no role in this protocol.

Availability of data and materials

No datasets were generated or analysed during the current study.

Declarations

Ethics approval and consent to participate

No ethical review or consent to participate is required for this systematic review, as it does not involve primary data collection.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

Author details

¹African Population and Health Research Center (APHRC), P.O. Box 10787-00100 GPO, Nairobi, Kenya. ²Department of Population, Family and Reproductive Health, School of Public Health, University of Ghana, Accra, Ghana. ³Department of Reproductive Health, Nutrition, Health Service Management and Promotion, St. Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia.

Received: 19 April 2024 Accepted: 15 November 2024

Published online: 25 November 2024

References

- Nambambi NM, Mufune P. What is talked about when parents discuss sex with children: family based sex education in Windhoek, Namibia. *Afr J Reprod Health*. 2011;15(4):120–9.
- Dessalegn W, Tesso MAF, Enquselassie F. Parent young people communication about sexual and reproductive health in West Ethiopia. *Reprod Heal*. 2012;2012:1–13.
- Crichton J, Ibisomi L, Gyimah SO. Mother-daughter communication about sexual maturation, abstinence and unintended pregnancy: experiences from an informal settlement in Nairobi, Kenya. *J Adolesc*. 2012;35(1):21–30. <https://doi.org/10.1016/j.adolescence.2011.06.008>.
- De Meyer S, Kemigisha E, Reeuwijk M Van, Kågesten A, Kristien M. Say it out loud—Sexual Wellbeing Matters: perspectives from young people in Ecuador and Uganda. 2022;(March).
- Markham CM, Lormand D, Gloppen KM, Peskin MF, Flores B, Low B, et al. Connectedness as a predictor of sexual and reproductive health outcomes for youth. *J Adolesc Heal*. 2010;46(3):S23.
- Bastien S, Kajula L, Muhwezi W. A review of studies of parent-child communication about sexuality and HIV/AIDS in sub-Saharan Africa. *Reprod Health*. 2011;8(1):25. Available from: <http://www.reproductive-health-journal.com/content/8/1/25>.
- Fernández-García C-M, Rodríguez-Menéndez C, Peña-Calvo J-V. Parental control in interpersonal acceptance-rejection theory: a study with a Spanish sample using Parents' Version of Parental Acceptation-Rejection/Control Questionnaire. *An Psicol*. 2017;33(3):652.
- Stacey L. The family as gender and sexuality factory: a review of the literature and future directions. *Sociol Compass*. 2021;15(4):1–13.
- Baku EAK, Agbemaflle I, Kotoh AM, Adanu RMK. Parents' experiences and sexual topics discussed with adolescents in the Accra Metropolis, Ghana: a qualitative study. *Adv Public Heal*. 2018;2018:1–12.

10. WHO. Helping parents in developing countries improve adolescents' health. 2007; Available from: http://apps.who.int/iris/bitstream/handle/10665/43725/9789241595841_eng.pdf?sequence=1.
11. Muhwezi WW, Katahoire AR, Banura C, Mugooda H, Kwesiga D, Bastien S, et al. Perceptions and experiences of adolescents, parents and school administrators regarding adolescent-parent communication on sexual and reproductive health issues in urban and rural Uganda Adoles-cent Health. *Reprod Health*. 2015;12(1):1–16. <https://doi.org/10.1186/s12978-015-0099-3>.
12. Bushajja E, Sunday F, Asingizwe D, Olayo R, Abong'o B. Factors that hinder parents from the communicating of sexual matters with adolescents in Rwanda. *Rwanda J Heal Sci*. 2013;2(2):13.
13. Guilamo-Ramos V, Soletti AB, Burnette D, Sharma S, Leavitt S, McCa-rthy K. Parent-adolescent communication about sex in rural India: U.S.-India collaboration to prevent adolescent HIV. *Qual Health Res*. 2012;22(6):788–800.
14. Jejeebhoy SJ, Santhya KG. Parent-child communication on sexual and reproductive health matters: perspectives of mothers and fathers of youth in India. *Popul Counc*. 2011;1–51.
15. Jerman P, Constantine NA. Demographic and psychological predictors of parent-adolescent communication about sex: a representative statewide analysis. *J Youth Adolesc*. 2010;39(10):1164–74.
16. Lambert H, Wood K. A comparative analysis of communication about sex, health and sexual health in India and South Africa: implications for HIV prevention. *Cult Heal Sex*. 2005;7(6):527–41.
17. Mbugua N. Factors inhibiting educated mothers in Kenya from giving meaningful sex-education to their daughters. *Soc Sci Med*. 2007;64(5):1079–89.
18. Meschke LL, Dettmer K. "Don't cross a man's feet": Hmong parent-daugh-ter communication about sexual health. *Sex Educ*. 2012;12(1):109–23.
19. Vilanculos E, Nduna M. "The child can remember your voice": parent-child communication about sexuality in the South African context. *Afr J AIDS Res*. 2017;16(1):81–9.
20. Wanje G, Masese L, Avuvika E, Baghazal A, Omoni G, Scott MR. Parents' and teachers' views on sexual health education and screening for sexu-ally transmitted infections among in-school adolescent girls in Kenya: a qualitative study. *Reprod Health*. 2017;14(1):1–11.
21. Shamseer L, Moher D, Clarke M, Gherzi D, Liberati A, Petticrew M, et al. Preferred reporting items for systematic review and meta-analysis proto-cols (prisma-p) 2015: elaboration and explanation. *BMJ*. 2015;349(Janu-ary):1–25. <https://doi.org/10.1136/bmj.g7647>.
22. Higgins JPT, Altman DG. Assessing risk of bias in included studies. *Cochrane Handb Syst Rev Interv Cochrane B Ser*. 2008;187–241.
23. Sterne JAC, Hernán MA, Reeves BC, Savović J, Berkman ND, Viswanathan M, et al. ROBINS-I: a tool for assessing risk of bias in non-randomised stud-ies of interventions. *BMJ*. 2016;355.
24. Granholm A, Alhazzani W, Möller MH. Use of the GRADE approach in systematic reviews and guidelines. *Br J Anaesth*. 2019;123(5):554–9.
25. Deeks JJ, Higgins JPT, Altman DG, Group CSM. Analysing data and under-taking meta-analyses. *Cochrane Handb Syst Rev Interv*. 2019;241–84.
26. Fletcher J. What is heterogeneity and is it important? *BMJ*. 2007;334(7584):94–6.
27. Borenstein M, Higgins JPT, Hedges LV, Rothstein HR. Basics of meta-anal-ysis: I2 is not an absolute measure of heterogeneity. *Res Synth Methods*. 2017;8(1):5–18.
28. Tufanaru C, Munn Z, Stephenson M, Aromataris E. Fixed or random effects meta-analysis? Common methodological issues in systematic reviews of effectiveness. *Int J Evid Based Healthc*. 2015;13(3):196–207.

Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in pub-lished maps and institutional affiliations.