

Reducing unwanted adolescent pregnancies in Kenya: A policy brief with evidence-based options

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Abstract

Adolescent pregnancy is a global health issue that affects millions of young girls and their families. According to the World Health Organization, approximately 16 million adolescents aged 15-19 years give birth annually, representing 11% of all births worldwide. Most of these pregnancies occur in low- and middle-income countries (LMIC), especially in Sub-Saharan Africa. The burden of adolescent pregnancy in Kenya is 15% of girls aged 15-19 years, with 2.7 % of adolescents aged 15 years having ever been pregnant. Unintended pregnancies among adolescents in Kenya account for most maternal morbidity and mortality cases from abortions. Pregnant adolescents are at an increased risk of pregnancy and childbirth complications, unsafe abortion, violence from intimate partners, HIV/AIDS,

and other sexually transmitted infections. Furthermore, infants born to adolescent mothers have higher probability of mortality and exposure to life-threatening conditions. This policy brief reviews and analyses the factors associated with unintended adolescent pregnancies in Kenya and identifies evidence-based interventions that can be applied in the local context. It argues that a multisectoral approach involving education, contraception, and incentives is needed to address adolescent pregnancies. In conclusion, more research is needed to tailor these interventions to the local Kenyan context while analyzing the availability and mobilization of resources.

Keywords: adolescent policy, adolescent pregnancies, teenage pregnancies

Introduction

Complications related to pregnancy, including unsafe abortion practices, are the leading cause of adolescent deaths among 15-19-year-olds (1,2). Every year, approximately 10 million adolescents from low- and middle-income countries (LMICs) have unintended pregnancies, with half of them ending up in unsafe abortions (1). However, statistics are likely underestimated in these countries, where access to abortion is restricted

and cultural norms limit adolescents from exercising their sexual and reproductive health rights (3). Pregnancy in adolescence is associated with poor health outcomes, higher rates of pregnancy complications and childbirth, and an increased risk of maternal and child mortality compared with mothers aged >20 years (4-6). The outbreak of the COVID-19 pandemic in Kenya led to the immediate closure of all learning institutions in March 2020 (7). Four months later, media reports highlighted a surge in adolescent

pregnancies in the country, revealing the challenges faced by adolescent girls and the associated risk of unintended pregnancies (8–10).

Situation analysis: Clarifying the problem of adolescent pregnancies

Adolescent pregnancies affect the attainment of the Sustainable Development Goals (SDGs) 1 and 4 because they increase the vulnerability of adolescent mothers to poverty and disrupt their education, further increasing their economic dependency (11,12). East Africa has the highest prevalence of unwanted adolescent pregnancies at 21.5% compared with 18% in the rest of Africa (13). Unintended pregnancies in Kenya are associated with poor pregnancy outcomes, including preterm deliveries, abortion, or stillbirth, with a higher incidence of pregnancy loss observed in first pregnancies (14,15). Pregnant adolescents develop coping strategies, including unsafe abortion, dropping out of school, and early marriages (16). Two percent of adolescent girls have been pregnant before the age of fifteen years (14). The percentage of teenage pregnancies in Kenya remains relatively unchanged, indicating that one in every five teenage girls aged 15-19 years are pregnant with their first child or have had a live birth, thus indicating limited progress in reducing adolescent pregnancies in Kenya (14,17,18).

Methods

Clarifying the problem

This study employed the Supporting the Use of Research Evidence (SURE) guides for preparing and using evidence-based policy briefs (19). This was done by clarifying the problem in the local context, deciding on and describing the policy options, identifying barriers to implementation, clarifying uncertainties, and determining what would be monitored and evaluated and how this would be carried out (19). A systematic literature review was conducted in the PubMed and Google Scholar databases, Kenya's Ministry of Health website, and local health networks to clarify the root causes and contributing factors to unintended adolescent pregnancies. The SURE guides were used to assess the suitability of the problem to include its importance in the community, available viable options, opportunity for change, uncertainty about the problem and potential solutions, availability of relevant global research, and interest in informed deliberation about the problem and potential solutions (19).

Creating an evidence base

Systematic reviews were collated to address the research question by searching selected databases

and screening all identified articles. Initial screening of the literature was performed to determine relevance to the research question. To determine the applicability and quality of systematic review articles, an adapted checklist by Lavis et al. for assessing the applicability of systematic reviews and the AMSTAR (A Measurement Tool to Assess Systematic Reviews) checklist were used (20,21). To build an evidence base and identify relevant articles to address the review question, a literature search was performed in PubMed and the Cochrane Library for systematic review databases using a prespecified strategy. An adapted version of the population, intervention, control, and outcomes (PICO) framework was used to describe the inclusion and exclusion criteria targeting the reviews on adolescent pregnancies. 91 studies were retrieved and imported into the Covidence systematic review software. The literature search results were summarized using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flow chart and the remaining four articles that qualified for the final analysis were assessed for applicability and quality. Using SUPPORT Tools for assessing the applicability of systematic reviews, the four remaining articles were further assessed to determine if they were applicable to the setting of the review question and therefore appropriate to be included in the evidence base (21–25). Ethical approval was obtained from the MPH Ethics Group, Usher Institute, University of Edinburgh.

Developing and evaluating policy-based options

Using the adapted Buffet framework, the applicability and transferability of the evidence extracted in systematic reviews was assessed for applicability and transferability to the Kenyan context (26). Political acceptability, social acceptability, availability of essential resources, and institutional capacity were assessed. The magnitude of the health problem in the local setting, the potential reach and cost-effectiveness of the characteristics of the intervention, and the target population were determined while recognizing locally existing policies and how they can be incorporated.

Developing an implementation strategy

Using the SURE guides, potential barriers and enablers to the implementation of policies were systematically identified and assessed.

Approach and Results

In the local context, 22 articles were obtained. Local evidence revealed several key factors as the root causes of adolescent pregnancy in Kenya, including structural and systemic factors leading to

lack of access to contraceptives, lack of education on sexuality, negative media influence, poverty, and lack of parental guidance (27–33).

To create an evidence base, the research question sought interventions and strategies that have been used in LMICs to reduce unintended pregnancies. Therefore, reviews reporting on interventions carried out in LMICs were considered due to similarities with the Kenyan context. These include resource constraints, health system arrangements, and general contextual factors such as policy spaces and sociopolitical situations that may undermine or facilitate the success of interventions compared with those carried out in high-income countries. The four articles measured pregnancy and contraceptive use as outcomes, with educational strategies appearing universally as the primary intervention. These articles identified four forms of interventions that were also evaluated for their effectiveness in addressing adolescent pregnancies. Interventions were classified into four categories: incentive-based, educational, contraceptive-promoting, and combined. Incentive-based interventions involve providing incentives such as cash or in-kind benefits and encouraging school attendance (22,23). Educational interventions aim to promote knowledge and awareness of sexual and reproductive health among adolescents, and to change attitudes and behaviors related to it (22,24,25). Contraceptive-promoting interventions offered education and access to contraceptives for adolescents (23,24). Combined interventions integrated two or more of the above approaches. The review article found that all types of interventions had some positive effects on preventing adolescent pregnancy. Engagement of stakeholders including adolescents, parents or guardians, and the Ministries of Health and Education representatives at both the national and devolved units of governments is key in considering the feasibility and acceptability of these options in the local context.

Evidence-based interventions to reduce adolescent pregnancies in Kenya

Incentive-based interventions

Incentive-based interventions include providing school uniforms and cash transfers to promote school attendance, either conditioned on attendance or unconditioned but determined by poverty levels (22,23). These require a financial commitment to achieve success and have been shown to reduce the rates of pregnancy among intervention groups compared to control groups, and are generally accepted by primary stakeholders, that is, parents and adolescents. There is a need to define and report objective measures of target

group identification to ensure equitable engagement of vulnerable groups, such as adolescents living with HIV and those with disabilities, and to mitigate stigmatization toward identified beneficiaries (34). Existing evidence from trials conducted in Kenya that used both cash transfers and education subsidies suggests that these interventions reduced the probability of pregnancy among young women by 5% points (35,36). However, a roll-out at the national level may be expensive for the government, highlighting the need for stakeholder engagement and input, including adolescents and implementers as primary and secondary stakeholders, respectively. Stakeholders should engage on budgetary implications. Existing evidence shows that policy options promoting school attendance can have positive sexual and reproductive health effects, such as avoiding early sexual debut and pregnancy among girls. In low-resource settings, these incentives may be critical to support girls and their families, especially when girls engage in transactional sex due to menstrual needs (37,38). However, concerns have been raised about the potential harm of incentive-based programs (36). Despite these concerns, none of the reviews included in the study reported an increase in pregnancy rates (22,24).

Educational interventions

All four studies included in this study found that implementing sexual and reproductive health education interventions for adolescents in schools, including social cognitive behavior change training, life skills programs, education on sexuality, risk reduction sessions, and education sessions promoting contraceptive use have the potential to reduce adolescent pregnancies and sexually transmitted infections (STIs) (22–25). Implementation of education interventions has the potential to reduce the rates of unintended pregnancies. However, implementing education-based strategies alone did not demonstrate strong evidence to reduce the rates of unintended pregnancies (22–25). This intervention is aligned with the Kenya National Adolescent Sexual and Reproductive Health Policy, which prioritizes strengthening comprehensive sexuality education for both in-school and out-of-school adolescents (39). Comprehensive sexuality education (CSE) improves attitudes related to sexual and reproductive health among adolescent boys and girls (40). In Kenya, consensus has not been reached on issues considered sensitive in different cultural backgrounds (41). Decentralization of CSE and stakeholder participation is an asset in the implementation of CSE (41). Gender-based programs that challenge cultural and gender norms may be more effective in reducing unintended pregnancies (42). However, reviewed studies did

not report on conducting sex education for girls and boys separately.

Innovative delivery models and trained personnel are needed to implement them in the local context in consultation with stakeholders, including adolescents, teachers, parents, and the public. Educational interventions for sexual and reproductive health among adolescents increase awareness, knowledge, and attitudes about STIs, contraception, and pregnancies and thus promote safe sexual behaviors, including abstinence, delayed sexual debut, and contraceptive use for sexually active individuals. However, one study included in Hindin et al.'s review reported a decrease in contraceptive and condom use following life skills training and sexual reproductive health education. This was attributed to the shift from more casual sex partners at baseline to a more regular partner(s) in the follow-up period with perceived lower risk among partners (23,43).

Contraceptive interventions

Contraceptive-promoting interventions for adolescents can reduce unintended pregnancies and the risk of STIs and HIV/AIDS. Studies have reported that providing contraceptives to those seeking them at health facilities may be effective (23,24). In contrast, two trials did not find any statistically significant differences in the risk of unintended pregnancy between the intervention and control groups (24,44,45). A combination of educational strategies and contraceptive-promoting interventions can lower the risk of unintended adolescent pregnancy (46). However, hesitancy among some religious groups toward the use of contraceptives highlights the need for extensive awareness campaigns and engagement with stakeholders (47). Access to youth-friendly health services is key to the success of this intervention, and negative attitudes from parents and health workers toward contraceptive use can increase the unmet need for contraception among adolescents (28,48). Reviews included in this study did not report any harm. However, stigmatization of adolescents using contraceptives has been observed in the LMICs (49). A knowledgeable community on the use of contraception has also been shown to have a positive influence; therefore, there is a need to engage the community through education programs (49).

Combined interventions

Two main combinations have been reported, both of which include education with or without incentive-based interventions (22,24). There is a need for further context-specific trials to determine the impacts of these combinations since the quality

of existing evidence is quite low and may not be a good ground for drawing conclusive recommendations (22,24). The GRADE framework was used to assess the quality of evidence available for each policy option. Overall, these reported interventions were of low to high quality, and further trials within the local context may be useful in testing these interventions, thus providing strong evidence-based support and confidence ascribed to each of the identified policy options (50). The policy options presented here are suitable and appropriate interventions. However, due to limited resources in the local context, the adoption of educational strategies and contraceptive-promoting interventions at the national level and combining these with occasional incentive-based interventions in selected special sites such as in informal settlements may be more feasible and practical, especially, considering cost implications (22–25).

Developing an implementation strategy

Successful implementation of these policies must include an analysis of the barriers and enablers of all three levels of interventions. Addressing these barriers in conjunction with strengthening available enablers and relying on evidence-based policy options alone or in unison is key to effective policies and programs aimed at reducing unintended adolescent pregnancies.

Barriers

1. Fear-inducing education strategies (51).
2. Lack of access to education due to poverty (11).
3. Negative community influence on contraceptive uptake and negative health care attitudes among young women (49,52).
4. Cultural and religious norms that prevent the delivery of contraceptives to adolescents, including laws that limit access to married women (49).
5. Infrastructural limitations such as physical inaccessibility of health facilities due to long distances and contraceptive stockouts (53).
6. Limited resources in the Kenyan context with a lack of support from the current adolescent health policy (39).

Enablers

1. Involvement of stakeholders in community and religious organizations

through education, policy implementation, and comprehensive sexuality education (39).

2. Community participation through education programs on contraceptive use (54).
3. Enhancing existing service provision channels to include the needs of adolescents and ensure their availability (55).
4. Cash transfers and nonmonetary incentives can promote school attendance and reduce the rates of unintended pregnancies (55).

Implementation strategies

1. Institute policies that provide an enabling environment for adolescents to exercise their sexual and reproductive health rights (28).
2. Deliberations on whom incentive-based interventions should target, the duration of the intervention, and potential integration into policy are needed for this policy option to be viable. This includes budgetary needs and allocations that also ensure that vulnerable groups are included (52).
3. Need to establish a coordinated multisectoral input that includes experts from the ministries of health and education, to develop evidence-based age-appropriate, religious, and culturally sensitive education content (56).
4. Need to engage all stakeholders to attain buy to encourage ownership and participation (39).

These multisectoral and multidisciplinary approaches to tackling adolescent pregnancies should be supported by evidence that caters to the different needs of adolescents namely those living with disability, HIV/AIDs, and other chronic illnesses (57-59) The monitoring and evaluation process for this policy involves setting valid and acceptable inputs, including finances, human resources, and material resources. Activities involve adjusting budgetary allocations and instituting guidelines, establishing intended outputs, which are gains or losses from policy implementation, and impact, which encompasses assessing desirable and undesirable effects. Evaluation should be built into the policy implementation program and involve comparing the proportion of unwanted adolescent pregnancies before and after implementation, measuring potential secondary

outcomes such as the prevalence of STIs, and conducting surveys to assess whether the key concerns of adolescents have been met.

Conclusion

Existing evidence indicates that one in five teenage girls in Kenya is either pregnant with their first child or has had a live birth. This suggests that while strategies may have been initiated to reduce rates of unintended adolescent pregnancies in Kenya, progress has been slow. This policy brief presents a thorough analysis of the issue of adolescent pregnancy in Kenya and proposes evidence-based solutions, including incentive-based, educational, contraceptive, and combined interventions. These options were evaluated on basis of their cost-effectiveness, feasibility, acceptability, equity, and sustainability. The policy brief highlights the significant implications of these findings for policy and practice. There is a need for a multisectoral approach that involves different stakeholders from health and education and emphasizes the need for a rights-based approach that upholds and safeguards the sexual and reproductive rights of adolescent girls. It underscores the importance of formulation, implementation, monitoring, and evaluation systems in policies aimed at reducing adolescent pregnancies in Kenya.

Declarations

Conflict of interest

The authors declare no conflicts of interest.

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References

1. World Health Organization. Adolescent Pregnancy. Geneva; 2020
2. World Health Organization. Adolescent Health. Geneva; 2015
3. Grimes DA, Benson J, Singh S, et al. Unsafe abortion: the preventable pandemic. *Lancet*. 2006;368(9550):1908-1919. doi:10.1016/S0140-6736(06)69481-6
4. Neal S, Matthews Z, Frost M, Fogstad H, Camacho AV, Laski L. Childbearing in adolescents aged 12-15 years in low resource countries: a neglected issue. New estimates from demographic and household surveys in 42 countries. *Acta Obstet Gynecol Scand*. 2012;91(9):1114-1118. doi:10.1111/j.1600-0412.2012.01467.x

5. Glassman A, Silverman R, McQueston K. Adolescent Fertility in Low- and Middle-Income Countries: Effects and Solutions. *Cent Glob Dev Work Pap No 295*. 2012
6. Global Strategy for Women's, Children's and Adolescents' Health (2016–2030). New York: Every Woman Every Child; 2015
7. Kenyatta, H.E. Uhuru (2020). Address to the nation by H.E. Uhuru Kenyatta, C.G.H, President of the Republic of Kenya and Commander-In-Chief of the defence forces on COVID-19, commonly known as coronavirus at Harambee House, Nairobi on 15th March 2020. Nairobi, 15 March. Available at <https://www.president.go.ke/2020/03/15/address-to-the-nation-by-h-e-uhuru-kenyatta-c-g-h-commander-in-chief-of-the-defence-forces-on-covid-19-commonly-known-as-coronavirus/>
8. Business Daily. Address teenage sexual and reproductive health. Business Daily. 2020 Aug
9. Aljazeera. Aljazeera. 2020 [cited 2021 Jun 28]. Schools shut and pregnancies rise in COVID-hit Kenya. Available from: <https://www.aljazeera.com/gallery/2020/11/16/schools-close-and-student-pregnancies-rise-in-lockdown-kenya/>
10. NPR broadcast. As Kenya Keeps Schools Shut, Teen Pregnancies Are Rising [Internet]. 2020. Available from: <https://www.npr.org/2020/07/11/889718651/as-kenya-keeps-schools-shut-teen-pregnancies-are-rising>
11. Williamson, N. E. (2012). Motherhood in Childhood: Facing the Challenge of Adolescent Pregnancy: UNFPA State of World Population 2013, United Nations Population Fund
12. UN. Sustainable Development Goals. 2015 [cited 2020 Sep 26]. 17 Goals to Transform Our World. Available from: <https://www.un.org/sustainabledevelopment/>
13. Kassa GM, Arowojolu AO, Odugogbe AA, Yalaw AW. Prevalence and determinants of adolescent pregnancy in Africa: a systematic review and Meta-analysis. *Reprod Health*. 2018;15(1):195. Published 2018 Nov 29. doi:10.1186/s12978-018-0640-2
14. Kenya National Bureau of Statistics. Demographic and Health Survey 2022. Demogr Health Surv 2022. 2023;1–23
15. Magadi M. Poor pregnancy outcomes among adolescents in South Nyanza region of Kenya. *Afr J Reprod Health*. 2006;10(1):26-38
16. Beguy D, Mumah J, Gottschalk L. Unintended pregnancies among young women living in urban slums: evidence from a prospective study in Nairobi city, Kenya. *PLoS One*. 2014;9(7):e101034. Published 2014 Jul 31. doi:10.1371/journal.pone.0101034
17. Ministry of Health Kenya. Kenya Demographic Health survey 2009. Nairobi: Demographic Health Survey; 2009
18. Kenya National Bureau of Statistics. Kenya Demographic Health Survey 2014. Nairobi; 2014
19. Collaboration S. World Health Organization. 2011 [cited 2020 Sep 28]. SURE Guides for Preparing and Using Evidence-Based Policy Briefs. Available from: <https://www.who.int/evidence/sure/guides/en/>
20. Shea BJ, Grimshaw JM, Wells GA, et al. Development of AMSTAR: a measurement tool to assess the methodological quality of systematic reviews. *BMC Med Res Methodol*. 2007;7:10. Published 2007 Feb 15. doi:10.1186/1471-2288-7-10
21. Lavis JN, Oxman AD, Lewin S, Fretheim A. SUPPORT Tools for evidence-informed health Policymaking (STP). *Health Res Policy Syst*. 2009;7 Suppl 1(Suppl 1):I1. Published 2009 Dec 16. doi:10.1186/1478-4505-7-S1-I1
22. Mason-Jones AJ, Sinclair D, Mathews C, Kagee A, Hillman A, Lombard C. School-based interventions for preventing HIV, sexually transmitted infections, and pregnancy in adolescents. *Cochrane Database Syst Rev*. 2016;11(11):CD006417. Published 2016 Nov 8. doi:10.1002/14651858.CD006417.pub3
23. Hindin MJ, Kalamar AM, Thompson TA, Upadhyay UD. Interventions to Prevent Unintended and Repeat Pregnancy Among Young People in Low- and Middle-Income Countries: A Systematic Review of the Published and Gray Literature. *J Adolesc Health*. 2016;59(3 Suppl):S8-S15. doi:10.1016/j.jadohealth.2016.04.021
24. Oringanje C, Meremikwu MM, Eko H, Esu E, Meremikwu A, Ehiri JE. Interventions for preventing unintended pregnancies among adolescents. *Cochrane Database Syst Rev*. 2009;(4):CD005215. Published 2009 Oct 7. doi:10.1002/14651858.CD005215.pub2
25. Lopez LM, Bernholc A, Chen M, Tolley EE. School-based interventions for improving contraceptive use in adolescents. *Cochrane Database Syst Rev*. 2016;2016(6):CD012249. Published 2016 Jun 29. doi:10.1002/14651858.CD012249
26. Buffett C, Ciliska D, Thomas H. *Can I Use This Evidence in my Program Decision? Assessing Applicability and Transferability of Evidence*. Hamilton, ON: National Collaborating Centre for Methods and Tools (NCCMT) School of Nursing, McMaster University; 2007
27. Were M. Determinants of teenage pregnancies: the case of Busia District in Kenya. *Econ Hum Biol*. 2007;5(2):322-339. doi:10.1016/j.ehb.2007.03.005
28. Hagey JM, Akama E, Ayieko J, Bukusi EA, Cohen CR, Patel RC. Barriers and facilitators adolescent females living with HIV face in accessing contraceptive services: a qualitative assessment of providers' perceptions in western Kenya. *J Int AIDS Soc*. 2015;18(1):20123. Published 2015 Sep 16. doi:10.7448/IAS.18.1.20123
29. Wado YD, Sully EA, Mumah JN. Pregnancy and early motherhood among adolescents in five East African countries: a multi-level analysis of risk and protective factors. *BMC Pregnancy Childbirth*. 2019;19(1):59.

- Published 2019 Feb 6. doi:10.1186/s12884-019-2204-z
30. Godia PM, Olenja JM, Hofman JJ, van den Broek N. Young people's perception of sexual and reproductive health services in Kenya. *BMC Health Serv Res.* 2014;14:172. Published 2014 Apr 15. doi:10.1186/1472-6963-14-172
 31. Solanke BL, Kupoluyi JA, Akinyemi JO, Banjo OO. Do Community Characteristics Influence Unintended Pregnancies in Kenya?. *Malawi Med J.* 2019;31(1):56-64. doi:10.4314/mmj.v31i1.10
 32. Ikamari L, Izugbara C, Ochako R. Prevalence and determinants of unintended pregnancy among women in Nairobi, Kenya. *BMC Pregnancy Childbirth.* 2013;13:69. Published 2013 Mar 19. doi:10.1186/1471-2393-13-69
 33. Ngom P, Magadi MA, Owuor T. Parental presence and adolescent reproductive health among the Nairobi urban poor. *J Adolesc Health.* 2003;33(5):369-377. doi:10.1016/s1054-139x(03)00213-1
 34. Obare F, van der Kwaak A, Birungi H. Factors associated with unintended pregnancy, poor birth outcomes and post-partum contraceptive use among HIV-positive female adolescents in Kenya. *BMC Womens Health.* 2012;12:34. Published 2012 Oct 6. doi:10.1186/1472-6874-12-34
 35. Duflo E, Dupas P, Kremer M. Education, HIV, and Early Fertility: Experimental Evidence from Kenya. *Am Econ Rev.* 2015;105(9):2757-2797. doi:10.1257/aer.20121607
 36. Palermo T, Handa S, Peterman A, Prencipe L, Seidenfeld D. Unconditional Government Social Cash Transfer in Africa Does not Increase Fertility. *J Popul Econ.* 2016;29(4):1083-1111. doi:10.1007/s00148-016-0596-x
 37. Monstad K, Propper C, Salvanes KG. Education and fertility: Evidence from a natural 547 experiment. *Scand J Econ.* 2008;110(4):827-52
 38. Phillips-Howard PA, Otieno G, Burmen B, et al. Menstrual Needs and Associations with Sexual and Reproductive Risks in Rural Kenyan Females: A Cross-Sectional Behavioral Survey Linked with HIV Prevalence. *J Womens Health (Larchmt).* 2015;24(10):801-811. doi:10.1089/jwh.2014.5031
 39. Ministry of Health Kenya. National Adolescent Sexual and Reproductive Health Policy, 2015. Natl Adolesc Sex Reprod Health Policy. 2015;1-37
 40. Montgomery P, Knerr W. Review of the evidence on sexuality education: report to inform the update of the UNESCO International technical guidance on sexuality education.
 41. Keogh SC, Stillman M, Awusabo-Asare K, et al. Challenges to implementing national comprehensive sexuality education curricula in low- and middle-income countries: Case studies of Ghana, Kenya, Peru and Guatemala. *PLoS One.* 2018;13(7):e0200513. Published 2018 Jul 11. doi:10.1371/journal.pone.0200513
 42. Haberland NA. The case for addressing gender and power in sexuality and HIV education: a comprehensive review of evaluation studies. *Int Perspect Sex Reprod Health.* 2015;41(1):31-42. doi:10.1363/4103115
 43. Diop NJ, Bathidja H, Touré ID, Dieng T, Mané B, RamaRao S, Adamchak SE, Wong E, Ndoye A, Sy A, Fall B. Improving the reproductive health of adolescents in Senegal.
 44. Raymond EG, Stewart F, Weaver M, Monteith C, Van Der Pol B. Impact of increased access to emergency contraceptive pills: a randomized controlled trial. *Obstet Gynecol.* 2006;108(5):1098-1106. doi:10.1097/01.AOG.0000235708.91572.db
 45. Raine TR, Harper CC, Rocca CH, et al. Direct access to emergency contraception through pharmacies and effect on unintended pregnancy and STIs: a randomized controlled trial. *JAMA.* 2005;293(1):54-62. doi:10.1001/jama.293.1.54
 46. Oringanje C, Meremikwu MM, Eko H, Esu E, Meremikwu A, Ehiri JE. Interventions for preventing unintended pregnancies among adolescents. *Cochrane Database Syst Rev.* 2009;(4):CD005215. Published 2009 Oct 7. doi:10.1002/14651858.CD005215.pub2
 47. Abdulla S. *Religious Affiliation and contraceptive use in Kenya* (Doctoral dissertation, University of the Witwatersrand, Faculty of Humanities, School of Social Sciences).
 48. Denno DM, Hoopes AJ, Chandra-Mouli V. Effective strategies to provide adolescent sexual and reproductive health services and to increase demand and community support. *J Adolesc Health.* 2015;56(1 Suppl):S22-S41. doi:10.1016/j.jadohealth.2014.09.012
 49. Mutumba M, Wekesa E, Stephenson R. Community influences on modern contraceptive use among young women in low and middle-income countries: a cross-sectional multi-country analysis. *BMC Public Health.* 2018;18(1):430. Published 2018 Apr 2. doi:10.1186/s12889-018-5331-y
 50. Moberg J, Oxman AD, Rosenbaum S, et al. The GRADE Evidence to Decision (EtD) framework for health system and public health decisions. *Health Res Policy Syst.* 2018;16(1):45. Published 2018 May 29. doi:10.1186/s12961-018-0320-2
 51. Guttmacher Institute. (2017). Sexuality education in Kenya: New evidence from three counties. Fact Sheet <https://www.guttmacher.org/fact-sheet/sexuality-education-kenya>
 52. Ochako R, Mbondo M, Aloo S, et al. Barriers to modern contraceptive methods uptake among young women in Kenya: a qualitative study. *BMC Public Health.* 2015;15:118. Published 2015 Feb 10. doi:10.1186/s12889-015-1483-1
 53. Chandra-Mouli V, McCarragher DR, Phillips SJ, Williamson NE, Hainsworth G. Contraception for adolescents in low and

- middle income countries: needs, barriers, and access. *Reprod Health*. 2014;11(1):1. Published 2014 Jan 2. doi:10.1186/1742-4755-11-1
54. Burke E, Kébé F, Flink I, van Reeuwijk M, le May A. A qualitative study to explore the barriers and enablers for young people with disabilities to access sexual and reproductive health services in Senegal. *Reprod Health Matters*. 2017;25(50):43-54. doi:10.1080/09688080.2017.1329607
55. Engelbert Bain L, Amu H, Enowbeyang Tarkang E. Barriers and motivators of contraceptive use among young people in Sub-Saharan Africa: A systematic review of qualitative studies. *PLoS One*. 2021;16(6):e0252745. Published 2021 Jun 4. doi:10.1371/journal.pone.0252745
56. World Health Organization. Adolescents: health risks and solutions. Geneva; 2018
57. Chandra-Mouli V, Patel SV. Mapping the knowledge and understanding of menarche, menstrual hygiene and menstrual health among adolescent girls in low- and middle-income countries. *Reprod Health*. 2017;14(1):30. Published 2017 Mar 1. doi:10.1186/s12978-017-0293-6
58. Dick B, Ferguson J, Chandra-Mouli V, Brabin L, Chatterjee S, Ross DA. Review of the evidence for interventions to increase young people's use of health services in developing countries. *World Health Organ Tech Rep Ser*. 2006;938:151-341.
59. Chandra-Mouli V, Akwara E, Engel D, et al. Progress in adolescent sexual and reproductive health and rights globally between 1990 and 2016: what progress has been made, what contributed to this, and what are the implications for the future?. *Sex Reprod Health Matters*. 2020;28(1):1741495. doi:10.1080/26410397.2020.1741495