Proceedings of the Public Health and Well-being Conferenc, Vol. 5, 2024, pp. 55-69

ISSN 2659-2096
DOI: https://doi.org/10.32789//publichealth.2024.5105

Effectiveness of a Community-Based Intervention Program in Preventing Adolescent Pregnancy: A Systematic Literature Review

P.E. Mahmud[1,3], R.D. Yanti[1], L. Sekarrini[1], L. Anggraeni[1], L. Nurdini[1], Farhati[1], D.A. Bugis[2], T. Krianto[3], K.N. Siregar[4]

[1]*Doctoral Program in Public Health Sciences, Faculty of Public Health, Universitas Indonesia, petrianamahmud@gmail.com, dewiyantirisna@gmail.com, loveria2012@gmail.com, leginasyamsiar@gmail.com, nurdinilia1@unja.ac.id, f4rh4t1@gmail.com*

[2]*Program of Nursing Science, Sekolah Tinggi Ilmu Kesehatan Pasapua Ambon, dewiarwini87@gmail.com*

[3]*Department of Health Promotion and Behavioral Sciences, Faculty of Public Health, Universitas Indonesia, petrianamahmud@gmail.com, tkarjoso@gmail.com*

[4]*Department of Biostatistics and Population Studies, Faculty of Public Health, Universitas Indonesia, nazarudin.kemal51@gmail.com*

EFFECTIVENESS OF A COMMUNITY-BASED INTERVENTION PROGRAM IN PREVENTING ADOLESCENT PREGNANCY: A SYSTEMATIC LITERATURE REVIEW

Abstract: Adolescent pregnancy leads to unsafe abortion, school dropout, premature birth, stunting and pregnancy complications that can increase maternal and infant mortality. Community-based intervention programs can provide a comprehensive and effective approach that can be tailored to the specific needs of the local population. This SLR aims to identify community-based intervention programs that are effective in preventing adolescent pregnancy. This study used Preferred Reporting Items for Systematic Review and Meta Analysis (PRISMA). Databases were sourced from Embase, ProQuest, Scopus, and PubMed from 2018-2023. Articles were search by keywords and extracted based on inclusion and exclusion criteria. This SLR generated 16 articles. Four intervention programs focused on sexual antecedents. There were no articles with intervention programs that only focused on non-sexual antecedents and 12 intervention programs that focused on a combination of sexual and non-sexual antecedents. Intervention programs that focus on a combination of sexual and non-sexual antecedents, such as comprehensive sexual education, are the most effective programs that can be used in preventing adolescent pregnancy. Conclusions of the study is the intervention programs that focus on a combination of sexual and non-sexual antecedents can be considered by health promoters and stakeholders to develop pregnancy prevention strategies for adolescents.

Keywords: Adolescent, Pregnancy Prevention, Program Intervention, Sexual Reproductive Health

Introduction

Adolescent pregnancy is a global phenomenon with well-recognized causes and serious health, social and economic impacts (WHO, 2023b). Adolescent girls, particularly those in early adolescence, are particularly vulnerable to the health impacts of pregnancy and childbirth. In 2019, adolescents aged 15-19 years in low- and middle-income countries (LMICs) were estimated to experience 21 million pregnancies annually, of which around 50% were unintended and resulted in around 12 million births. Based on 2019 data, 55% of unintended pregnancies among adolescent girls aged 15-19 years ended in unsafe abortion (WHO, 2023b). The birth rate for adolescent girls aged 10-14 years in 2023 is estimated at 1,5 per 1000 women, with higher rates in Sub-Saharan Africa (4,4) and Latin America and the Caribbean (2,3) (WHO, 2024). Pregnancy and childbirth complications experienced by adolescent mothers (maternal conditions) are one of the leading causes of Disability Addjusted Life Years (DALYs) and mortality in girls aged 15-19 years (UNICEF, 2022; WHO, 2023a).

Some factors that contribute to unplanned or unwanted pregnancies in adolescents are adolescents being under pressure to marry and bear children early, having limited educational and employment prospects, adolescents not knowing how to avoid pregnancy, neglect by parents, lack of community responsibility, and belief in a culture that encourages early marriage. (Widyaningsih *et al*., 2021; Nabugoomu *et al*., 2020; WHO, 2023c). Pregnancy prevention efforts can be carried out by utilizing various sectors such as medical teams, schools and communities, as well as internet sites designed to provide information about sexuality to adolescents. Cooperation between families, schools and the whole community is needed to improve adolescent reproductive health improvement programs (Stahl *et al*., 2016). School-based interventions have been shown to be effective in preventing teenage pregnancy but many reviews also report weak and inconsistent behaviour change (Kholifah *et al*., 2017). Community-based programs are considered effective in preventing teenage pregnancy because they are able to reach adolescents outside the school environment, offer more holistic and sustainable support, and involve various elements in the community to create a supportive environment for adolescents by considering local culture (Kirby, 2007). Based on this, this SLR attempts to summarize the most effective community-based intervention programs in preventing adolescent pregnancy.

Methodology

Design

This article describes the steps in conducting a literature review. It starts by defining the purpose of the literature review and then investigates how keywords are used to determine the scope of the review. The next step is to review the articles by identifying the problem, searching the literature using specific keywords, assessing the data, and performing analysis and presentation (Cranwell and Dally, 2001). The publications were then described based on the PICOS framework (Population/ problem, Intervention, Comparation, Outcome, Study Design*).*

Data Sources and Strategy

This systematic review used the Preferred Reporting Items for Systematuc Review and Meta Analysis (PRISMA) approach in selecting articles from previous studies. Research articles were obtained by accessing Embase, ProQuest, Scopus, and PubMed electronic databases using the keywords (adolescent OR teens OR youth) AND (sex education OR health promotion OR intervention study) AND (pregnancy prevention OR teen pregnancy OR unintended pregnancy).

Inclusion Criteria

The article search strategy uses the PICOS framework (Population / problem, Intervention, Comparation, Outcome, Study Design) which has been determined by the researcher and described through the PRISMA diagram. The PICOS framework used in this SLR can be described below:

1. *Population*: A study focusing on adolescents/youth in the community (after school) aged 10-24 years.
2. *Intervention*: Studies that examine intervention programs in the prevention of adolescent pregnancy.
3. *Comparators*: Comparison intervention groups used are other interventions or groups that are only observed without being given an intervention.
4. *Outcomes*: Studies that describe intervention programs that have an effect on reducing adolescent pregnancy rates, changing the age of early sexual initiation, or increasing knowledge and attitudes about preventing teenage pregnancy and improving life skills.
5. *Study Design*: RCT, Mixed Methode, Eksperimental dan Quasi-experimental studies.
6. Publication Years: 2018 - 2023.

Data Analysis Procedure

In conducting the data analysis, all articles were reviewed. A quick summary and reading was then conducted to extract data based on the PICOS framework found in all relevant articles.

Screening

Articles were screened based on research title, abstract, and full text with an assessment of study quality using The Joanna Briggs Institute Guideline with a cut-off point value of 50%.

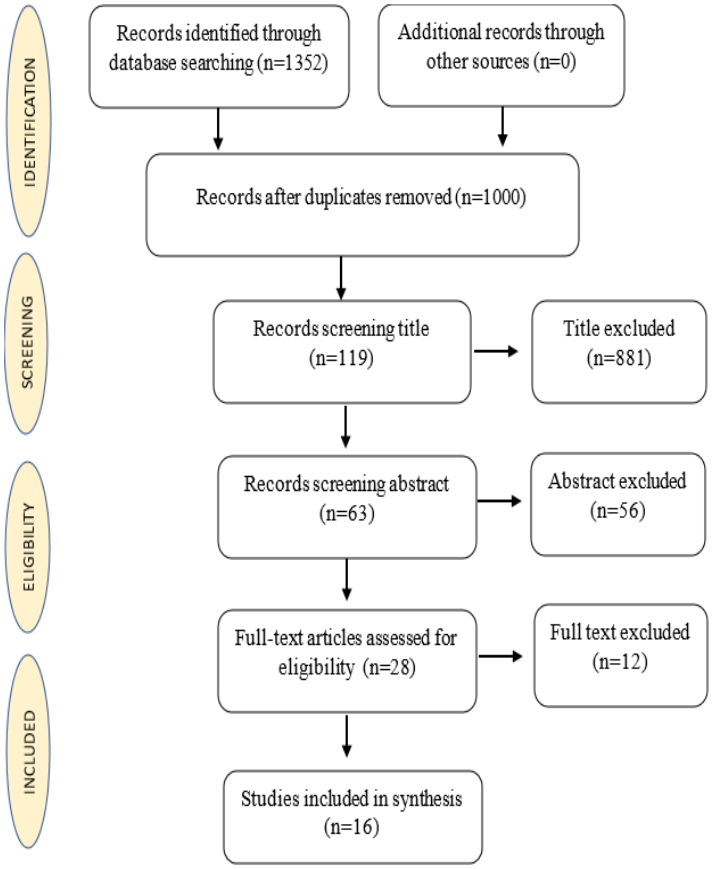

Figure 1: PRISMA Flow Diagram of Article Search Result

Results and Discussion

This study found 1352 articles from four databases which are Embase, ProQuest, Scopus, and PubMed from 2018-2023. The results of the screening stage resulted in 16 studies that fit the research criteria. After quality assessment, the 16 studies were eligible for analysis. The results of the selection of study articles can be described in the table below.

Table 1: Results of 16 Studies

No.	Author/Year	Country	Population	Intervention	Comparison	Outcomes	Study Design	Category
1.	(Chinman *et al*., 2018)	US	Adolescent aged 11-13 years (n = 32 boys and girls club)	Making Proud Choice Supported by Gettting to Outcomes (MPC + GTO) Comprehensive Sexual Education	Making Proud Choice (MPC only)	Increase knowledge, attitude, intention about sex and condoms	RCT	Combination Programs Sexual and Non Sexual Antecendents
2.	(Manlove *et al*., 2022)	US	Black and Latino teenage boys aged 15 – 18 years. (n = 51)	Manhood 2.0 Social messages about masculinity, gender norms, focused on improving knowledge, attitudes, self-efficacy, gender norms, and social skills competencies	NA	Increase knowledge about SRH, contraceptive and positive attitude to support partner in pregnancy prevention	Mixed Methods	Combination Programs Sexual and Non Sexual Antecendents
3.	(Pedrana *et al*., 2020)	Indonesia	Young people aged 16–24 years. (n = 235)	SMS (Short Message Service) Educational and persuasive text messages about smoking, reproductive health and promoting health services.	NA	Increased knowledge on sexual and reproductive health and related programs in Indonesia and the dangers of smoking.	Quasi-experimental pretest–posttest trial	Combination Programs Sexual and Non Sexual Antecendents
4.	(Oman *et al*., 2018)	US	Adolescent aged 13-18 years (n = 1037)	Power Through Choice (PTC) Educational curriculum about sexual health, contraceptive use, and pregnancy prevention strategies, as well as skill development.	General health education programs about topics	The intervention group had a significantly lower chance of having unprotected sexual intercourse, and getting	RCT	Combination Programs Sexual and Non Sexual Antecendents

					such as healthy eating.	pregnant or getting someone pregnant than control group.		
5.	(Ybarra *et al*., 2021)	US	14- to 18-year-old cisgender LGB+ girls. (n = 948)	Girl2Girl (Text Messaging) Text messaging–based about information, motivation, behavioral skills model focuses on pregnancy prevention.	Message about diet, exercise, and how to deal with bullying.	Increase contraceptive practices and a higher likelihood of condom use during sexual activity.	RCT	Combination Programs Sexual and Non Sexual Antecendents
6.	(Martínez-garcía *et al*., 2023)	US	Young women, aged 14-18 years. (n = 1.210)	Crush (Mobile App) Crush is a mobile application about sexual health education and promoting the use of SRH services and contraception.	An existing application about free nutrition and physical fitness for adolescent women.	Increase accessing SRH service and believing to use birth control consistently and perceiving they would get pregnant if didn't use birth control.	RCT	Programs that Focused on Sexual Antecendents
7.	(Behm-Morawitz *et al*., 2019)	US	Adolescent girls aged 14 to 18 years (n= 147)	MTV 16 and Pregnant (EE) TV series to prevent adolescent pregnancy.	Two episodes of another MTV docudrama unrelated to teen pregnancy.	Develop positive attitudes toward teen pregnancy. Levels of pregnancy risk and health literacy were examined but were not significant moderators.	Pre-post tes Quasi Eks	Programs that Focused on Sexual Antecendents
8.	(Aparicio *et al*., 2019)	US	Woman were experiencing homelessness aged 14–22 years. (n = 51).	Wahine Talk Intervention to individual, interpersonal, and institutional/sexual health care system levels to bring them into the drop-in center, link to	NA	Improve readiness to utilize birth control and linkage to sexual health care, actual birth control usage, and	Mixed Methods	Combination Programs Sexual and Non Sexual Antecendents

				sexual health care, and improve birth control education, access, and use.		prevent adolescent pregnancy.		
9.	(Campero *et al*., 2021)	Mexico	Adolescents 11–19 years old. (n= 1193)	"I matter, I learn, I decide" Program focused on (1) information on sexual and reproductive health and rights; (2) promoting gender equity; (3) improving perceived self-eficacy.	Standard education curriculum at school and the standard health services.	Signifcantly increase in the knowledge and self-efcacy concerning SRH.	Quasi-experimental design	Combination Programs Sexual and Non Sexual Antecendents
10.	(Manlove *et al*., 2021)	US	Female, aged 18–20 (n = 798)	Pulse (App) Comprehensive, medically accurate sexual and reproductive health information to choose an effective birth control, access SRH services, and prevent unintended pregnancies.	General health apps focuses on exercise, healthy eating, sleep, and emotional health.	Increase contraceptive knowledge in earlier evaluation but not sustained at six-month follow-up.	RCT	Programs that Focused on Sexual Antecendents
11.	(Brown, Turner and Christensen, 2021)	US	Rural youth aged 13-19 years (n= 786)	Linking Families and Teens (LiFT) Program focusing on rural youth & their parent/caregiver(s) to increasing family connectedness, youth's self-efficacy, knowledge, and skills related to sexual health.	NA	Significant effects on youth's frequency of communication with their parenting adults about sexuality and perceived competence to prevent pregnancy.	RCT	Combination Programs Sexual and Non Sexual Antecendents

12.	(Cordova *et al*., 2020)	US	Youth and clinicians. 50 youths aged 13 to 21 years. .	Storytelling 4 Empowerment (S4E – Mobile App) Mobile apps about substance use, sexual risk behaviors, and improve uptake of STI/HIV testing through improving clinician-youth risk communication, prevention knowledge, and self-efficacy.	Printed PDF version of the S4E tobacco module.	Increase youth-clinician risk communication in prevention knowledge, reductions substance use, alcohol, tobacco, drug use and also suggest a reduction in the proportion of youths condomless sex and alcohol use before sex.	RCT	Combination Programs Sexual and Non Sexual Antecendents
13.	(Tingey *et al*., 2021)	US	Native American youths aged 11-19 years (n=534)	Respecting the Circle of Life Program (RCL) Comprehensive sexual education to development soft skills such as problem solving, communicating with sexual partners and parents.	Educational lessons on nutrition, fitness, outdoor recreation.	Increase knowledge, condom use, contraceptive use self-efficacy & contraceptive use, negotiation and communication skills with their parents about SRH.	RCT	Combination Programs Sexual and Non Sexual Antecendents
14.	(Jenner *et al*., 2023)	US	Female; be 18 or 19 years old (n= 1770)	Vidio Plan A (EE) The video about five primary topics (1) pregnancy, STI, and HIV risk perception; (2) contraceptive options (3) condom use and partner negotiation skills; (4) importance of regular HIV/STI testing; (5) communication about sexual with a health provider.	Video about the hazards of cigarettes.	Individuals assigned to Plan A had higher contraceptive knowledge, may be more likely to get sexually transmitted infection (STI) testing, and may have elevated HIV/STI risk perceptions.	RCT	Combination Programs Sexual and Non Sexual Antecendents

15.	(Lowrey, Altman and Jungmeyer, 2021)	US (Missouri)	Youth aged 11-19 years (n = 1335)	Missouri PREP Program (TOP, MPC dan BAR) Comprehensive Sexual Education with curriculum to improve knowledge, attitude, intention and life skill to prevent teen pregnancy.	NA	Program change in intentions to use a condom are highest among the three intention outcomes. Missouri PREP saw improvements in knowledge, attitudes, and intentions as a result of program implementation.	Quasi Experiment (pre-post design)	Combination Programs Sexual and Non Sexual Antecendents
16.	(Philliber, 2021)	US	LGBTQ aged 14-20 years. (n =1.401) .	The IN.clued: Inclusive Healthcare e Youth and Providers Empowered Program is an educational intervention for lesbian, gay, bisexual, transgender, queer, and questioning youths. by providing a workshop about sexual reproductive health, contraceptive and promoting sexual health care.	Films by and for, LGBTQ youths about sexual orientation and gender identity; community scavenger hunts; poetry slams; discussions about relationships; and activities related to the appreciation of individuals' unique strengths.	Increase knowledge and healthcare self-efficacy scores and had been to a doctor or clinic for and received contraception or birth control..	RCT	Programs that Focused on Sexual Antecendents

The table above shows that 14 studies were conducted in the United State of America, 1 study was conducted in Indonesia and 1 study was conducted in Mexico, with a sample size between 50 and 1770 research samples. Based on the study design, 10 studies used Randomized Control Trial design, 2 studies used mixed methods and 4 studies used quasi-experiment pre and post test design. The intervention programs in this study were divided into three parts, namely programs that focus on sexual antecedents, programs that focus on non-sexual antecedents and programs that focus on combining sexual antecedents and non-sexual antecedents. The types of intervention programs found were four intervention programs that focused on sexual antecedents (sexual and reproductive health education, contraceptive use, and promotion of reproductive health service facilities for adolescents). There were no intervention programs that only focused on non-sexual antecedents, and there were 12 intervention programs that focused on a combination of sexual antecedents and non-sexual antecedents (comprehensive sexual education and a combination of sexual and reproductive health education with life skills development).

A. Intervention Programs Focused on Sexual Antecedents

Intervention programs that focus on sexual antecendents are curricula-based programs which include abstinence only programs and sexual and reproductive health education, sexual and HIV education for parents and families, health service strengthening programs to increase access to contraception and community wide initiatives with many components (Douglas Kirby, 2021).

The articles included in this intervention program are articles number 6, 7, 10, and 16. The intervention program carried out in this SLR such as providing education on sexual and reproductive health and promoting reproductive health services for adolescents including promoting contraceptives using digital platforms for delivering pregnancy prevention education that focuses on sexual antecendents using Mobile Apps Crush, a comprehensive and medically accurate web-based mobile application that aims to improve sexual health by increasing the use of more effective contraceptive methods and utilization of sexual and reproductive health (SRH) services among adolescent girls and to evaluate its effect on constructs associated with these behaviors. Crush delivers content on contraceptive methods, STIs, health clinic navigation, healthy relationships, and pregnancy information through multimedia features, including animations, videos, audio dialogs, comic stories, graphics, and quizzes, to enhance interaction and support different types of learners (Martínez-garcía *et al.*, 2023). Interventions that focus on sexual antecedents also use the Pulse app (Martínez-garcía *et al.*, 2023; Manlove *et al.*, 2020).

The reproductive health intervention with the Pulse app, designed specifically for Black and Latino women aged 18-20 provided program content related to reproductive health and contraception, and participants received regular text messages with reminders to view the app. The intervention was conducted independently without direct contact with study staff. The intervention group showed significant improvements compared to the control group, including being less likely to report having sex without hormonal or long-acting contraceptive methods, higher contraceptive knowledge scores, and increased confidence in using contraceptives (Manlove *et al.*, 2020). Another intervention to prevent teenage pregnancy is Entertainment Education (EE), MTV16 and pregnancy. The MTV16 and Pregnancy intervention is an EE documentary-style reality show that aims to reduce US teen pregnancy rates. A pretest-posttest experiment was conducted with to investigate the effectiveness of MTV16 and Pregnancy on beliefs, attitudes, and intentions to avoid teen pregnancy (Behm-Morawitz *et al.*, 2019). Clued is also an intervention program conducted to prevent teenage pregnancy. Uniquely, this study was conducted on LGBT people. The program is an educational intervention designed to reduce unintended pregnancies and sexually transmitted diseases among lesbian, gay, bisexual, transgender, queer, and questioning youths. The goals are to increase sexual health knowledge, healthcare self-efficacy, and sexual healthcare use, and to reduce unprotected sexual behaviors (Philliber, 2021).

The results of the studies described above varied, some interventions could improve knowledge, attitudes, efficacy and intention to use condoms and reproductive health service visits to prevent teenage pregnancy, but there were also results from interventions, respondents were not consistent in terms of condom use behavior in preventing teenage pregnancy.

B. Intervention Programs Focused on Non Sexual Antecedents

Many nonsexual risk and protective factors affect adolescents sexual behavior. For teenage girls, protective factors such as good performance in school, positive plans for the future, and strong connections to family, school, and faith community all reduce pregnancy and birth rates. In addition, many types of risky behavior are related to each other. Programs that focus on nonsexual risk and protective factors are divided into three groups. First, welfare reform for adults; second early childhood development programs; third youth development programs for adolescents (Kirby, 2007). In this research, there is no study that only focuses on non-sexual antecendents.

C. Combination Intervention Program Focused on Sexual and Non Sexual Antecendents

A third group is programs focuses on both sexual and non sexual factors affecting teen sexual behavior. This review divides them into two categories. First, programs that focus on substance use, violence, and sexual risk-taking and programs that focus on sexual risk-taking, with sexuality and youth development components (Kirby, 2007). The articles included in this intervention program are number 1, 2, 3, 4, 5, 8, 9, 11, 13, 14, 15 and 16. These twelve intervention programs are comprehensive sexual education programs where sexual health education with combining adolescent skill development. Within this SLR is an evidence-based teen pregnancy prevention program called Getting To Outcomes (GTO) designed to help health organizations in the USA. This cluster randomized controlled trial compared 16 groups of boys and girls (BGCs) implementing a teen pregnancy prevention EBP called Making Proud Choice for two years, with 16 BGCs implementing Making Proud Choice (MPC) plus GTO training, tools, and technical assistance. Participating adolescents were compared in terms of proximal outcomes (knowledge, attitudes, and intentions about sex and condoms from baseline to post-intervention) and sexual behaviors (frequency of sex and condom use, from baseline to 6-month follow-up). The GTO group improved significantly in terms of attitudes and condom use intentions (Chinman *et al*., 2018).

The Manhood 2.0 program, which is specific to adolescent males and focuses on social messaging about masculinity, gender norms, and personal experiences related to identity and race/ethnicity as well as increased knowledge about sexual health, contraception, healthy relationships, and responsible decision-making focused on improving knowledge, attitudes, self-efficacy, gender norms, and social skills competencies. This study provides preliminary evidence on the potential effectiveness of the Manhood 2.0 program in addressing unintended pregnancy (Brown, Turner and Christensen, 2021). Another study promoting reproductive health services for adolescents including promoting contraceptives using SMS (short message services) (Pedrana *et al.*, 2020). In this study they combaining education about tobacco and sexual reproductive health. The next intervention is the Power through Choices (PTC) program to increase contraceptive use and reduce pregnancy among adolescents living in Group Care Homes. The PTC intervention is also sensitive to issues of abuse and other traumas that may be part of an adolescent's life story and addresses issues that may motivate system-involved adolescents to become pregnant or engage in risky sexual behavior. The PTC curriculum provides opportunities for adolescents to examine how these experiences may influence feelings and behaviors related to sexual decision-making. Adolescents who received the PTC intervention had 28% lower odds of having had sex without using contraception in the past 3 months at the 6-month post-intervention assessment and had 33% lower odds of ever getting pregnant or becoming pregnant after the 12-month intervention (Oman *et al.*, 2018).

Research by Yakubu et al. (2019) conducted a Comprehensive Sex Education intervention through the "Abstinance" program based on the Health Belief Model behavior change theory. The program focuses on various aspects such as perceived vulnerability and severity of teenage pregnancy, perceived benefits and barriers to pregnancy prevention, personal and family values, perceived self-efficacy, and knowledge about contraception. (Yakubu *et al.*, 2019). Another programs is "I Matter, I Learn, I Decide" intervention curriculum for adolescents includes ten activities with eight topics were developed: interconnectivity between mind and body, basic aspects of communication, strategies to increase self-esteem, gains in equality in interpersonal and couple relationships, decision-making, sexual and reproductive health (SRH), sexual and reproductive rights (SRR), and visualization of the present for future construction (Campero *et al.*, 2021).

The Wahine Talk program is a CSE intervention program combined with peer educators for homeless adolescent girls. The program includes provision and connection to basic healthcare facilities, peer mentoring, group-based sexual health education, and linkage to and provision of sexual health care. The program aims to address the high risk of pregnancy among homeless adolescent girls by providing them with sexual health education and access to contraception. The study found that more than half of participants experienced improved outcomes related to sexual health care during the program, and there was a significant increase in birth control use (Aparicio *et al.*, 2019). The Missouri Personal Responsibility Education Programe (PREP) intervention aimed to determine adolescents' intentions to use condoms, engage in sexual behaviors, and abstain from sex as a result of Missouri PREP program implementation. The results showed that Missouri PREP was able to increase knowledge, attitudes, and positively influence the intention not to engage in risky sexual behaviors (Lowrey *et al*., 2021).

Another intervention is the Girl2Girl program, which is a text message-based teen pregnancy prevention program. The intervention content is guided by the information, motivation, behavioral skills model and focuses on pregnancy prevention information (e.g., how one can get pregnant), motivation (e.g., reasons to start birth control), and behavioral skills. Additional content describes topics and scenarios relevant to sexual decision-making for sexual minority girls (e.g., aspects of healthy relationships). (Brown *et al*., 2021). Another combination intervention program is the Plan A video intervention. This study implemented a sexual health (education entertainment) video intervention designed to promote effective contraceptive use, and HIV/STIs. The video consists of three interrelated soap opera-style vignettes that address five key topics: pregnancy, STIs, and HIV risk perception; contraceptive options with an emphasis on long-acting reversible contraceptives (LARCs); condom use and partner negotiation skills; the importance of regular HIV/STI testing; and the convenience of discussing sexual history, as well as types of contraceptive methods with available health services. The video also includes a short animated sequence to convey information about contraceptives (IUDs) and implants (Jenner *et al.*, 2023).

Respecting the Circle of Life program (RCL) is The RCL curriculum includes comprehensive sexual and reproductive health education with a combination of family-based interventions that include knowledge about anatomy, puberty, how pregnancy occurs, how HIV and other STIs are spread, effective methods for prevention of pregnancy and STIs or HIV (including condoms and all forms of contraception), and how to identify and reduce associated risk behaviors. RCL incorporates the development of soft skills such as problem solving, communication with sexual partners and parents or trusted adults, and goal setting. The program includes modeling of learned skills, "family trees" to contextualize abstract concepts, culturally appropriate interactive activities, and extensive practice of condom and contraceptive use skills (Tingey *et al.*, 2021).

Another intervention is the Linking Families and Teens (LiFT) program, a 5-hour program for families in rural communities with a focus on rural adolescents and their parents/caregivers with the goal of reducing unplanned teen pregnancy by increasing family connectedness and improving adolescents' self-efficacy, knowledge, and skills related to sexual health. A 5-hour LiFT workshop for adolescents and their parenting adults (biological parents, caregivers, or other significant adults in the adolescent's life) facilitated by skilled sex educators who utilize trauma-informed practices, engage LGBTQ

participants, community-respected youth, and are familiar with local resources (Brown, Turner and Christensen, 2021).

Clued is also an intervention program conducted to prevent teenage pregnancy. Uniquely, this study was conducted on LGBT people. The program is an educational intervention designed to reduce unintended pregnancies and sexually transmitted diseases among lesbian, gay, bisexual, transgender, queer, and questioning youths. The goals are to increase sexual health knowledge, healthcare self-efficacy, and sexual healthcare use, and to reduce unprotected sexual behaviors (Philliber, 2021).

Health education interventions that combine sexual and non-sexual antecedents have been shown to impact more than one risk behavior that can lead to adolescent pregnancy, which is a strength of this intervention. This intervention has been identified as a best practice in sex education in the United States and internationally. Interventions that aim to provide comprehensive adolescent sexual and reproductive health education are very good and very much needed by adolescents in shaping themselves into quality, as well as influencing when making decisions related to sexuality.

Conclusion & recommendations

This SLR generated 16 articles on community-based intervention programs. Four intervention programs focused on sexual antecedents. There were no articles with intervention programs that only focused on non-sexual antecedents and 12 intervention programs that focused on a combination of sexual and non-sexual antecedents. Intervention programs that focus on a combination of sexual and non-sexual antecedents, such as comprehensive sexual education, are the most effective programs that can be used in preventing adolescent pregnancy. Intervention programs that focus on a combination of sexual and non-sexual antecedents can be considered by health promoters and stakeholders to develop pregnancy prevention strategies for adolescents.

Acknowledgements

Special thanks to the Indonesia Endowment Fund for Education Agency (Lembaga Pengelola Dana Pendidikan Republik Indonesia) for funding support to attend the 6th International Conference on Public Health and Well-being 2024 as an oral presenter for presenting this research

References

Aparicio, E.M. *et al*. (2019) 'Holistic, trauma-informed adolescent pregnancy prevention and sexual health promotion for female youth experiencing homelessness: Initial outcomes of Wahine Talk', *Children and Youth Services Review*, 107(November), p. 104509. Available at: https://doi.org/10.1016/j.childyouth.2019.104509.

Behm-Morawitz, E. *et al*. (2019) 'Examining the effects of MTV's *16 and Pregnant* on adolescent girls' sexual health: The implications of character affinity, pregnancy risk factors, and health literacy on message effectiveness', *Health Communication*, 34(2), pp. 180–190. Available at: https://doi.org/10.1080/10410236.2017.1399506.

Brown, S.A., Turner, R.E. and Christensen, C. (2021) 'Linking Families and Teens: Randomized controlled trial study of a family communication and sexual health education program for rural youth and their parents', *Journal of Adolescent Health*, 69(3), pp. 398–405. Available at: https://doi.org/10.1016/j.jadohealth.2021.05.020.

Campero, L. *et al*. (2021) '"I Matter, I Learn, I Decide": An impact evaluation on knowledge, attitudes, and rights to prevent adolescent pregnancy', *Journal of Primary Prevention*, 42(4), pp. 343–361. Available at: https://doi.org/10.1007/s10935-020-00609-w.

Chinman, M. *et al*. (2018) 'A cluster-randomized trial of Getting to Outcomes' impact on sexual health outcomes in community-based settings', *Prevention Science*, 19(4), pp. 437–448. Available at: https://doi.org/10.1007/s11121-017-0845-6.

Cordova, D. *et al*. (2020) 'Pilot study of a multilevel mobile health app for substance use, sexual risk behaviors, and testing for sexually transmitted infections and HIV among youth: Randomized controlled trial', *JMIR mHealth and uHealth*, 8(3), pp. 1–17. Available at: https://doi.org/10.2196/16251.

Cranwell, R. and Dally, W. (2001) 'Strategies for the construction of a critical review of the literature', *Nurse Education in Practice*, 1(2), pp. 57–63. Available at: https://doi.org/10.1054/nepr.2001.0008.

Douglas Kirby, P.D. (2021) *Emerging Answers: Research Findings on Programs to Reduce Teen Pregnancy*, *Children of the Atomic Bomb*. Washington. Available at: https://doi.org/10.2307/j.ctv11smg6d.17.

Jenner, E. *et al*. (2023) 'Randomized trial of a sexual health video intervention for Black and Hispanic adolescent females', *Prevention Science*, (0123456789). Available at: https://doi.org/10.1007/s11121-023-01499-0.

Kholifah, S.N. *et al*. (2017) 'Structural model of factors relating to the health promotion behavior of reproductive health among Indonesian adolescents', *International Journal of Nursing Sciences*, 4(4), pp. 367–373. Available at: https://doi.org/10.1016/j.ijnss.2017.10.001.

Kirby, D. (2007) *Emerging Answers 2007: Research Findings on Programs to Reduce Teen Pregnancy and Sexually Transmitted Diseases*. Available at: http://www.catalystforchildren.org/pdf/Emerging_Answers.pdf.

Lowrey, K., Altman, C. and Jungmeyer, A. (2021) 'Targeted high-risk youth in Missouri PREP: Understanding program impacts on youth sexual behavior intentions', *Child and Youth Care Forum*, 50(3), pp. 415–435. Available at: https://doi.org/10.1007/s10566-020-09580-3.

Manlove, J. *et al*. (2020) 'Short-term impacts of Pulse: An app-based teen pregnancy prevention program for Black and Latinx women', *Journal of Adolescent Health*, 66(2), pp. 224–232. Available at: https://doi.org/10.1016/j.jadohealth.2019.08.017.

Manlove, J. *et al*. (2021) 'Lessons learned from replicating a randomized control trial evaluation of an app-based sexual health program', *International Journal of Environmental Research and Public Health*, 18(6). Available at: https://doi.org/10.3390/ijerph18063305.

Manlove, J. *et al*. (2022) 'A mixed-methods pilot evaluation of Manhood 2.0, a program to reduce unintended pregnancy among young men', *American Journal of Men's Health*, 16(3). Available at: https://doi.org/10.1177/15579883221104895.

Martínez-García, G. *et al*. (2023) 'Crush: A randomized trial to evaluate the impact of a mobile health app on adolescent sexual health', *Journal of Adolescent Health*, 72(2), pp. 287–294. Available at: https://doi.org/10.1016/j.jadohealth.2022.09.019.

Nabugoomu, J., Seruwagi, G.K. and Hanning, R. (2020) 'What can be done to reduce the prevalence of teen pregnancy in rural Eastern Uganda? Multi-stakeholder perceptions', *Reproductive Health*, 17(1), pp. 1–12. Available at: https://doi.org/10.1186/s12978-020-00984-x.

Oman, R.F. *et al*. (2018) 'Adolescent pregnancy prevention among youths living in group care homes: A cluster randomized controlled trial', *American Journal of Public Health*, 108, pp. S38–S44. Available at: https://doi.org/10.2105/AJPH.2017.304126.

Pedrana, A.E. *et al*. (2020) 'A quasi-experimental text messaging trial to improve adolescent sexual and reproductive health and smoking knowledge in Indonesia', *Sexual Health*, 17(2), pp. 167–177. Available at: https://doi.org/10.1071/SH18199.

Philliber, A. (2021) 'The IN•clued Program: A randomized control trial of an effective sex education program for LGBTQ youth', *Journal of Adolescent Health*, 69(4), pp. 636–643. Available at: https://doi.org/10.1016/j.jadohealth.2021.04.002.

Stahl, M.A. *et al*. (2016) 'Adolescence: The issue of lesbian, gay, bisexual, and transgender', *International Journal of Child and Adolescent Health*, 9(3), pp. 313–325.

Tingey, L. *et al*. (2021) 'Prevention of sexually transmitted diseases and pregnancy prevention among Native American youths: A randomized controlled trial, 2016-2018', *American Journal of Public Health*, 111(10), pp. 1874–1884. Available at: https://doi.org/10.2105/AJPH.2021.306447.

UNICEF (2022) *Early Childbirth*. Available at: https://data.unicef.org/topic/child-health/adolescent-health/ (Accessed: 20 June 2023).

WHO (2023a) *Adolescent and Young Adult Health*. Available at: https://www.who.int/news-room/fact-sheets/detail/adolescents-health-risks-and-solutions.

WHO (2023b) *Adolescent Pregnancy*. Available at: https://www.who.int/news-room/fact-sheets/detail/adolescent-pregnancy (Accessed: 16 June 2023).

WHO (2024) *Adolescent Pregnancy*. Available at: https://www.who.int/news-room/fact-sheets/detail/adolescent-pregnancy (Accessed: 5 July 2024).

Widyaningsih, V. et al. (2021) 'Adolescent pregnancy prevention in rural Indonesia: A participatory action research', *Rural and Remote Health*, 21(3), pp. 1–11.