

Appendix 5: Characteristics Table of the Included Studies

Study ID	Study design and total duration of study	Country and setting (urban/rural)	Participant (n=)	Intervention (n=)	Platform	Comparison (n=)	Outcomes	Time-points, evaluation measurement
Agha 2004 [33] Society for Family Health Program	q-RCT 10 months	Zambia Urban	n=404 aged 14-23 years Both males and females school children Female= I: 54.3; C:28.4% Sexually active= I: 36.6%; C:65.4% Grade 11= I: 53.5%; C:57.4%	n=254 School-based sexual education program promoting condom usage and decision-making skills Sexual and Reproductive Health empowerment with Behavioural Skills	School-based Duration = 1 hour 45 minutes	n=162 Boarding school children with limited access to internet	Use of condom with regular/casual partner Discussion on condom use with regular/casual partner	Week 2 of intervention and 6 months of intervention
Aplasca 1995 [68] AIDS prevention program	cRCT 1992	Philippines Both urban and rural	n=804 Both males and females of high school age (13-16) Females: I=55.7%; C=54.1% Sexually active: M=20.3%; F=3.6%	N=420 Education program delivered by trained teachers on subject matter related to HIV/AIDs including decision marking skills Sexual and Reproductive Health empowerment with Behavioural Skills	School-based Duration: (12x40 mins lesson over 6 weeks) across areas related to HIV/AIDs	N=382	Frequency of condom usage Intended use of condoms during sex in future AIDs related knowledge	8 weeks after completion of intervention
Austrian 2020 [71] Adolescent Girls Empowerment Programme ISRCTN29322 231	cRCT	Zambia Both urban and rural	n=4660 Never married adolescent girls 10-19 years	n=3515 Curricula included health and life skills (44 sessions) financial education (19 sessions), nutrition (6 sessions) Multidimensional Empowerment	Community-based Duration n= 3.5 years	n=1146 Control group: No intervention	Social assets Economic assets Health assets Sexual behaviour (females) Education outcomes Fertility outcomes	3.5 years intervention Follow-up at round 3 (after the end of the intervention) and round 5 (after 2 years of the end of the intervention)
Cowan 2010 [72, 262] The Regai Dzive Shiri Project	cRCT 4 years	Zimbabwe Rural	N=6791 Males (mean age) I: 15.4 and C 15.5, Females	Regai Dzive Shiri Project has three components: 1. Youth programme with structured material delivered to	Community-based	N=3381 Standard HIV	Increased knowledge on STIs, pregnancy prevention.	Duration of intervention: 5 years

			(mean age) I 14.8 ; C:15.0 Sexually active: n=505 Marital status: N=1334	in and out of school-youth by school leavers (pre-university) role models) in rural areas. 2. Programme for parents and community stakeholders to improve knowledge on reproductive health. 3. Programme for nurse/health staff to improve accessibility to clinic for out-of school youth. Sexual and Reproductive Health empowerment with Behavioural Skills	Duration n= 4 years	prevention activities were implemented through the District AIDS Action Committees across all communities	Positive effect on attitudes to relationship control and gender empowerment Increased access to health/clinic care for contraceptives by females. Healthcare access Sexual behaviour Use of contraceptives (males and females)	
Deveaux 2007 [69] Focus on Youth in the Caribbean (FYOC Program)	cRCT 6-12 months	Bahamas Urban	Students n=1360 6 th grade Females: I: n= 452/863 group. C: n=269/497. Parents n=1137 Sexually active: 4% of total participants. Marital status: Not reported.	Student intervention: Sessions focusing on substance use/healthy sexual relationships in context of HIV; skills development & practice in decision-making, negotiation & communication. Parent intervention: educational videos on communicating about sex with children, condom usage, and establishing/implementing career goals. Sexual and Reproductive Health empowerment with Behavioural Skills	School-based 12 months	School-based conservation program on importance of water conservation, wildlife and other natural resources. Duration – 12 months N= 497 students and their parents	Condom usage Skills/self-efficacy in condom usage Knowledge on transmission/preventions of STIS	6 months follow-up
Hanna 1994 [44] Nurse-Client Transaction	Experimental study RCT 3 months	United States Rural	N=604 (enrolled n=51) 16-18 years of age, females only. Sexually active: Not reported. Marital status: Not married Education status: Currently enrolled in high school	N=26 Clinical teaching protocol and transactional intervention following the prescription for oral contraceptives: Intervention included personalised interactions, group discussion and role playing with focus on maturity, responsibility, and decision-making	Community based (including in health clinics) Duration n= 3 months	N=26 Clinical teaching protocol only. Duration= 3 months	Contraceptive adherence Attitudes to benefits in contraceptive usage and interpersonal responsibility of contraceptive usage Marital status	

				Sexual and Reproductive Health empowerment with Behavioural Skills N=320				
Cartagena 2006 [34] Peer education program – HIV Prevention Program	Program evaluation (NRSI) 3-year program evaluation	Mongolia Both urban and rural	N=720 (enrolled= 647) Secondary school students (Both males and females) Sexually active= n145/720 Marital status: Not reported.	Sexual health peer education program: The lesson plan is divided into 1) Reproductive health; 2) AIDS and STI transmission, symptoms and prevention; 3) Safe sex including how to use condoms; 4) Discussions and interactive communication through skills-based learning about emotions, refusal skills, love, friendship. (GTZ). Sexual and Reproductive Health empowerment with Behavioural Skills	School based Duration = 3 days	School-based (No access to sexual health peer education program) N=327	Condom usage during sexual intercourse based on SES status of school Knowledge score Self-efficacy score	Program implemented in 2000 and evaluation done in 2004
Dancy 2014 [35] MMKA program	Quasi-experimental (2 groups research design) 6 months	Malawi Rural	N=499 Age: 13-19 years Both Genders; Outcomes reported separately for males and females Marital status: Not reported	N= 306 (baseline) 384 (post-intervention) Seven, weekly two-hour sessions focusing on sexual health, HIV, adolescent development (emotionally/cognitively), skills development for sexual behaviour, refusal, decision making, condom usage skills. Sexual and Reproductive Health empowerment with Behavioural Skills	Community based Duration: 6 months	N= 193 (baseline) and 393 (post-intervention) Comparison intervention not described. Duration: 6 months	Consistency of condom usage Ever used a condom Completion of primary schooling Knowledge on HIV prevention Attitudes to hope Self-efficacy of condom usage Self-efficacy in safe-sex practices Communicating with partner about safe sex HIV testing rates	7 weeks of intervention
Dunbar 2014 [56]	RCT	Zimbabwe	N=315 Age:16-19 years	N=158	Community based	N=157	Power in current sexual	24 months

The SHAZ Project	6-19 months 24 months intervention	Urban/p eri- urban	Marital status: 7% Females only Sexually Active: 28% in intervention and 23% in control arm	Life skills training based on HIV and reproductive health education (e.g., condom use, issues on gender, violence, culture business training and mentorship, and access to microloans. Multidimensional Empowerment	Duratio n: 6 months	Life skills training (including home-based care training) and reproductive health services alone. Duration: 6 months	relationship and non- sexual/romanti c relationships Physical violence Sexual violence Forced sex Contraceptive usage with partner Knowledge on HIV transmission	follow- up Intervent ion given for 6 months
Erulkar 2004 [36] The Nyeri Youth Health Project	qRCT 3 years (1997- 2001)	Kenya Urban and Rural	N= 1865 (at end line – n=1544 at baseline) Age: 10-24 years at baseline (10- 26 years at end line) Males 553; Females=618 (baseline); Males 715; Females=853 (endline) Education status: Some in school, some not. Marital status: Unmarried Sexually active: n=121 (baseline)	N= 1096 (baseline); n=1408 (endline) Curriculum guided activities delivered by counsellor (week for 2-8 weeks, 90- 120 min sessions) focusing on life skills development (such as sexual and reproductive health, pregnancy, relationships, future decision making/planning, gender norms & child rights) Counsellors also conducted sessions with adults to improve attitudes to adolescent issues and worked with schools using activities to improve-teacher- student communication. Sexual and Reproductive Health empowerment with Behavioural Skills	Comm unity- based Duratio n: 3 years	N=448 (baseline; n=457 (endline) No access to intervention Duration: 3 years	Males: Condom usage at last sexual encounter Discussion of reproductive health issues with a parent Sexual initiation Number of sexual partners Females: Sexual initiation Increased use of condoms Communication about sexual and reproductive health topics with parent/adult In control area – females: Condom usage at last sexual engagement Communicatin g to a parent or other adult about sexual and	Time periods and measure ment methods ?

							reproductive health issues.	
Gelfond 2016 [37] Need to Know (N2K) project	qRCT 3 years (Fall 2012-Spring 2015)	United States Not mentioned	N=1437 Age: 14-15 years Educational status: 9 th grade Marital status: Unmarried Sexually active: Control group 10.3% (n=55); I: 7.6% (n=44)	N=578 Class-room based intervention focusing on knowledge, skills, motivation/support. Changing attitude/norms and behaviours regarding sexual behaviours using presentation, game, role play. Delivered in 16 session each year (25 min per session) Sexual and Reproductive Health empowerment with Behavioural Skills	School based Duration: 3 years	N=535 School-based (no intervention received)	No Condom usage during sex Intention to have sex with condom Intention to have sex with birth control Pregnancy rate	intervention for over 3 years
Hagen 2012 [38] Community asked Abstinence Culture (C-BAC) Program	qRCT 5 years	United States Rural tribal areas	N=293 Age: 12-14 Both genders: ratio? Educational status: High school Marital status: unmarried Sexually active: I= 66.7% I; C= 73.7%	N=157 Teen pregnancy prevention program targeting abstinence/health relationship development in Native American community. Focus on making health decisions and implementing them. Sexual and Reproductive Health empowerment with Behavioural Skills	Community-based Duration: 5 years	N=136 Community-based (Students attending public high school- not tribal middle school)	Condom usage in most recent sexual encounter Sexual initiation prior to finishing school Pregnancy/fertility outcomes	5-year program implemented
Jemmott 2010 [58] HIV/STD Risk reduction intervention	cRCT October 2004-December 2006	South Africa Urban and Rural	N=1898 (enrolled=1057) Age: 9 to 18 years Females n=558; Males= 499 Education: Grade 6 students Marital status: Unmarried Sexually active: Yes 1.25% in HIV Intervention group; 1.01% in Health intervention group.	N=562 HIV/STD risk reduction intervention with focus on increasing beliefs/risk reduction knowledge, enhancing condom efficacy use, increasing skills and self-negotiation skills to use condoms Sexual and Reproductive Health empowerment with Behavioural Skills	School-based Duration: 13 months	N=495 School-based Health-promotion intervention focusing on behaviours linked to NCDs.	Unprotected vaginal sexual intercourse Reduction in anal sexual intercourse	Average d over 3 follow-ups – over 3 months
Kim 2001 [39]	Quasi-experi	Zimbabwe	N=1426 (enrolled=1426)	N=973 (baseline) (n=1000 follow-up)	Community based	N= 453 (baseline);	Usage of modern contraception	1 years after program

	mental design 1 year	Urban and Rural	Age: 10-24 years I= 50.1% Females (Baseline), C=50.0% Females (Baseline); Education status: Primary and high school Marital status: 6.9% married in interventional group and 18.4% married in the control group at baseline Sexually active I=20.8%; Control= 29.6%:	Media based campaign addressing reproductive health topics such as HIV/AIDs, peer pressure, parental engagement, sexual responsibility, delaying pregnancy, refusal skills to sex (leaflets, posters, radio show episodes, newsletters) Sexual and Reproductive Health empowerment with Behavioural Skills	Duratio n: 6 months	n=400 (follow-up) Youth included where campaign was not reaching.	Communicatio n with others regarding STIs Knowledge on contraceptive methods Visits to healthcare centres communicatio n with friend, parents, teachers, and partners regarding reproductive and sexual health issues Knowledge on contraceptives Knowledge on deformities/infertility Sexual rights/sexual refusal skills Perceptions on males' rights to decide whether to have sex	6 months impleme ntation
Kinsler 2004 [40] HIV/AIDS education and prevention program	Quasi-experimental (pre-post-test design) 3-month	Belize Urban	N=150 Age 13-17 years (n=94 females; n=56 males) Education: Primary and high school students Marital status: Not reported. Sexually active: 34.6% (n=52)	N=75 HIV/AIDs education intervention with workshops focusing on sexual health education re HHIV/AIDs, communication development, behavioural development to resisting peer pressure for sex, and psychological/social aspects of HIV. Sexual and Reproductive Health empowerment with Behavioural Skills	School-based Duratio n: 3 months	N=75 Received HIV/AIDs education handbook (HIV/AIDs sexual health education & info on HIV/AIDs health centres/organizations)	Condom usage HIV knowledge Intentions to use condoms at next sexual intercourse Condom usage Attitudes to condom usage	3-month Pre versus post-test in intervention group)
LaChaussem 2016 [59] Positive prevention PLUS Adolescent	cRCT 6 months	United States Not mentioned	N=4267 (enrolled= 3554) Age: Mean = 14.63 years (range not mentioned)	N=2483 Intervention delivered through science/health/physical education school curriculum (11x45	School-based 6 months	N=1784 School-based (Standard health, science, or	Delay in sexual activity Knowledge on adolescent-pregnancy	In past 3 months (measured at 6 months follow-up)

Pregnancy Prevention program			Education status: 9 th grade Marital status: Unmarried Sexually active: Yes (0.02 I; 0.03 Control)	mins sessions) focusing on abstinence, assertive communication, refusal skills, accessing reproductive health services, condom negotiation, and condom use. Sexual and Reproductive Health Empowerment with Behavioural Skills		physical education curriculum – teachers allowed to discuss human reproduction but refrain from all other sexual-health related content)	prevention topics Sex without birth control Unprotected sexual intercourse Pregnancy/fertility rates	6-months post intervention
Lou 2004 [41] Community based sex education and reproductive health service program	NRSI 20 months	China Urban	N=2227 Age= 15 to 24 (I: Males n=719; Females = 501; C: Makes=554; Females=453) Education: Junior high, senior high, college and higher Employment: Workers (I:35.0%; C=40.0%). Administration/professionals: (I:4.3%; C:3.7%) Marital status: Unmarried Sexually active: Yes (I: 10.4%; C: 12.1%)	N=1220 Intervention targeted at unmarried youth with education intervention focusing on building awareness focusing on sexual and reproductive health, interpersonal relationships, safe sex, contraception, and condom usage. Information on how/where to access reproductive health services, contraception, and counselling. Delivered in addition to standard program. Sexual and Reproductive Health Empowerment with Behavioural Skills	Community-based Duration: 20 months	N= 1007 Standard services and program continued to be provided.	Participants remained unmarried Some paid employment Physical education Study Sexual activities Contraceptive usage Contraceptive usage for sexually active Confidence in accessing health services for contraception Likelihood of use of contraception Use of contraception at sexual onset Condom usage Regular condom usage on basis of SES/education	20 months Baseline versus post-intervention survey
Mathews 2012 [60] SATZ project ISRCTN293223	cRCT 12-15 months	South Africa (Cape Town and Mankweng) and Tanzania (Dar es Salaam)	N=12139 Age: 12-14 years (Both genders) Education: Grade 8 in South Africa and Grade5/6 in Dar es Salaam	N=6801 11-17 hours of classroom sessions with presentations, discussions, role-plays and homework focusing on HIV Prevention program	School-based Duration: 18 months	N= 5338 School based (No intervention but teach training and materials provided at	Condom usage Effect on delaying sexual debut Intention to use condoms	18 months of intervention

		es Salaam) Urban	More females than males in I&Cs in all three cities. Sexually active: Yes 23.9% in Cape Town, 8.3% Dar as Salam, 30.2% in Mankweng	Sexual and Reproductive Health empowerment with Behavioural Skills		end of study)	Improvement in self-efficacy regarding sex and condom use Perceptions of access to condoms	
Philliber 2002 [45] Children's Aid Society-Carrera Program	Program evaluation (NRSI) 3 years	United States Urban	N=484 Age: 13 to 15 years (I: Females n=130; I Males n=112); C: N=138; Males n=104) Education: Students Sexually active: Yes (I: n=26; C: n= 25) Marital status: Not mentioned	N=242 School-based reproductive health program with focus on skills for career development, academic attainment, family/sexual/reproductive health education, improving confidence, and self-efficacy Multi-dimensional Empowerment	School-based Duration: 3 years	N=242 School-based (Alternative program offered to intervention program)	Unmarried Sexual health knowledge Decision to refuse sex when pressured Condom usage (based on sexual experience?) Hormonal contraceptive usage (based on sexual experience?) Condom usage at last sexual intercourse Healthcare access (outside of ED)	Follow-up for 3 years
Speizer 2001[42] Entre Cous Juenes Program	Quasi-experimental (pre/post-test comparison) 18 months	Cameroon Not clear – rural?	N=818 (n=802 enrolled) Age: 10-25 years (baseline); 12-25 (follow-up). Gender ratio-varying statistics? Education status->80% of the participants had a secondary education Sexually active: Yes, sexually active in the last 3 months (I females [51.2% of n=66]; Males [60.5 of n=81]; C: females	N=402 (Follow-up n=40)3 Peer-educator program for STI/HIV preventative behaviour with focus on knowledge of contraceptive methods available and condom-use negotiation skills Sexual and Reproductive Health empowerment with Behavioural Skills	School-based Duration: 2 academic years	N=400 (follow-up n=413) Community-based (No access to program)	Knowledge of modern contraceptive methods for males (I v C) Knowledge of modern contraceptive/condoms (I v C) Knowledge of STI symptoms (females) Likelihood to engage in sex Usage of modern contraceptives Usage of condoms	18 months intervention

			[66.2% of 88] males [64.8% of 83 sexually experienced] Marital status: Nearly 10% married				Usage of condoms based on educational status Higher use of condoms for participants in school versus not Usage contraceptives of participants who met with peer educator	
Van Devanter 2002 [47] The Women in Group Support (WINGS) project	RCT 3 months	United States Urban	N=604 17 years and older (mean=28.5) (All females) Education status: No degree-63.0%; high school degree or equivalent-24%; Some post-secondary education-13% Sexually active: Yes (but statistics not specified)	N=227 STD/HIV intervention Behavioural Intervention with focus on use of male condom, skills training in communication and goal setting Sexual and Reproductive Health empowerment with Behavioural Skills	Community based Duration: 6 weeks	N= 215 Community-based (Participation in a 1-hour session with nutrition video on health food choices)	Usage of female condoms by females with partner Confidence and efficacy in use of female condom Acceptance of use of female condom by male partners Decision-making/communication regarding condom usage by females with male partners Usage of a female condom based on sexual relationship status	At time of 3-month follow-up Within last 3-days
Walker 2006 [61] Curriculum based on guidelines of the UN programme on HIV/AIDS	cRCT 16 months	Mexico Not clear (Rural)	N=10954 (enrolled=9372) Age: 15-18 years old Education status: 10th grade students Marital status: not reported Sexually active: Yes (control group female[16.8%], males [26.7%];	N= 5617 HIV Education prevention with focus on life skills development with focus on condom promotion/usage and accessing emergency contraception Sexual and Reproductive Health empowerment with Behavioural Skills	School-based Duration: Not clear	N=1867 Continued delivery of biology-based sex education course implemented by Ministry of Education.	Condom usage Usage of emergency contraception Knowledge of emergency contraception Attitudes to condom usage Improved HIV knowledge	16 months follow-up

			Condom promotion intervention group female [18.8], male [27.8]; condom promotion with emergency contraceptive intervention group female [16%], males [29.1])					
O'Donnell 1999 [48] Community youth service program (CYS)	RCT Fall 1994- spring 1995 6 months	United States Fall 1994- Spring 1995 Urban	N=1157 (enrolled n=1061) Age: 7 th grad (mean 12.2 years; 8 th grade (mean 13.3 years) Education status: 7 th and 8 th grade Marital status: Unmarried Sexually active: 23.1%	N=477 Community Youth Learning Service program with focus on life/career skills development and relating this to sexual/reproductive health with regard to decision making, health seeking behaviours, health advocacy and information seeking Sexual and Reproductive Health empowerment with Behavioural Skills	Community-based Duration: 6 months	N= 584 No intervention	Condom usage Birth control usage Sexual activity	6 months follow-up
Roosem 2000 [62] The PSI/PMSC Adolescent Reproductive Horizon Jeunes Health Program	cRCT July 1996- November 1997	Cameroon July 1996- November 1997	N= 1606; follow-up 1633 Age 12-22 years old (Gender ratio not mentioned) Sexually active (Not clear) Marital status: not reported Education status: not reported	N= 805 (follow-up n=811) Adolescent reproductive health program with integrated social marketing campaign with focus on behaviour and communication change related to reproductive/sexual health topics to improve contraceptive use, use of healthcare facilities for hormonal contraception/detection of STIs, and improving communication with parents Sexual and Reproductive Health empowerment with Behavioural Skills	Community based Duration: 13 months	N=801 (follow-up n=822) No intervention	Condom usage Contraceptive usage Greater rate of males Knowledge of condom usage Knowledge of other modern contraceptive methods (oral pill, IUD, injections) Self-efficacy in condom usage	
Bauman 2021 [49] Project Prepared	RCT 2011-2013 2 years	USA Urban	n=397 (enrolled n=459) Age: 12 to 14 years Gender: 50.3 (M:), 49.7(F)	N= 200 School-based intervention with training and education on contraceptive usage, decision-making	Community based (Primary care centres)	N=197 TEEN was an 11-week communication and social skills program,	Refusal of sex without a condom Endorse male sexual risk behaviours	2 years 12 months follow-up

			<p>Education status: Not reported</p> <p>Sexually active: Not reported</p> <p>Marital status: Not reported</p>	<p>skills, sexual health, gender-based norms and healthy relationships)</p> <p>Sexual and Reproductive Health empowerment with Behavioural Skills</p>	<p>Duration: 11-week interactive classroom-style intervention was followed immediately by a 3-week internship, for a total of 14 sessions.</p> <p>Duration: 11-week interactive classroom-style intervention was followed immediately by a 3-week internship, for a total of 14 sessions.</p>	<p>and a 3-week internship (14 total sessions) in which adolescents created a poster presentation to teach peers about communication and social skills. It was as intensive as Prepared, but had no HIV/STD, gender norm, or relationship content.</p>	<p>endorse female sexual risk behaviours</p> <p>HIV knowledge</p> <p>Plan to carry condom</p> <p>Plans to discuss with partners about STIs/ HIV</p>	
<p>Burnett 2011 [54]</p> <p>It's Our Future Too Program</p>	<p>RCT</p> <p>Not reported</p>	<p>Swaziland</p> <p>Urban</p>	<p>n=177</p> <p>Age: Intervention 17.35 years Control 17.32 years</p> <p>Gender: 39.5(M):60.5(F)</p> <p>Education status: Grade 9 (Form 2) - Intervention: 31 (45%); Control: 26 (39%)</p> <p>Sexually active: Yes- A total of 17 students reported ever having sex.</p> <p>Marital status: Not reported</p>	<p>N=69</p> <p>The program It's Our Future Too! is unique in that it includes four enrichment curricula: life skills for HIV awareness and prevention, computer technology, job readiness, community outreach. The program was held over a period of 13 half-day Saturday sessions, with 1 hour per week for each of the four curricula</p> <p>Multi-dimensional Empowerment</p>	<p>School-based</p> <p>Duration: 13 half-day Saturday sessions, with 1 hour per week for each of the four curricula.</p>	<p>N=66</p> <p>Delayed intervention group acted as control and did not receive any intervention</p> <p>Duration: Not reported</p>	<p>Condom usage</p> <p>Knowledge for HIV prevention</p> <p>Self-efficacy for abstinence</p> <p>self-efficacy for condom usage</p> <p>Knows own HIV status</p> <p>Knows partner HIV status</p> <p>Ever had HIV test</p> <p>Self-efficacy for getting HIV test</p>	<p>Not reported</p>

<p>Bandiera 2020 [57]</p> <p>Empowerment and Livelihood for Adolescents (ELA)</p>	<p>RCT</p> <p>March 2008 to July 2012</p>	<p>Uganda</p> <p>Urban and rural</p>	<p>n=5,966-enrolled?</p> <p>Age: 14 to 20</p> <p>Gender: 100 (F)</p> <p>Education status: Intervention group- mean 0.71;</p> <p>Sexually active: Yes-At baseline 14 percent reported having had sex unwillingly in the past year.</p> <p>Marital status: Intervention group- mean 0.094;</p>	<p>N=3964</p> <p>Vocational & life skills training including on sexual and reproductive health, pregnancy, family planning, child marriage and gender-based violence</p> <p>Multi-dimensional Empowerment</p>	<p>Community (The intervention is delivered from designated “adolescent development clubs”)</p> <p>Duration: Clubs are open five afternoons per week</p>	<p>N=2002</p> <p>No clubs-enough information not provided</p> <p>Duration: Clubs are open five afternoons per week</p>	<p>Condom usage</p> <p>Rates of unwillingly having sex</p> <p>Marital status</p> <p>Co-habitation status</p>	<p>Impact observed after 2 and 4 years of the intervention</p>
<p>Berglas 2016 [63, 263]</p> <p>Sexuality Education Initiative (SEI) Intervention</p>	<p>cRCT</p> <p>2011-2013</p>	<p>USA</p> <p>Urban</p>	<p>n=1909 (n=2379 enrolled)</p> <p>Age: 14 to 15</p> <p>Gender: 49.4(M):50.6(F)</p> <p>Education status: ninth-grade students</p> <p>Sexually active: Yes- Approximately one-fifth (22.3%) reported having had vaginal or anal sex in their lifetime, and 10.3% reported having had sex in the previous 3 months</p> <p>Marital status: Not reported</p>	<p>N=1025</p> <p>School based sexual education program with focus on gender norms and power dynamics</p> <p>Sexual and Reproductive Health empowerment with Behavioural Skills</p>	<p>School-based</p> <p>Duration: 3-session control curriculum</p>	<p>N=884</p> <p>The classroom curriculum-The control curriculum covered basic sexual health topics, including anatomy and prevention of pregnancy and STIs. The control curriculum had been implemented in previous years and reflected standard sexuality education in local high schools.</p>	<p>Contraceptive usage at last sex</p> <p>Condom used at last sex</p> <p>Fertility rates</p> <p>Usage of sexual health services</p> <p>Currently carrying a condom (self-efficacy)</p>	<p>1 year follow-up</p>
<p>Jennings 2016 [70]</p> <p>Suubi-Maka Project</p>	<p>cRCT</p> <p>2011-2013</p>	<p>Uganda</p> <p>Rural</p>	<p>n=346 (follow-up n=346)</p> <p>Age: 10 to 17</p> <p>Gender: 35(M): 65(F)</p>	<p>N=179</p> <p>HIV prevention program with focus on economic empowerment and financial skills building</p>	<p>School-based</p> <p>Duration: Monthly</p>	<p>N=167</p> <p>Usual services given to all orphaned children in the region (counselling)</p>	<p>Consistent condom usage</p> <p>Attitudes to HIV prevention</p>	<p>12 months intervention period</p>

			Education status: Not reported	Multi-dimensional Empowerment		, school lunch, scholastic materials), plus monthly mentoring sessions	Sexual abstinence or postponement	
			Sexually active: Not reported				Cash/accumulated savings	
			Marital status: Not reported			Duration: Monthly		
Jewkes 2008 [64, 73] Stepping Stones Intervention	cRCT 2004-2006	South Africa Rural	n=2776 (follow-up n=73) Age: 16 to 23 Gender: 48.9(M):51(F) Education status: Participants in the control arm were slightly more educated (P=0.09 for women, P=0.08 for men). Sexually active: YES- Women-intervention- 655 (91.6%) Control-633 (90.3%) Marital status: Not reported	N=1409 Sexual health intervention with prevention on HIV/Herpes with focus on skills and knowledge building/risk reduction Sexual and Reproductive Health empowerment with Behavioural Skills	Community based Duration: 13 core sessions and three meetings. Each session lasts about 3 h.	N=1367 single session with exercises about HIV and safer sex practices drawn from the Stepping Stones curriculum. Duration: Single session of about 3 h	Consistency in condom usage Sexual activity (casual or multiple sexual partners) HIV-positive results Intimate partner violence in females Pregnancy	24 months follow-up
Kelsey 2016 [50] Cuidate! NCT02540304	RCT September 2012-October 2014	USA Urban	n=2165 Age: 13 to 19 years Gender ratio: 47.02(M):52.98 (F) Education status: Not reported Sexually active: Yes- More than one fifth of the sample (n=1969) had engaged in sexual intercourse before the study began. Marital status: Not reported	N=1326 Culturally appropriate school-based sexual/reproductive health education program with focus on reproductive health, skills-building for sexual-risk avoidance, empowerment/attitude development towards contraception usage and delaying pregnancy Sexual and Reproductive Health empowerment with Behavioural Skills	School-based Duration: Six 60-minute curriculum modules	N=870 Regular physical education class, a curriculum focused on health and well-being, usual programming—regular physical education, regular health class, or other regular activities. Duration: 6 months	Condom usage during sexual intercourse, oral sex and anal sex Birth control usage during sexual intercourse Intentions to engage in the following behaviours in the next 12 months—incomplete Knowledge of pregnancy Perceived refusal skills	6 months intervention 12 months follow-up
McCarthy 2020 [51] Intervention delivered by mobile phone NCT02905526	RCT March 2017-Feb 2018	Bolivia Urban	n=640 Age: 16 to 24 years Gender ratio: 100 (F)	N=319 Mobile phone intervention to promote acceptance/effective use of contraception and improve knowledge/ on	Digital - app based Duration: 183 messages for	N=321 Control group had access to the app which delivered 7 control instant	Contraception usage Acceptability of contraceptive usage	120 days intervention

			<p>Education status: Primary 32 (5.0%) Secondary 462 (72.2) University 130 (20.3) Technical 16 (2.5)</p> <p>Sexually active: Yes</p> <p>Marital status: 32 (5.0%) were married and 608 (95.0%) were unmarried</p>	<p>contraceptive usage, and self-efficacy regarding influence on reproductive health</p> <p>Sexual and Reproductive Health empowerment with Behavioural Skills</p>	120 days	<p>messages reminding them about importance to remain in intervention</p> <p>Duration: 16 messages about trial</p>		
<p>Mmbaga 2017 [65]</p> <p>PREPARE intervention</p> <p>ACTRN12613 000900718</p>	<p>cRCT</p> <p>2011-2014</p>	<p>Tanzania</p> <p>Urban</p>	<p>n=5091 participants and n=115 schools</p> <p>Age: 12 to 14</p> <p>Gender ratio: 49.4(M):50.6(F)</p> <p>Education status: Class 5- Intervention=583 (33.9); Control=902 (36.8); Class 6 Intervention=1660 (66.1) 1547 (63.2)</p> <p>Sexually active: At baseline, 10.7% of participants from the intervention</p> <p>Marital status: Not reported</p>	<p>N=2503</p> <p>Intervention on condom use and delay of sexual initiation with focus on development of life-skills, communication with adults and peer regarding sexual health, and promoting access to sexual and reproductive health services (for contraception/condoms, STI management, & pregnancy tests</p> <p>Sexual and Reproductive Health empowerment with Behavioural Skills</p>	<p>School-based</p> <p>Duration: Three peer-led lessons taught over 8 h- 9 weeks (once a week), each session lasting 60-90 min.</p>	<p>N=2588</p> <p>Not reported</p> <p>Duration: 12 months</p>	<p>Intention to use condoms (I v C)</p> <p>Condom use behaviours</p> <p>Sexual initiation</p>	12 months follow-up
<p>Robinson 2016 [55]</p> <p>Teen Outreach Program (TOP) Changing Scenes Curriculum</p>	<p>RCT (Louisiana)</p> <p>cRCT (Rochester)</p> <p>2012-2015</p>	<p>USA</p> <p>Not specified</p>	<p>n= 2428 in Louisiana; n= 824 in Rochester</p> <p>Age: 12 to 17; 11-14</p> <p>Gender ratio: 40.4(M):59.6(F) in Louisiana; 47.7(M):52.3(F) Rochester</p> <p>Education status: Not reported</p> <p>Sexually active: Yes</p> <p>Marital status: Not reported</p>	<p>n = 1248 (Louisiana); n = 477(Rochester)</p> <p>Teen Pregnancy Prevention Program with focus on decision-making, goal setting, values, and life skills</p> <p>Sexual and Reproductive Health empowerment with Behavioural Skills</p>	<p>Community-based organization (CBO) based</p> <p>Duration: 25 sessions take place over a consecutive nine-month period.</p>	<p>n = 1180 (Louisiana); n = 347(Rochester)</p> <p>No treatment</p> <p>Duration: 9-month period</p>	<p>Usage of birth control</p> <p>Delay in sexual initiation</p> <p>Unprotected Sex</p>	9 months intervention

Ross 2007 [66] Multi component intervention programme	cRCT 1998-2002	Tanzania Rural	n=9645 Age: 14 to >equal to 18 Gender ratio: 55.3(M):44.6(F) Education status: School year (1998) Sexually active: Yes- Men (intervention)N=1279 (Control)N=1331 ; Women (intervention)N=383 (Control)N=476 Marital status: Not reported	N=4870 Education intervention to delay sexual initiation, use of contraception, and increase use of sexual health and family planning services Sexual and Reproductive Health empowerment with Behavioural Skills	School-based Duration: 12, 40-min sessions per year; twice-yearly youth health days at health facilities, and quarterly video shows	N= 4529 Standard activities Duration 3 years	Condom usage at last sexual intercourse Condom usage first used during follow-up Access health facility for most recent STI symptoms within past 12 months Attitudes to sex Pregnancy prevention knowledge Prevalence of STI/HIV	3 years follow-up
Sieving 2011 [53] PRIME Time Intervention	RCT 2007-2008	USA Urban	n=253 Age: 13–17 Gender ratio: 100 (F) Education status: Not reported Sexually active: Yes Marital status: Not reported	N=126 Clinic-based intervention to prevent pregnancy with focus on relationship development with adults/peers, contraception/condom use skills, emotional/personal/c communication skills development) Sexual and Reproductive Health empowerment with Behavioural Skills	Health clinic based Duration: 18 months	N=127 Usual clinic services Duration: not reported	Consistency of condom usage Consistency in usage of hormonal contraceptives Consistency in dual usage of condom and hormonal contraceptives Sexual risk communication with partner	Follow-up time period-12 months Intervention provided for 18 months
Marie Scull 2018 [67] Media Aware (Sexual Health Program for Young Adults)	cRCT April-December 2015	USA Urban	N=281 Age: 18–19 Gender ratio: 38.7(M):52.3(F) Education status: Not reported Sexually active: Yes Marital status: Not reported	N=163 Digital/media based literacy education program for sexual health promotion with focus on pregnancy prevention, sexual health, gender-based violence, and communication skills with sexual partners/health professional –focus on development of critical thinking skills to redress inaccurate norms/belief about sexual health Sexual and Reproductive Health	Community-based Duration: Not reported	N=118 wait-listed controls Duration: Not reported	Condom usage Dental dam usage Sexual health communication Knowledge about sexual health Condom usage during last sexual intercourse	6 months?

				empowerment with Behavioural Skills				
<p>Mason-Jones 2011 [43]</p> <p>Government-led peer education program</p>	<p>Quasi-experimental study</p> <p>Aug/Oct 20017 recruited, followed till 18 months</p>	<p>South Africa</p> <p>Urban, Semi Rural and rural</p>	<p>n=3934</p> <p>Age: 15-16 years</p> <p>Gender ratio: 42.2(M):57.8(F)</p> <p>Education status: Not reported</p> <p>Sexually active: Not reported</p> <p>Marital status: Not reported</p>	<p>N=2049</p> <p>Peer-education program for sexual health promotion with focus on relationships, sexual health, confidence-building and increase condom usage for sexually active students</p> <p>Sexual and Reproductive Health empowerment with Behavioural Skills</p>	<p>School-based</p> <p>Duration: two 1 h skills training sessions per month; mentoring sessions of up to 1 h duration each per month, and a 3-day camp which included 11 further training sessions.</p>	<p>N=1885</p> <p>usual life orientation program.</p> <p>Duration: not reported</p>	<p>Condom usage</p>	<p>18 months intervention</p>
<p>McBride 2000 [52]</p>	<p>RCT</p> <p>Not reported</p>	<p>USA</p> <p>Not reported</p>	<p>n=1732</p> <p>Age: 9 10 13; 14 to 17 years</p> <p>Gender ratio: 95(M):4(F)</p> <p>Education status: Not reported</p> <p>Sexually active: Yes- 63 teenage reported having sex.</p> <p>Marital status: Not reported</p>	<p>N=920</p> <p>Community-based adolescent pregnancy prevention programs with focus on preventing teenage pregnancy with focus on education, skills-building (communication, decision making skills, delaying sex, reducing engagement in risky sexual behaviour), supporting referrals to community/family planning services, empowerment/self-esteem building</p> <p>Sexual and Reproductive Health empowerment with Behavioural Skills</p>	<p>Community-based</p> <p>Duration: 14 hours of services per year</p>	<p>N=812</p> <p>education and skills-building-to all clients. Controls did not receive the individualized services that treatment group clients did (i.e., counselling, advocacy or mentoring).</p> <p>Duration: five hours of services;</p>	<p>Educational aspirations</p> <p>Contraceptive usage</p> <p>Sexual behaviour intent</p>	<p>5-7 months duration between pre and post intervention with an average of 7 months</p>
<p>Daniel 2008 [46]</p>	<p>non-RCT</p>	<p>India</p>	<p>n= 2030</p> <p>Age= 15-24 years</p> <p>Gender: Females</p>	<p>n = 1447</p> <p>Through work shops and behavior change communication, the interven</p>	<p>community-based</p>	<p>n= 633</p> <p>No intervention</p>	<p>contraceptive use</p> <p>contraceptive knowledge</p>	<p>12 months duration</p>

			All married	tions provided essential reproductive health information and addressed key issues of concern to young people at their particular stage of life Sexual and Reproductive Health Empowerment with Behavioural Skills				
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