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INSIGHTS AND EVIDENCE GAPS IN GIRL-CENTERED PROGRAMMING: A SYSTEMATIC REVIEW

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RISING
a research initiative for
success in girls programs

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GIRL Center Research Briefs present new knowledge on issues of current and critical importance and recommend future directions for research, policies, and programs.

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Increased attention to the needs of adolescent girls has led to a growing number of programs in low- and middle-income countries (LMICs). Questions remain, however, about what aspects of program design are most effective. This hinders efforts to effectively allocate resources, scale-up programs, and replicate results across settings. To address these issues, we conducted a systematic review to identify lessons learned and gaps in the evidence base.

KEY FINDINGS

1. **Multicomponent** programs tended to outperform single-component programs, although few studies controlled for duration of exposure to the intervention. There were too few studies to draw conclusions about the durability of program effects over time.
2. Longer **program exposure** improved program effectiveness and may contribute to the durability of program effects over time, although selection bias was a limitation in a number of studies.
3. Evidence on whether **multilevel** interventions enhance benefits for girls relative to single-level interventions was inconclusive. No identified studies assessed the relative effect of **booster** “add-ons” (versus no booster) or varied the **saturation** level of the program in communities.
4. Few evaluations of girl-centered programs to date have rigorously addressed implementation science questions, highlighting a robust and urgent research agenda for the future.

BACKGROUND

The 1.2 billion young people aged 10–19 living today—the largest generation of adolescents ever—present the world with unprecedented potential for social and economic progress. With the majority of adolescents living in low- and middle-income countries (LMICs), identifying programs that prevent them from falling into or remaining in poverty is more pressing than ever. Girls, especially, are confronted with unique challenges, such as gender-based violence, child marriage, early pregnancy, and increased risks of HIV/AIDS. Today, it's hard to find a global health or development organization that isn't implementing programs or projects aimed at improving some aspect of girls' lives.

While understanding what works—and what does not work—is important to ensure that investment in girl-centered programming is evidence-informed, it is equally imperative to explore how and why these interventions work, for what girls, for which outcomes, and whether outcomes are sustained.¹ Specifically, the field has limited answers to the following questions:

- Are multicomponent programs that combine different interventions—such as life-skills education and savings accounts—better at improving outcomes for girls relative to programs with only one type of intervention?
- What is the added value of involving individuals in addition to the girl herself, such as parents, guardians, husbands, etc. (i.e., multilevel interventions)?
- What is the threshold proportion of girls that is needed to participate in a program to bring about normative and behavior changes at the community level?
- Is a greater level of program exposure associated with greater programmatic benefit for girls?
- Can supplemental “booster” activities extend the benefits of a program after it ends?

We conducted a systematic review to identify lessons learned and gaps in evidence. This research was undertaken as part of the Council's RISING (a Research Initiative for Success in Girls programs) initiative, which builds the evidence base for best practices in girl-centered programs.

METHODOLOGY

Four electronic databases (PubMed, CINAHL, EconLit, and Sociological Abstracts) were searched to identify studies published between 1990 and 2014 that evaluated health (i.e., sexual and reproductive health, HIV, and sexually transmitted infections [STIs]), social (education, violence, empowerment), or economic programs targeting adolescent girls (ages 10–24) in LMICs (N=77 of 33,743 identified articles). We extracted information on the program objective, participants, setting, intervention content, program attributes, and outcomes. Outcomes of interest related to knowledge, attitudes/beliefs/norms, self-efficacy/agency, behaviors, or health or status outcomes (e.g., STIs, school enrollment, child marriage) across health, social, and economic domains. Studies that examined by design the relative effect of multicomponent versus single-component programs, multilevel versus single-level programs, boosters, and higher versus lower levels of saturation in the community and program exposure level, were included in the analysis (N=19).

Study quality was assigned based on type of study design, where randomized controlled trials (RCTs) were considered high quality, quasi-experimental designs or pre- and post-intervention assessments with a comparison group were considered medium quality, and cross-sectional, control-comparison data were considered low quality. This initial rating was adjusted based on whether there were other sources of unaddressed bias in the study, as defined by the Effective Public Health Practice quality assessment tool.² The full methodology is described in Haberland, McCarthy, and Brady (2018).

KEY FINDING 1

MULTICOMPONENT PROGRAMS TEND TO OUTPERFORM SINGLE-COMPONENT PROGRAMS.

Eight studies compared a single-component program (e.g., life skills) with a multicomponent version (e.g., life skills plus savings accounts) (Table 1). In total, five studies (two high-quality, two medium-quality, one low-quality) found stronger effects in the multicomponent arm. Of these, four were based on changes in behavior or impact related to work, violence, school, or marriage, and one examined changes in gender attitudes. Three studies (two high-quality, one medium-quality) did not find a difference between multicomponent and single-component arms. Additionally, three studies assessed outcomes over multiple follow-up periods. Of these three, only one found that the multicomponent arm demonstrated greater effect durability for some outcomes over time. The main limitation to this analysis is that in several of the studies, the multicomponent arm (either likely or clearly) entailed more time with participating girls, raising the question of how much of the enhanced performance is attributable to multiple components, to greater exposure, or a combination of the two. The two studies that compared program variations that likely did not differ in the amount of time girls were exposed to the program did not find that the multicomponent arm performed better.

KEY FINDING 2

LONGER PROGRAM EXPOSURE MAY MATTER FOR PROGRAM EFFECTIVENESS.

Eight studies assessed the magnitude of program effects by exposure level (Table 2). Of these, seven studies (six medium-quality and one low-quality) provided evidence that longer exposure was associated with greater benefit, with results based on a range of outcome indicators. Additionally, two studies assessed the magnitude of program effect(s) by exposure level over multiple follow-up assessments. Both of these studies evaluated conditional cash transfer programs and found that girls with longer exposure demonstrated greater school enrollment or attainment, an effect that persisted over time. We note important limitations of some studies reviewed, such as the possibility of selection bias—that girls who chose to attend more sessions may have been more likely to do well regardless of how many hours of intervention they received.

KEY FINDING 3

THERE IS INSUFFICIENT EVIDENCE TO DETERMINE WHETHER MULTILEVEL INTERVENTIONS, BOOSTERS, OR COMMUNITY SATURATION LEVEL ENHANCE INTENDED OUTCOMES FOR GIRLS.

Five studies compared a single-level program (e.g., program with girls only) with a multilevel version (e.g., program with girls plus an intervention with parents, family, or employers) (Table 3). We found mixed evidence with regard to whether multilevel programs outperform programs that engage girls only. Two studies (medium- and low-quality) found better outcomes in the multilevel arm—one assessing changes in physical fitness and the other assessing changes in gender attitudes. Two high-quality studies found the multilevel arm did not outperform the single-level arm. The remaining study found no effects for adolescent girls in our age group of interest regardless of study arm. Two programs compared multilevel and single-level study arms over multiple time-points; neither study provided evidence of more sustained program impact in the multilevel versus single-level arm.

There was also insufficient evidence to draw conclusions regarding questions of booster add-on components and community saturation level. We identified only one girl-centered program in an LMIC setting that included a booster component and no studies tested the relative benefit of its addition.³ Only one study described varying the saturation of the program as part of the study design;⁴ the analysis of these data is currently underway.

KEY FINDING 4

FEW EVALUATIONS OF GIRL-CENTERED PROGRAMS TO DATE HAVE RIGOROUSLY ADDRESSED IMPLEMENTATION SCIENCE QUESTIONS, HIGHLIGHTING A ROBUST AND URGENT RESEARCH AGENDA.

Despite a relatively large initial sample of evaluations of girl-centered programs in LMICs (N=77), only 19 studies provided information that examined or allowed examination of implementation science questions. Of included studies, 6 were high quality, 11 were moderate, and 2 were low quality. Studies generally provided limited information on the process of program implementation. For example, many studies did not include information on the number of hours and program length (i.e., dosage) in different study arms, or participant exposure to the intervention in practice. Such reporting limitations, in addition to methodological limitations, leave many implementation science questions unanswered and underscore the continued need for rigorous research to address questions related to what program attributes, as well as level of program exposure and saturation in the community, are most effective in producing intended outcomes for girls.

POLICY RECOMMENDATIONS

As girl-centered programs are considered for replication, expansion, and scale-up, or new program ideas are innovated for pilots, it is critical that we know what does and does not work for girls, and equally important that we understand how and why programs have their effect. This evidence is vital to ensure that girls receive effective support and to guide the judicious use of limited resources. Based on the gaps identified in this review:

1 We recommend a robust implementation research agenda. Such an agenda includes rigorous studies that:

- Compare multicomponent and single-component programs that hold program exposure constant
- Assess the effects of differential program exposure while addressing selection bias
- Compare multilevel with single-level program variations
- Test whether boosters can sustain program effects
- Assess what level of program saturation can lead to benefits for nonparticipants or change at the community level
- Are longer term, to understand whether/which implementation approaches are more likely to lead to sustained effects
- Assess a broader set of outcomes, to understand whether/which approaches are more likely to lead to a broader set of beneficial outcomes and whether the degree of change, or the durability of change, is affected
- Ascertain cost and measure cost-effectiveness.

Other implementation questions such as fidelity are of keen interest and also need further examination.

2 We call for more and higher-quality research that seeks to address implementation science by design.

More studies on these questions would allow for the synthesis of evidence by program area and/or outcome, while higher-quality evidence can better inform whether there is a causal effect between intervention elements and outcomes.

3 Well-documented program details are essential for maximizing resources to improve outcomes for girls.

Most studies assessing girl-centered programs provided sparse information on program implementation, limiting the ability to address questions of program design and efficiency. There is a need for authors to publish full information regarding intervention design and implementation. A protocol for reporting the process of implementation would ensure standardization in the use of key terms as well as reported information.

Filling the program implementation evidence gap is essential to guiding investment of finite resources. The cost of conducting the high-quality research needed to answer these questions is substantial, but is vital to avert funding programs that do not work.

CONCLUSION

This review looked at how the number of program components, involvement of supporting actors who influence the lives of girls, supplemental “booster” activities, intervention exposure level, and community saturation level influenced outcomes for girls. While findings suggest the importance of multicomponent programs and longer program exposure, each area requires further rigorous research to determine whether and under what circumstances they amplify impact. We call for future research to explicitly test implementation science questions to inform more effective use of resources and to improve outcomes for girls.

KEY TERMS

Girl-centered program—Explicitly targets or intends to reach adolescent girls, builds girls social, economic, education and/or health assets, intends to address girl-specific needs or vulnerabilities, measures outcomes at the level of the girl.

Implementation science—Methods to promote the adoption and integration of evidence-based practices into routine settings while maximizing program effectiveness, efficiency, quality, scale-up, and sustainability.⁵⁻⁷

Multicomponent—Programs that include more than one type of intervention for participants; for example, a program that includes both life-skills education and livelihoods training. Also referred to as combined (versus single-focus) programs.

Multilevel—Programs that reach not just the main beneficiary, but also include activities for actors who directly or indirectly affect their lives and well-being. Using the example of adolescent girls, this could include parents/guardians, husbands, siblings, teachers, etc.

Booster—Supplemental activities implemented with participants after the end of the main intervention with the aim of sustaining program effects.

Saturation—The proportion of individuals in a community eligible to participate (based on program-specific criteria) who actually participated in the intervention.

Exposure—Amount of a program’s intended content that was received by participants.

Durability—The degree to which program effects are maintained over time.

TABLE 1. ADOLESCENT GIRL PROGRAMS IN LOW- AND MIDDLE-INCOME COUNTRIES THAT ASSESSED MULTICOMPONENT[‡] VERSUS SINGLE-COMPONENT INTERVENTION ARMS (N=8)

Program	Citation	Intervention Arms [Ⓞ]	Does Multicomponent Arm Perform Better? [Ⓢ]		
			Detailed Outcomes (Direct comparison of intervention arms or across arm evidence) [Ⓢ]	Overall summary by study quality	
			Low	Medium	High
Kishori Abhijan, Bangladesh	Amin et al. 2005 ⁹	1. APON (Education on health + legal rights) (S) 2. APON + microcredit to qualified members only (M1) 3. CMES (Education on health and legal rights + microcredit) (M2)	Delayed marriage; Dowry payment; School retention; Paid work ↑	Yes ^c	
Safe and Smart Savings, Kenya and Uganda	Austrian et al. 2013 ⁹	1. Savings accounts (S) 2. Safe spaces girls group + savings accounts (M)	Attitudes that condone GBV ↓; Experiences of GBV (Savings Accounts only group experienced increased GBV vs. no change in multicomponent); SRH knowledge ↑; Ever HIV tested	Yes ^b	
Training and wage subsidy intervention, Jordan	Groh et al. 2012 ¹⁰	1. Job voucher (S1) 2. Employability training (S2) 3. Job voucher + employability training (M)	Employment (ever, current, months employed); Hours worked last week; Work income; Life evaluation (current, future); Mental health; Mobility; Empowerment; Delayed marriage		No ^b
Supporting adolescent orphan girls to stay in school, Zimbabwe	Halfors et al. 2011 ¹¹	1. School feeding program (S) 2. School feeding program + school support (school fees and supplies paid; school helper to meet attendance requirement) (M)	School attendance ↑; Perception adults are caring; Educational aspirations; Future expectations about school completion ↑; Gender equitable attitudes ↑ #; Wife-beating endorsement; Think it's OK to ask husband to use condom; Think it's not OK to have sex as an adolescent; Waiting for sex until marriage/ because of values; Waiting for sex because of consequences ↑; Ever sex; School dropout ↓; Delayed marriage ↑ <i>#Marginally significant at p=0.07.</i>		Yes ^a
Siyakha Nentsha, South Africa	Hallman et al. 2011 ¹²	1. Basic (social & health) education (S) 2. Basic education + financial education (M)	Know where to get condoms; Know social grant requirements; Improved budget and planning skills; Attempts to open bank account; Saving behavior; Remain sexually abstinent; Fewer number of sexual partners; Undertake income-generating activity; Self-esteem; Confidence in ability to get a condom; Perceived social inclusion ↑; Obtain birth certificate ↑		Yes ^a
Sanitary pad and puberty education program, Ghana	Montgomery et al. 2012 ¹³	1. Puberty education (S) 2. Puberty education + menstrual pads (M)	School attendance	No ^c	

Program	Citation	Intervention Arms [Ⓐ]	Detailed Outcomes (Direct comparison of intervention arms or across arm evidence) [Ⓒ]	Does Multicomponent Arm Perform Better? [†]		
				Overall summary by study quality		
				Low	Medium	High
Entre Amigas, Nicaragua	Peña et al. 2008 ¹⁴	1. Peer groups (S) 2. Peer groups + mothers (M1) 3. Peer groups + mothers + soap opera (M2)	Self-esteem; Gender-equitable attitudes ↑	Yes ^a		
Kishoree Kontha (Adolescent Girls' Voices), Bangladesh	Scales et al. 2013 ¹⁵	1. Basic (SRH/life-skills, literacy) support (S1) 2. Livelihoods (basic + financial education) (S2) 3. Both (M)	Developmental assets			No ^c

[†] Multicomponent intervention refers to more than one type of intervention for the same participants.

[Ⓐ] Program components indicated as: **S** = single-component arm (**S1** and **S2** used to note multiple single-component arms, if applicable);
M = multicomponent arm (**M1** and **M2** refer to more than one multicomponent arm, if applicable).

[Ⓢ] Outcomes: ↑ = multicomponent arm increases relative to single-component arm; no sign = no difference; ↓ = multicomponent arm decreases relative to single-component arm.

[†] **Yes** = multicomponent arm outperforms single-component arm; **No** = multicomponent arm does not outperform single-component arm. Assessment based on following levels of evidence for at least one outcome or at least one follow-up time-point:

^a = Direct comparison of multicomponent vs. single component using significance test (p<0.05).

^b = Greater number of intended significant outcomes in multicomponent vs. control (or baseline) than in single component vs. control (or baseline).

^c = Larger magnitude of effect in multicomponent vs. control (or baseline) relative to single component vs. control (or baseline).

TABLE 2. ADOLESCENT GIRL PROGRAMS IN LOW- AND MIDDLE-INCOME COUNTRIES THAT ASSESSED MAGNITUDE OF PROGRAM EFFECT BY EXPOSURE LEVEL‡ (N=8)

Program	Citation	Exposure Groups [®]	Does longer exposure lead to better outcomes?†			
			Detailed Outcomes (Direct comparison of exposure groups or evidence across exposure groups) [®]	Overall summary by study quality		
				Low	Medium	High
Better Life Options Program, India	Acharya et al. 2009 ¹⁶	<p>Intervention:</p> <ul style="list-style-type: none"> - Life-skills education - Livelihood training - Safe spaces girls groups <ul style="list-style-type: none"> • Regular attenders (half or more of sessions) (E1) • Irregular attenders (less than half of sessions) (E2) • Nonparticipants in intervention site (E3) • Control-site participants (E4) 	Independent decision-making ↑; Self-efficacy ↑; Mobility ↑; Access to savings ↑; Gender-equitable attitudes ↑; Gender-egalitarian work attitudes ↑; Awareness of SRH matters ↑; Communication with parents (general topics); Communication with parents (SRH topics) ↑; Preference for delayed marriage ↑; Mean age at marriage ↑		Yes ^{bc}	
Punjab Female School Stipend Program (FSSP), Pakistan	Alam et al. 2011 ¹⁷	Years of CCT exposure (to girl) conditional on school attendance (E)	Complete one grade of high school ↑; Probability of delayed marriage ↓		Yes ^a	
PROGRESA/ Oportunidades, Mexico	Behrman et al. 2011 ¹⁸	<ol style="list-style-type: none"> 1. 18+ months of exposure to CCT (to family) conditional on girls' school attendance vs. baseline (E1) 2. <18 months exposure to CCT (to family) conditional on girls' school attendance vs. baseline (E2) 	Grade completion ↑; Employment		Yes ^a	
PROGRESA/ Oportunidades, Mexico	Behrman et al. 2012 ¹⁹	<ol style="list-style-type: none"> 1. One-year exposure to CCT (to family) conditional on girls' school attendance (E1) 2. Two years exposure to CCT (to family) conditional on girls' school attendance (E2) 	School enrollment; Grade completion; Time devoted to homework; Working for pay; Monthly wages		No ^{bc}	
ISHRAQ, Egypt	Brady et al. 2007 ²⁰	<p>Intervention: girl centered spaces + literacy classes + life-skills programs + sports clubs</p> <ol style="list-style-type: none"> 1. Full-term participants (30 months) (E1) 2. Dropouts (13–29 months) (E2) 3. Dropouts (<12 months) (E3) 4. Nonparticipants (0 months) (E4) 	Academic skills (writing, math, literacy) ↑; Gender-equitable attitudes on marriage ↑; Desire for <3 children ↑; Gender-equitable attitude index ↑ Decreased intent to circumcise daughters ↑; Experience of FGM/C ↓; Attitudes supportive of GBV ↓; Experience of verbal abuse ↓		Yes ^{bc}	
Female Secondary School Assistance Project (FSSAP), Bangladesh	Khandker et al. 2003 ²¹	Continuous years of exposure (i.e., 1–4 years of implementation in school) to CCT (tuition paid to school and stipend paid to girl directly) (E) conditional on school attendance	Secondary school enrollment ↑	Yes ^a		

Program	Citation	Exposure Groups [Ⓜ]	Does longer exposure lead to better outcomes? [†]			
			Detailed Outcomes (Direct comparison of exposure groups or evidence across exposure groups) [Ⓜ]	Overall summary by study quality		
			Low	Medium	High	
First Time Parents Project, India	Santhya et al. 2008 ²²	<p>Intervention: Information provision (by outreach worker) + Social support groups + Health service adjustments</p> <p>Two study sites: 1. Diamond Harbor (15% exposed to all 3 components; 51% information provision and group activities; 20% information provision only) (E1) 2. Vadodora (1% exposed to all 3 components; 9% information provision and group activities; 13% information provision only) (E2)</p>	<p><i>Autonomy and social support</i> Role in HH decision-making ↑; Mobility; Equitable gender-role attitudes ↑; Nonacceptability of GBV; Friends in marital village ↑; Peer support ↑</p> <p><i>Family planning and maternal health practices</i> Index of SRH knowledge ↑; Married women's contraceptive use ↑; ANC use ↑; Delivery preparations ↑; Facility-based birth; PNC check w/in 6 weeks ↑; Early breastfeeding adoption ↑</p> <p><i>Partner communication and support</i> Discussed contraceptive use with partner ↑; Partner communication in disagreement ↑; Husband supports wife in family conflicts</p>	Yes [Ⓟ]		
Go Girls! Initiative, Botswana, Malawi, Mozambique	Underwood et al. 2011 ²³	<p>Intervention: 1. <i>Structural level:</i> training school personnel, access to financial resources to girls + families 2. <i>Community:</i> mobilization, local leadership involvement 3. <i>Family:</i> adult-child communication 4. <i>Individual:</i> community-based life skills (out-of-school girls) and school-based life-skills education for boys and girls (in school) 5. Radio component (all levels) (Malawi only)</p> <p>Implementation areas: Botswana (E1) Malawi (E2) Mozambique (E3)</p> <p>Participated in at least one activity: 18% E1, 55% E2, 24% E3</p>	HIV knowledge ↑; Adult-child communication ↑; Relationship satisfaction with mother ↑; Reduction in teachers asking for sex in exchange for favors ↑; Feel safe in school; Legal literacy ↑	Yes [Ⓟ]		

[†] Exposure level refers to level of participant adherence to the program, degree of program participation, or the length of time respondents receive the program.

[Ⓜ] **E** refers to exposure period assessed. **E1** refers to exposure group 1 in study, **E2** refers to exposure group 2, etc.

[Ⓝ] Outcomes: ↑ refers to increased magnitude of effect with longer exposure, no sign = no change with longer exposure, ↓ = lower magnitude of effect with longer exposure.

[†] **Yes** = higher exposure arm outperforms lower exposure arm; **No** = higher exposure arm does not outperform lower exposure arm. Higher exposure group outperforms lower exposure group using one of the following levels of evidence for at least one intervention time-point (if multiple):

[Ⓝ] = Statistical comparison of intervention effect over time.

[Ⓟ] = Greater number of intended significant outcomes in higher exposure group vs. control (or baseline) than in lower exposure group vs. control (or baseline).

[Ⓠ] = Larger magnitude of effect in higher exposure group vs. control (or baseline) relative to lower exposure group vs. control (or baseline).

TABLE 3. ADOLESCENT GIRL PROGRAMS IN LOW- AND MIDDLE-INCOME COUNTRIES THAT ASSESSED MULTILEVEL[‡] VERSUS SINGLE-LEVEL COMPONENT INTERVENTION ARMS (N=5)

Program	Citation	Intervention Arms [Ⓐ]	Detailed Outcomes (Direct comparison of intervention arms or across arm evidence) [*]	Does Multilevel Arm Perform Better? [†]		
				Overall summary by study quality	Low	Medium
Training and wage subsidy intervention, Jordan	Groh et al. 2012 ¹⁰	1. Job voucher (S1) 2. Employability training (S2) 3. Job voucher + employability training (M)	Across arm evidence (S1 vs. control, S2 vs. control, M vs. control) does not show that participation in M arm leads to a greater number or more sustained number of intended outcomes than either single-level arm. Current employment (ever, current, months employed) (S1+); Hours worked last week (S1+); Work income (S1+); Life evaluation (current, future) (S1+, S2+); Mental health (S2+); Mobility (M+); Empowerment; Delayed marriage			No ^b
CASPIAN, Iran	Kargarfard et al. 2012 ²⁴	1. After-school physical activity program for girls (S) 2. After-school physical activity + mothers (M)	Physiological health (resting heart rate, one-mile walk time, max. oxygen intake, flexibility, abdominal muscle strength, and endurance) ↑; Upper-body muscle strength; BMI		Yes ^a	
School feeding program, Burkina Faso*	Kazianga et al. 2009 ²⁵	1. School meals (S) 2. Take-home rations (conditional on attendance) (M)	New school enrollment; School absenteeism; Math ability; Time to answer math questions; Cognitive development; Child labor <i>*Note: Findings reported for girls ages 13 to 15.</i>			No ^b
Entre Amigas, Nicaragua	Peña et al. 2008 ¹⁴	1. Peer groups (S) 2. Peer groups + mothers (M1) 3. Peer groups + mothers + soap opera (M2)	Self-esteem; Gender-equitable attitudes †	Yes ^a		
Exploring the World of Adolescents (EWA), EWA with parents (EWA+), Vietnam	Pham et al. 2012 ²⁶	1. SRH education + gender content (EWA curriculum) (S) 2. SRH + gender content + parent education (EWA+) (M)	No clear pattern of larger magnitude of effect, significant number, or sustained outcomes for M (vs. baseline) relative to S (vs. baseline) across outcomes and follow-up times <i>Knowledge</i> Pregnancy/contraceptive (M+); STIs; HIV (M+) <i>Attitudes toward risk and protective behaviors</i> Extrinsic rewards; Intrinsic rewards (S+); Perceived severity: pregnancy (M+); Perceived severity: HIV/AIDS (M+); Perceived vulnerability: sex (S+); Perceived vulnerability: HIV/AIDS (S+); Self-efficacy condom use; Self-efficacy abstinence; Response efficacy; Response cost (S+)			No ^b

[‡] Multilevel refers to programs that reach not just the primary target group of adolescent girls, but also include intervention activities for those who directly or indirectly affect girls' lives (e.g., parents, brothers, partners, community members).

[Ⓐ] Program components indicated as: **S** = single-level arm (**S1** and **S2** used to note multiple single-level arms, if applicable); **M** = multilevel arm (**M1** and **M2** refer to more than one multilevel arm, if applicable).

^{*} Outcomes: † = multilevel increases relative to single-level arm; no sign = no difference; ↓ = multilevel decreases relative to single-level arm. S+/M+ = significant positive effect for girls in single-level arm or multilevel arm vs. girls in control/comparison group at p<0.05.

[†] **Yes** = multilevel arm outperforms single-level arm; **No** = multilevel arm does not outperform single-level arm. Assessment based on following levels of evidence for at least one outcome or at least one follow-up time-point.

^a = Direct comparison of multilevel vs. single level using significance test (p<0.05).

^b = Greater number of intended significant outcomes in multilevel vs. control (or baseline) than in single level vs. control (or baseline).

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