

TITLE PAGE

Interventions to reduce gender-based violence among young people living with or affected by HIV/AIDS in low- and middle- income countries.

Running Head Preventing GBV in young people affected by HIV.

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ABSTRACT

Objective(s): This study explored the effectiveness of gender-based violence (GBV) interventions on young people living with or affected by HIV in low- and middle-income countries (LMICs).

Design: Systematic review and meta-analysis.

Methods: We pre-registered a protocol, then searched thirteen databases and grey literature. We screened randomised and quasi-experimental studies (n=2199) of young people (aged 10–24) living with or affected by HIV in LMICs. Outcomes were GBV and/or GBV-related attitudes. We appraised the data for risk of bias and quality of evidence. Narrative syntheses and multi-level random effects meta-analyses were conducted.

Results: We included 18 studies evaluating 21 interventions. Intervention arms were categorised as: a) sexual health and social empowerment (SHSE) (n=7); b) SHSE plus economic strengthening (n=4); c) self-defence (n=3); d) safer schools (n=2); e) economic strengthening only (n=2); f) GBV sensitisation (n=2) and g) safer schools plus parenting (n=1). Risk of bias was moderate/high and quality of evidence low. Narrative syntheses indicated promising effects on GBV exposure, but no or mixed effects on GBV perpetration and attitudes for self-defence and GBV sensitisation interventions. Safer schools interventions showed no effects. For SHSE interventions and SHSE plus economic strengthening, meta-analysis showed a small reduction in GBV exposure but not perpetration. Economic-only interventions had no overall effect.

Conclusions: SHSE, SHSE plus and self-defence and gender sensitisation interventions may be effective for GBV exposure and GBV-related attitudes but not for GBV perpetration. However, the quality of evidence is poor. Future intervention research must include both boys and girls, adolescents living with HIV and key populations.

Keywords: gender-based violence, HIV/AIDS, adolescents and young people, prevention, intimate partner violence, low- and middle-income countries

Introduction

Gender-based violence (GBV) is a global public health concern. GBV is defined as the exposure or perpetration of physical, emotional or sexual intimate partner violence (IPV) or sexual violence by a non-intimate partner. One in three women experience GBV in their lifetime [1]. Adolescents and youth are disproportionately affected by GBV [2]. A recent meta-analysis estimates that 28% of female adolescents and youth (aged 10–24) have experienced GBV with highest prevalence rates in Eastern and Southern Africa [3]. HIV-positive women report up to ten times higher odds of GBV compared to HIV-negative women [4], even after discounting other forms of abuse they experience, e.g., forced or coerced sterilisation. Recent studies have also highlighted the elevated risk of GBV for key populations affected by HIV including transgender people, men who have sex with men (MSM), sex workers, people in prison, and intravenous drug-users, particularly in low- and middle-income countries (LMICs) [5–10]. These groups are vulnerable due to punitive legal policies, criminalisation, and societal attitudes and therefore at higher risk of victimisation.

GBV is associated with higher HIV incidence in the general population [11]. Among youth populations, data are scarce but there is longitudinal evidence linking GBV to heightened risk for HIV acquisition among young women and girls [12]. These links have also been found for MSM, transgender people, those affected by HIV and other key populations [13,14]. It is thought that multiple complex pathways connect HIV with GBV including, but not limited to, fear of IPV when requesting protection during intercourse, when disclosing one's HIV status [15,16], or when accessing testing and treatment, and multiple concurrent partnerships [17]. GBV can also disrupt HIV treatment and prevention services, resulting in reduced retention in care and poorer health outcomes [18,19]. Interventions are therefore urgently needed among adolescent and youth populations (ages 10–24) living with HIV, and those vulnerable

to or affected by HIV, to interrupt synergies between HIV and GBV and reduce the burden of violence.

We aimed to 1.) investigate what GBV interventions have been developed and evaluated, 2.) examine the components and theory of change of GBV interventions, and 3.) evaluate their effect on exposure to and perpetration of GBV and GBV-related attitudes among adolescents and youth living with or affected by HIV in LMICs.

Methods

Search strategy and selection criteria

A systematic review following a pre-registered protocol [20] and the PRISMA guidelines was conducted. A comprehensive search strategy (Appendix 1, <http://links.lww.com/QAD/B515>) was developed for electronic databases and grey literature. Thirteen databases including PsychInfo and Embase; websites of relevant organisations; conference abstracts; trial registries; and reference lists of retrieved articles were searched between 2005 and 17th September 2018 with no language restrictions (Appendix 2, <http://links.lww.com/QAD/B515>). Relevant experts in the field were also contacted.

Studies were included if they evaluated an intervention reporting GBV or GBV-related attitudes as an outcome. Studies had to be randomised or quasi-randomised trials or pre-post-tests with a control group. Primary outcomes were physical, emotional, or sexual IPV or non-partner sexual violence. Secondary outcomes were GBV-related attitudes (e.g., men have the right to have sex with their partners without their consent). Studies needed to include populations of adolescents or youth aged 10–24 living with or vulnerable to HIV (key populations or members of communities with generalised HIV epidemics) and living in a LMIC as defined by the World Bank [21].

Data extraction

Each study title and abstract were independently screened by two reviewers. Where there was uncertainty, full texts were screened, and discrepancies were resolved through discussion. Data were extracted, and risk of bias was assessed using a pre-tested data extraction sheet based on Cochrane and EPPI Centre guidance (Appendix 3, <http://links.lww.com/QAD/B515>) [22,23]. Study authors were contacted for additional information. Bias was examined using the Cochrane Risk of Bias Tool for randomised [24] and the ROBINS-I for non-randomised studies [25].

Data synthesis

A narrative review of intervention characteristics, components and findings was conducted, followed by a meta-analysis (Appendix 4, <http://links.lww.com/QAD/B515>). GRADE criteria were used to assess the overall quality of the body of evidence for GBV exposure and perpetration and GBV-related attitudes (Appendix 5, <http://links.lww.com/QAD/B515>) [26]. Disagreements were resolved by discussion.

Statistical analysis

For the meta-analysis, studies were grouped by intervention type based on the components they comprised. Significance tests for all statistical analyses were evaluated at a 95% confidence level. Using the Practical Meta-Analysis Effect Size Calculator [27] and R, outcome effects were recalculated as odds ratios for all binary outcomes. Where reported, odds ratios for cluster-randomisation or adjusted analyses were used. For each meta-analysis and multilevel random-effects meta-analysis, odds ratios were log-transformed. Data from the first follow-up of each study after the intervention, which varied between 0 and 12 months post intervention, were included in the meta-analysis. Funnel plots were created to assess

publication bias. Analyses were conducted in RStudio (v3.4.3), using the package metafor (v2.0.0) [28], and assessed for heterogeneity for each comparison using visual inspection and statistical methods (X^2 and I^2). Extracted data and R-scripts are available at <https://osf.io/dgjea/>.

.Results

Description of studies

The search retrieved 2199 unique articles, of which 18 met the inclusion criteria (Figure 1). This review included eight cluster randomised trials, two randomised trials and eight controlled before-after studies, which included 39,746 young people in 21 intervention arms (Table 1, included studies: Appendix 6&7, <http://links.lww.com/QAD/B515>). Three studies were unpublished conference abstracts or presentations [29–32], of which one was published during data extraction [33]. All studies were published between 2005 and 2018. Youth were aged 10–24; a mean age could not be calculated as not all studies provided this information. Eleven studies were carried out in schools and seven in community settings. Of the school-based studies, three took place in primary and eight in secondary schools.

All included studies focused on adolescents and youth vulnerable to HIV, based on their location in a country or area with an HIV epidemic. Studies from rural and urban areas in South Africa, Uganda, Kenya, Zimbabwe, Ethiopia and urban areas affected by high deprivation in Rio de Janeiro were included. None specifically recruited young people living with HIV/AIDS or key populations. Nine studies included only girls, six had boys and girls in equal measures, one had boys and girls but reported only female outcomes, and two included boys only. All of the mixed-sex studies except two used the same exposure and perpetration measures for boys and girls. Those two measured self-reported exposure for girls and perpetration for boys [30,34].

Baseline prevalence of GBV

Study prevalence of GBV, where reported, can be found in Appendix 6, <http://links.lww.com/QAD/B515>.

Description of interventions

All interventions were multi-component, except for two focusing on cash transfers and savings accounts [33,35]. Interventions, or intervention arms in cases of multiple armed studies, were categorised based on the intervention's predominant components (see Table 2 for components and categories): a) sexual health and social empowerment (SHSE) (n=7) [32,34,36–40]; b) SHSE and economic strengthening (n=4) [35,41–43]; c) self-defence for girls (n=2) [44,45] combined which with gender sensitisation for boys (n=1) [46]; d) safer schools (n=2) [30,47]; e) economic strengthening only (n=2, one three-armed intervention: other arms were SHSE and economic strengthening) [33,35]; f) GBV sensitisation and intervention training for boys (n=2, one describes the results for only girls who received a self-defence intervention in the same school as these boys) [46,48]; and g) safer schools plus parenting (n=1) [30].

SHSE interventions included components on HIV prevention and sexual and reproductive health (SRHR), including contraception, gender-equitable norms and conflict resolution skills. SHSE and economic strengthening interventions combined SHSE with vocational skills, savings accounts or financial skills training. Self-defence interventions comprised of skills to defend against assault, de-escalation techniques, empowerment, and safer spaces training. One study also had a GBV sensitisation component for boys. Safer school interventions focused on educating schools and teachers about alternative, positive discipline techniques and teacher-child power dynamics. Economic interventions provided cash transfers or savings accounts but no skills or SHSE training. GBV sensitisation training was

aimed at boys only and focused on gender norms, GBV, consent and de-escalation techniques (Table 2 for components). The most common components were information on SRHR [29,34–37,39,41–43], GBV and gender norms [29,30,34–38,40,46,48], relationships [29,34,40,42,47] and communication [34,35,37,40,41]. Less frequent were empowerment and self-efficacy [39,44,45], de-escalation [41,44,46,48], self-defence [44–46], safe spaces [30,35,36,42], financial education [35,42,43] vocational skills [41–43], networking/social support/mentoring [35,42,43], safer schools [30,37,47], human rights [29,30,41], community involvement [34,38,40], savings accounts [35,43], social environment/peer pressure [29,39], health checks/access to health services [37,42], assessment of risky situations [36,42,45,48], self-blame reduction for victims [45], consent [48] and cash transfers [33].

Intervention format

All interventions except for cash transfers and savings accounts were group-based and involved meetings and interactive discussions. Half of the interventions were school-based and half were community-based. Two interventions focused on community engagement [34,38,40]. Information on theory of change, duration and delivery of interventions is provided in Table 2.

Delivery methods

Multi-component interventions used group-based participatory approaches for most of their components. Only cash transfers and savings accounts used a dyadic approach. Group-based participatory approaches included role-playing, youth groups, mentoring, workshops and facilitated discussions.

Participant involvement

Ten studies involved youth in their design by piloting questionnaires or interventions [36,39,47,48], consulting them prior to intervention design [36,37,42,43,46,48] and development [29,37,48], or having them co-write the intervention content [40].

Control conditions

Most school-based studies used treatment as usual including the standard life-skills curriculum. Community-based interventions either offered no control intervention or treatment as usual. One study provided SHSE to the control [42].

Intervention outcomes

Most studies either measured solely IPV or non-partner sexual violence (primary outcome) or GBV-related attitudes (secondary outcome). Only three studies measured both primary and secondary outcomes [30,38,43]. Primary outcome measures included unwanted sexual touching [35], forced sex [30,32,33,36,37,41,44–46] and rape perpetration [30,34,36], sexual assault (forced sex and/or touching) [47], any physical or sexual IPV exposure [30,34,37,42] and perpetration [30,32,34,37,38], physical IPV exposure [32,33] and perpetration [32], and emotional IPV exposure and perpetration [32]. Secondary outcome measures included gender-equitable attitudes [30,38,40,43,48], attitudes towards coerced sex [39] and acceptance of IPV [40].

Overall, 10 of 21 interventions (n=18 studies) showed a reduction in GBV or in GBV-related attitudes compared to the control group. SHSE interventions showed reductions in GBV exposure (3/5 studies), perpetration (1/6) and GBV-related attitudes (1/3). SHSE plus economic strengthening interventions showed reductions in GBV exposure (2/4) and GBV-related attitudes (1/1) but did not measure perpetration. Self-defence interventions showed reductions in GBV exposure (3/3) but did not measure GBV perpetration or attitudes. Safer

school interventions showed reductions in GBV exposure (1/2; one showed an increase in peer sexual violence for girls [47]), perpetration (0/1) and GBV-related attitudes (1/1). Of the economic interventions, cash transfers showed reductions in GBV exposure [33] and savings accounts showed an increase [35], but they did not measure GBV perpetration or attitudes. GBV sensitisation interventions showed reductions in GBV (1/1) and GBV-related attitudes (1/1) but did not measure perpetration. Safer schools plus parenting showed no reductions in GBV exposure or perpetration (1/1) but reductions in GBV-related attitudes (1/1).

Risk of Bias in included studies

Risk of bias was a concern with high or unclear risk of bias across most assessment categories for most randomised studies (Figure 2) and moderate or high risk of bias in non-randomised studies (Figure 3).

Meta-analyses are presented below for the intervention types: SHSE on GBV exposure and perpetration, and SHSE plus economic strengthening and economic strengthening only interventions on GBV exposure. These use nine of 18 studies with the outcome measured at first follow-up after the intervention. For all other intervention types, meta-analyses could not be conducted. This was due to too few studies in the intervention category (safer-schools plus parenting) or insufficient information to calculate effect sizes for synthesis (safer schools and self-defence), thereby reducing the number of analysable studies to less than two. Likewise, too few studies in each intervention category reported GBV-related attitudes to conduct analyses.

Effect of the interventions

Based on our analyses, an overall reduction could be observed for SHSE interventions on GBV exposure OR 0.85 (95% CI: 0.74-.0.98) with low levels of heterogeneity. An overall

reduction of GBV exposure could also be observed for SHSE plus economic strengthening interventions OR 0.83 (0.73-0.94) with low levels of heterogeneity. No effect could be observed on GBV perpetration for SHSE interventions OR 0.84 (0.54-1.32) or exposure for solely economic interventions OR 1.35 (0.34-5.45) with high levels of heterogeneity. Publication bias is very likely for these studies considering asymmetries in the funnel plots (see Appendix 6, <http://links.lww.com/QAD/B515> for Forrest and Funnel Plots) [22].

Quality of evidence

Using the GRADE criteria for randomised [26], non-randomised [49] and non-meta-analysed studies [50], the overall quality of the evidence was assessed as very low for GBV exposure, low for GBV perpetration and low for GBV-related attitudes (see Appendix 4, <http://links.lww.com/QAD/B515>).

Discussion

GBV is a global public health concern disproportionally affecting adolescents and youth and those living with or at of risk of HIV. Urgent intervention is required to reduce the burden of GBV, particularly in the context of HIV epidemics. This review found 21 heterogeneous interventions ranging from cash transfers to complex multi-component interventions. Multi-component SHSE and SHSE plus interventions showed small reductions in GBV exposure in the meta-analyses. This is an important finding as single-component interventions such as economic strengthening showed no effect on GBV exposure. In fact, the meta-analysis suggests a possible increase in risk in exposure driven by an intervention providing savings accounts. The other intervention, a cash transfer, resulted in a large reduction in GBV exposure. The meta-analyses showed no effect for SHSE interventions on GBV perpetration.

For self-defence for girls, safer schools, GBV sensitisation training for boys and safer schools plus parenting programmes, insufficient data were provided to conduct meta-analyses. In the narrative analysis, self-defence interventions, GBV sensitisation and the combination of both showed promising effects on GBV-related attitudes and rape. Safer schools interventions showed no effects on GBV (except for an increase in sexual violence among girls in one study, possibly related to increased reporting).

None of the included interventions focused explicitly on adolescents and youth living with HIV or from key populations. While some of these were potentially included in the studies, no information was provided on whether interventions are suitable or would require adaptation for these groups or contexts outside of sub-Saharan Africa. Furthermore, most interventions focused on IPV prevention in heterosexual relationships as a primary outcome and only three interventions focused specifically on non-partner sexual violence.

It is noteworthy that all multi-component interventions used some form of group-based participatory delivery method. Involving adolescents through role-play, discussions and workshops appears critical for successful interventions, supporting skill building over knowledge acquisition while potentially increasing acceptability of topics covered and engagement with the material.

Most interventions focused on girls and young women and provided skills for avoiding risky situations where they might encounter violence. This is also demonstrated in the findings that show reductions in exposure but no effects on perpetration. These complex multi-component group-based participatory interventions are excellent for expanding girls' agency and empowerment as well as critical thinking about gender norms. However, it is concerning that we have limited knowledge about what works to change boys' behaviour and attitudes. Interventions should make room to include boys in ways that still protect safe spaces for girls.

Harmful gender norms that drive GBV are difficult to change without involving all people who adhere to and act according to these norms. In fact, interventions involving the whole community either through engagement or mass media have been shown to be critical in shifting harmful gender norms [51,52], yet only three of the interventions included components targeting the wider community. Many interventions that successfully used community engagement to prevent and reduce GBV were excluded from the review because the impact of the intervention on adolescents and youth could not be discerned (Appendix 8, <http://links.lww.com/QAD/B515>: excluded studies). SHSE plus interventions for girls attempted to address this by providing participants with economic and vocational skills to improve economic standing in society in addition to SHSE knowledge. Other interventions focused on self-defence for girls, sometimes combined with gender sensitisation for boys, while safer schools and parenting was on offer for both boys and girls. Boys often received different programmes from girls, with components focused on consent, GBV and intervening to protect girls from harm.

None of the interventions acknowledged that boys and gender non-conforming youth may also be exposed to GBV themselves. Research shows more severe exposure and harmful outcomes for girls in terms of IPV, but in a recent national study in South Africa, 9.9% of boys reported non-consensual sexual acts [53]. Interventions in this review often combined outcome data for both genders or only described GBV experience for girls and perpetration by boys. Overall, interventions to reduce GBV appeared more effective for exposure among girls than exposure among or perpetration by boys.

Measurement of GBV was heterogeneous across studies measuring sexual violence by any or specific perpetrators; combinations of multiple types of IPV (physical, sexual and emotional); individual types of IPV; and GBV-related attitudes using a variety of measures. This

highlights the need for evaluations that include standardised measures reporting on individual IPV and sexual violence outcomes for both boys and girls.

Included non-randomised studies were of poor quality with regards to the construction of the control group. Studies did not use advanced matching techniques, regression discontinuity designs or interrupted time-series to establish causality. Thus, conclusions on effectiveness of these interventions are limited. Furthermore, some studies did not include the same participants at follow-up as at baseline. None of the non-randomised studies were pre-registered, leading to a high risk of selective outcome reporting.

Only one study in this review invited young people to co-create intervention content [40], only half involved young people in intervention planning. This is problematic as participatory research has been shown to make interventions more acceptable for the target audience [54] as well as being beneficial for participant-focused interpretation of data and implementation of study results [55].

Limitations of the review

This review is subject to a number of limitations that affected the analysis. First, this review focused only on studies reporting intervention effects for adolescents and youth. Multiple rigorous GBV prevention intervention evaluations had to be excluded as they only reported outcomes for adults or did not report results for <25 year olds. In light of emerging evidence suggesting incongruence between outcome reporting of older men in community-based studies (reporting reductions in perpetration) and women (reporting no change in violence exposure)[56], extrapolation of results from adult populations to adolescent populations would have been misleading. Second, included studies reported a variety of effect sizes (OR, RR, χ^2 and β - coefficients) which were transformed into odds ratios where sufficient information was provided, and not all cluster randomised studies adjusted for clustering.

Third, while multi-level meta-analyses account for correlations between effect sizes within studies, they only partly account for individual-level effect correlations. Fourth, meta-analyses used data from the first point of follow-up as comparability of follow-up points varying from 0–36 months post intervention was not given. Thus, overall effects in the meta-analyses may be over estimations as effects can trail off over time. Finally, few of the randomised studies included in this review had low risk of bias. Many studies were not pre-registered, or did not provide sufficient information to assess risk of bias and the overall quality of the body of evidence presented in this review was rated as low.

Implications for research and practice

The results of this review have significant implications for research and practice. First, more research using rigorous experimental or quasi-experimental designs is needed to establish the effectiveness of interventions to reduce GBV among young people in LMICs living with or vulnerable to HIV. The promising effects shown by SHSE, SHSE plus economic strengthening, self-defence, gender sensitisation and cash transfers highlighted in this review need further testing. Second, to increase effectiveness of interventions, it is essential that young people are meaningfully involved in the research and intervention design. Third, future interventions should be evaluated with young people living with HIV and key populations of both genders to allow generalisability of the results to these groups. Fourth, organisations funding and implementing GBV interventions should include a budget sufficient for rigorous evaluations of these interventions with comparison groups to inform further investments in programming. Fifth, practitioners should focus on the best available evidence when selecting interventions for implementation and conduct rigorous evaluations where the implemented interventions are not evidence-based. Finally, for both research and practice, targeting community- and society-level factors rather than individual-level factors, and ensuring

implementation and knowledge of laws to protect vulnerable populations from GBV may help shift gender norms to prevent and reduce GBV [57].

Conclusions

SHSE and SHSE plus economic strengthening interventions may reduce GBV exposure among adolescents and youth. More research is needed on the prevention of GBV exposure and perpetration, and on key populations and young people living with HIV. Finally, youth must be included in intervention design and evaluation.

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Author contributions

FM and MP designed the overall study, and MTL, VN, HS and LO contributed to the protocol. FM, MTL, VN, VP and AAB conducted the abstract screening. FM and VP assessed full text eligibility. MTL designed the data extraction form with contributions from FM and MP. FM, VN, VP, RHR, EDM and AAB extracted the data and assessed risk of bias. FM wrote the paper and conducted the narrative analysis. MP and LO contributed to the narrative analysis. TFS calculated effect sizes and conducted the meta-analysis. FM and RHR

GRADED the evidence. All authors contributed to the interpretation of the findings and the structure of the paper. All authors reviewed and approved the final version.

ACCEPTED

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INDIVIDUAL TABLES AND FIGURES

Table 1: Characteristics of included studies and their outcome

First Author (year)	Location	Design	Population	Intervention	Control	Outcome(s)	Effect Size ¹ (OR unless otherwise specified)
Austrian & Muthengi, 2014	Uganda, Kampala, informal settlements	Pre-post-test with accidental assignment to intervention A and B, control systematically different (intervention A n=451; intervention B n=300; control C=313)	Adolescent girls aged 10–19 in low-income areas	Community based interventions A: savings plus B: savings only	No intervention	Unwanted sexual touching past 6 months (A & B vs control)	2.47 (0.74–8.24)
						Unwanted sexual touching past 6 months (Int A)	1.80 (0.81–3.99)
						Unwanted sexual touching past 6 months (Int B)	3.15 (1.40–7.08)
Baiocchi et al., 2017	Kenya, Nairobi, informal settlements	Cluster RCT (intervention n=3529, cluster=16; control n=2827, cluster=16))	Primary school children aged 10–16	School-based sexual assault prevention intervention including self-defence, also included a gender sensitisation intervention for boys	1.5-2hr life-skills class on hygiene, food safety and personal rights as part of usual curriculum	Rape since intervention (girls)	3.7% (0.4–8.0) % risk reduction

¹ Calculated using Wilson [online] effect size calculator. Significance measured at a 95% confidence level.

First Author (year)	Location	Design	Population	Intervention	Control	Outcome(s)	Effect Size ¹ (OR unless otherwise specified)
				in the same schools			
Bandiera et al 2017	Uganda, rural and urban communities	Cluster RCT (intervention n=3964, cluster=100; control n=2002, cluster=50)	Adolescent girls (aged 14–20, mean age 16)	Adolescent club intervention on empowerment and livelihood	No intervention	Forced sex past year	0.82 (0.72–0.93) ^a
Devries et al., 2017	Uganda, Luwero	Cluster RCT (intervention n= 2097 students, cluster= 21; control n=2041, cluster=21)	Primary school children aged 11–14 (mean age 13)	Good Schools Toolkit for reducing violence in schools	No intervention	Peer sexual violence past term	2.01 (0.92–4.40)
						Peer sexual violence past term (girls)	3.39 (1.22–9.40)
						Peer sexual violence past term (boys)	0.64 (0.15–2.73)
						Teacher sexual violence past term	1.04 (0.48–2.25)
						Teacher sexual violence past term (girls)	1.20 (0.46–3.12)
						Teacher sexual violence past term (boys)	0.85 (0.27–2.69)
Dunbar et al., 2014	Zimbabwe, Chitungwiza (urban high density)	Individual RCT (intervention n=158; control n=157)	Out of school, female adolescent orphans aged 16–19 (mean age 18)	SHAZ! Multi-component intervention including life-skills, health, vocational training	Life skills and health education same as intervention group but no additional	Any physical or sexual violence since last study visit	0.68 (0.27–1.74)

First Author (year)	Location	Design	Population	Intervention	Control	Outcome(s)	Effect Size ¹ (OR unless otherwise specified)
				and micro grants	components		
Erulkar & Chong, 2005	Kenya, Nairobi, low-income informal settlements	Longitudinal study with matched control (intervention n=326; control n=326)	Out of school young women aged 16–22	TRY modified group-based finance intervention including savings, credit, business support and mentoring	No intervention	Gender attitudes	1.30 (1.24–1.37)
Jemmott et al., 2018	Eastern Cape Province, South Africa, a township and a semirural area	Cluster RCT: secondary analysis, planned after data was collected. (intervention n=306 female adolescents, n=255 male adolescents; control n=240 male adolescents, n=251 female adolescents)	Adolescent men and women aged 9–18	Let Us Protect Our Future intervention. Theory-based, culturally adapted, 6-session HIV/sexually transmitted disease risk-reduction intervention	Chronic disease prevention control intervention	Lifetime forced sex perpetration (boys)	RR 0.95 (0.92–0.99)
						Lifetime forced sex exposure (boys)	RR 0.96 (0.92–1.00)
						Lifetime forced sex exposure (girls and boys)	0.53 (0.26 – 1.08) ^a
						Lifetime forced sex perpetration (girls and boys)	0.38 (0.17 – 0.85) ^a
Jewkes et al., 2008	South Africa, Eastern Cape,	Cluster RCT (intervention n=694 men, n=715 women,	Adolescent men and women aged 16–	Stepping Stones participatory single	3hr session on HIV, safer sex	Rape/attempted rape of non-intimate partner	0.71 (0.47–1.07) ^a

First Author (year)	Location	Design	Population	Intervention	Control	Outcome(s)	Effect Size ¹ (OR unless otherwise specified)
	villages and townships in rural areas	cluster=35; control n=666 men, n=701 women; clusters=35)	23 (some lies about actual age so aged 15–25)	sex group-based HIV prevention	and condoms	perpetration	
						>1 physical or sexual IPV perpetration since last interview	0.73 (0.50–1.06) ^a
						>1 physical or sexual IPV exposure since last interview	0.87 (0.64–1.18) ^a
Jewkes et al., 2017	South Africa, Gauteng	Cluster RCT (n=3756 intervention A clusters=8; intervention B clusters=8; control cluster=8)	School children in grade 8 aged 12–19	Skhokho Supporting Success multi-component intervention Intervention A: school strengthening Intervention B: School and family strengthening	Standard curriculum	Any physical or sexual IPV perpetration (boys, Int A)	AIRR 0.94 (p=0.682)
						Any physical or sexual IPV perpetration (boys, Int B)	AIRR 0.93 (p=0.644)
						Any physical or sexual IPV victimisation (girls Int A)	AIRR 0.94 (p=0.610)
						Any physical or sexual IPV victimisation (girls Int B)	AIRR 0.93 (p=0.607)
						Non-partner rape perpetration past year (boys Int A)	AIRR 1.02 (p=0.849)
						Non-partner rape perpetration (boys Int B)	AIRR 1.00 (p=0.992)
						Non-partner rape victimisation	AIRR 0.98 (p=0.870)

First Author (year)	Location	Design	Population	Intervention	Control	Outcome(s)	Effect Size ¹ (OR unless otherwise specified)
						(girls Int A)	
						Non-partner rape victimisation (girls Int B)	AIRR 0.86 (p=0.307)
						Gender attitudes (boys Int A)	0.57 (p=0.019) OLS coefficient
						Gender attitudes (boys Int B)	0.20 (p=0.41) OLS coefficient
Keller et al., 2015	Nairobi, Kenya, secondary schools located in or bordering the six largest slums	Quasi-experimental pre-post test (intervention n=1543; control=293)	Adolescent boys aged 15–22	“Your Moment of Truth” (YMOT). Gender-based violence educational curriculum intervention	2hr life skills class	Gender attitudes	Between effect: control group scored significantly higher than the control group at FU, t (1306) = 13.51, p < .0001
Kilburn et al., 2018	South Africa, Mpumalanga, rural	RCT (intervention n=1225; control n=1223)	Unmarried young women aged 13–20 (mean age 15) enrolled in high school and living	Cash-transfer condition on school-attendance over period of 3 years	No cash transfer	Forced sex past year	1.16 (0.94–1.42) ^a
						Any physical IPV past year	0.48 (0.41–0.57) ^a

First Author (year)	Location	Design	Population	Intervention	Control	Outcome(s)	Effect Size ¹ (OR unless otherwise specified)
			with caregiver				
Mathews et al., 2016	South Africa, Western Cape	Cluster RCT (intervention n=1748, clusters=20; control n=1703, clusters =22)	Adolescents in Grade 8 in public high schools (mean age 13)	PREPARE after school, group-based HIV prevention intervention	School as usual	Any IPV experience past 6 months	0.77 (0.60-0.98)
						Any IPV perpetration past 6 months	1.57 (0.88-2.80)
						Unwilling first intercourse	0.91 (0.63-1.32)
Pullerwitz et al., 2015	Ethiopia, Addis-Ababa, low-income sub-cities	Pre-post-test with random assignment of sub-cities to intervention A (n=251), intervention B (n=235), and control (n=159).	Young men aged 15–24	Gender norm change and HIV prevention interventions Intervention A: community engagement and information Intervention B: Community engagement plus group education	Waitlist control	High gender equitable norms (A vs B vs Control)	40% vs 34% vs 30%
						Moderate gender equitable norms (A vs B vs Control)	29% vs 34% vs 37%
						Low gender equitable norms (A vs B vs Control)	31% vs 32% vs 55%
						Any physical or sexual IPV perpetration (A vs B vs Control)	18% vs 16% vs 14%

First Author (year)	Location	Design	Population	Intervention	Control	Outcome(s)	Effect Size ¹ (OR unless otherwise specified)
Risjdijk et al., 2011	Uganda	Quasi-experimental pre-post-test design in matched schools (intervention n=832; schools=24; control n=1011, schools=24)	Secondary school students aged 12–19	Worlds Starts with me low-tech computer-based, interactive sex education program	Waitlist control	Attitudes towards coerced sex	1.12 (0.95–1.32)
Rocha et al., 2013	Brazil, Rio de Janeiro, slum communities	Quasi-experimental pre-post-test in two matched geographic locations (intervention n=114; control n=159)	Young women in low-income communities aged 14–20	Program M, a multi-component group-based sexual and reproductive health intervention with social communication campaign to engage communities	Waitlist control	Acceptance of domestic violence	0.71 (0.11–4.44)
						Non-gender equitable attitudes	0.95 (0.61–1.47)
Sarnquist et al. 2014	Kenya, Nairobi, informal settlements	Pre-post-test in 4 intervention and 1 control neighbourhoods using repeated cross-sections (intervention n=1978, neighbourhoods=4; control n=428, neighbourhoods=4)	Adolescent girls attending low performing secondary schools (aged 13–20)	No means No, empowerment, self-defence and life-skills group-based intervention	Life skills class	Forced sex past year (change within intervention group)	Rate Ratio 1.61 (1.26–1.86); 17.9% vs 11.1%
						Forced sex past year (change control group)	Rate Ratio 1.02 (0.67–1.57);

First Author (year)	Location	Design	Population	Intervention	Control	Outcome(s)	Effect Size ¹ (OR unless otherwise specified)
		=1)					14.3% vs 14.0%
Sinclair et al., 2013	Kenya, Nairobi, urban informal settlements	Longitudinal cohort study in 6 schools pre and post intervention (intervention n=402, schools=4; control n=120, schools=2)	Adolescent high-school girls aged 14–21 years (mean age 16.7)	No means No: empowerment, self-defence and de-escalation	Life skills class	Sexual assault victimization past year	0.34 (0.19–0.59)
Taylor et al., 2011/2014	South Africa, KwaZulu-Natal, urban and rural areas	Cluster RCT (intervention n=432, cluster=8; control n=386, cluster=8)	Adolescents in grade 8 of high school (mean age males 14.8; mean age females 13.9)	Classroom-based sexual health intervention	School life skills curriculum	Physical IPV exposure (boys and girls)	0.78 (.56–1.04)
						Emotional IPV exposure (boys and girls)	1.11 (0.83–1.50)
						Sexual IPV exposure (boys and girls)	0.99 (0.35–2.83)
						Physical IPV perpetration (boys and girls)	0.83 (0.62–1.12)
						Emotional IPV perpetration (boys and girls)	1.08 (0.80–1.44)

^a Note that this OR was calculated for the purposes of the meta-analysis and does not account for the clustering in this study

Table 2: Interventions, their components and categorisations

Study ID	Intervention Name	Components	Duration	Delivery	Theory of change	Intervention categorisation	Youth Involvement
Austrian & Muthengi, 2014	A: Savings plus	Safe spaces: short training sessions on a variety of topics to build social assets and a platform in which girls are organized	30–90 min. sessions weekly overall duration of intervention 1 year	Community groups of up to 25 girls.	Adolescent girls need combination of health, social and economic assets in order to make a healthy transition into an adulthood. These assets will also reduce poverty.	Comprehensive SHSE plus economic strengthening	None reported
				Facilitated by mentor: young women aged 20–35 in the same community as the girls. Intensive 5-day delivery training. Supervision 1/month	Only assets or vocational skills are not sufficient as it won't allow girls to use their networks and capitalize on economic opportunities. Only knowledge on health etc. is not sufficient as economic vulnerability trumps knowledge and leads to increased risky behaviour.		

		Tuko Pamoja: Adolescent Reproductive Health and Life Skills Curriculum: information on puberty, reproduction, family planning, HIV/AIDS, STIs, drug abuse, communication, gender-based violence, peer pressure	30 sessions	No information provided	Successful interventions address the underlying causes and linkages that put girls at risk.		
		Young Women: Your future your money. Financial education on personal money management, exploring options for earning money in formal and informal economies	Sessions as part of safe spaces	Mentor			
		Savings accounts: savings group and individual savings account	Throughout	Local banks			
	B: Savings	Savings accounts: savings group and individual savings account	Throughout	Local banks	Girls were not informed that they could join the plus component and this was thus an accidental additional arm	Economic	

Baiocchi et al., 2017	IMPower	Girls: education to empower girls to avoid risky situations, advocate for themselves and defend themselves against an attack. Sessions: building rapport, personal awareness, boundaries, physical defence, verbal and physical skills, self-defence, de-escalation and negotiation, sharing of assault experiences and linking survivors to a support group	6 week, 2hr sessions classroom based with booster training session within 3 months	Group-based including role-plays, facilitated discussions and verbal and physical skill practice	Based on Social Learning Theory and the Health Belief Model aiming to increase self-efficacy as a key component of behaviour change.	Self-defence	Focus groups and classroom content piloting with target populations during intervention development
				Delivered by instructors who were respected members of their communities and had a background in and passion for prevention of sexual violence. They received extensive training by experience facilitators. New trainers were supervised throughout the first year.			
	50:50:00	Boys: developing awareness about gender interactions, negative gender roles, identifying emotions, skill building around courage, use of verbal interventions in	6 week, 2hr sessions classroom based with booster training session within 3 months	All sessions had ratios of approximately 1 instructor to 15 students		GBV sensitisation	

		harassment or assault situations					
Bandiera et al 2017	Empowerment and Livelihood for Adolescents (ELA)	Adolescent community clubs which host popular activities such as reading, staging drama, dancing, singing, playing games.	5 afternoons per week for 4 years	Adolescent community clubs led by female mentors selected from the community trained for 1 week and with monthly refresher courses.	Vocational skills with financial literacy and life skills will aid the empowerment of girls through relaxation of human capital constraints that adolescent girls face and enhancing control over their body. Kick-starting human capital to break the vicious circle between low labour force participation and high fertility.	Comprehensive SHSE plus economic strengthening	None reported

		Vocational skills taught through adolescent community clubs: courses on income generating activities, supporting the establishment of small-scale enterprises such as hair-dressing, tailoring, computing, poultry rearing also including financial literacy	Sessions offered during the first two years of the intervention	Taught by entrepreneurs engaged in the respective activities or by hired professionals as well as BRAC's agriculture and livestock program staff			
		Life skills: SRH, menstruation, pregnancy, STIs and HIV, family planning, rap, management skills, conflict resolution, leadership, legal knowledge on women's issues such as bride price and VAC	Sessions offered during the first two years of the intervention	Life skills sessions led by mentors or by BRAC's professional staff			
Devries et al. 2017	Good School Toolkit	Complex, whole-school intervention. Six steps containing 60 different activities for staff, students and administration focused on improving	Varies between schools receiving the intervention.	Delivered by two staff and two students per school in group-based format. Leaders receive ongoing support from Raising Voices, the NGO who developed	Draws on the Trans-theoretical model of behaviour change and aims to improve children's experience of school by training teachers and school	Safer schools	children participate actively in the committees and groups set up to make their school safer-questionnaires were piloted with

		the school environment , creating a better learning environment , fostering respect among stakeholders , understanding power relationships , improving teaching techniques, learning non-violent methods of discipline and creating accountability		the intervention.	administration in understanding power relationships, accountability, transparency, working in collaboration with students, taking into account their community's and student's backgrounds and beliefs		primary school children
				Schools must set goals, make action plans, think about rewards and reinforcements and creating social support for change. During the intervention Raising Voices staff provide one-on-one support through visits (2/term) and telephone calls.			
Dunbar et al., 2014	A: Shaping the Health of Adolescents in Zimbabwe SHAZ!	Reproductive health services: health screening, treatment for STIs and minor ailments, free contraceptives, HIV+ participants referred to local clinics and aided with ART registration	Every study visit	Trained project staff	Naila Kabeer's Theory of Women's empowerment. Empowerment is a process by which one develops increased access to resources and greater agency ultimately improving capabilities or the capacity to effect outcomes in one's own life.	Comprehensive SHSE plus economic strengthening	young women gave input into the design of the intervention

		Life skills education and home-based care training: SRH, relationship negotiation, strategies to avoid violence, identification of safe and risky places in the community	Life skills: 14 modules over 4–6 weeks	Life skills: delivered to groups of 25	The program's components were thought to work together to increase knowledge, improve social and economic indicators and enable participants to reduce risky behaviours and optimize healthy ones.		
			Home-based care: Skills around safely caring for people living with HIV		These improvements then reduce HIV acquisition and unintended pregnancy.		
				Home-based care: conducted through Red Cross Zimbabwe			
		Livelihoods: financial literacy education and choice of vocational training, those who completed the training successfully developed a business plan and received support through a micro grant	6 months long	At local training institutes conducted in English with a practical and theoretical component			

		Integrated social support: guidance counselling to help participants navigate challenges	Underpin the livelihoods component	By trained staff and self-selected mentors			
Erulkar & Chong, 2005	Tap and Reposition Youth (TRY) Savings and Micro-Credit	Multi-component intervention which combines savings, micro-credit, training in business and life skills, reproductive health and mentoring by adults from the community	Group meetings 1–2 hrs/week with KDA credit officer	Formation of KIWAs (groups of 15–25 young women) which elect their own representatives and are registered as a self-help group. Group opens savings account and receive 6–day training facilitated by KDA.	Improving adolescent's livelihood options by reducing their vulnerabilities to adverse social and reproductive health outcomes.	SHSE plus economic strengthening	piloting with adolescent girls which led to changes to the program to better meet adolescent girl's needs
				After 8 weeks of saving, group decides which of its members receive first disbursement of loans, other members only receive disbursements when loans have been repaid in full.			
			Group discussions, education sessions, recreation, excursions, sports and fitness organized by adult mentors	Part-time adult mentors from various professions receive 5–day training course.			

			following TRY group meetings.				
Jemmot t et al., 2018	Let Us Protect Our Future	Interactive education to reduce sexual risk behaviours with particular focus on abstinence and condom use: self-efficacy on being aware of risky sexual situations, and how to plan to avoid them, reinforce pride in having a healthy relationship, know and express their limits to avoid risky behaviours and sex refusal.	12 1-hr modules, with 2 modules delivered during each of 6 sessions on consecutive school days	Games, brainstorming, role-playing, group discussions, and comic workbooks with a series of characters and story lines.	Based on social cognitive theory and the theory of planned behaviour. The intervention was primarily designed to reduce sexual risk behaviours. It also included several features designed to address gender issues and rape myth beliefs relevant to perpetration and experience of forced sex.	SHSE	unclear in the paper if they followed protocol plans re the participation of adolescents in the development and piloting of the intervention—formative qualitative research with target group prior to intervention development
		Sessions: “The Long Walk Home”, the “What is a Relationship”, the “Understanding Risky Situations”, the “Knowing and Setting Sexual Limits”		Mixed-sex groups of 9–16 adolescents co-facilitated by a specially trained man and woman. These facilitator pairs modelled egalitarian gender roles in delivering the intervention.			

Jewkes et al., 2008	Stepping Stones	Multi-component HIV-prevention intervention which combines information on sexual and reproductive health, gender-based violence, motivation for sexual behaviour, communication skills, dealing with grief and loss	13 3hr sessions plus 3 meetings and a community meeting. 50 hrs delivered in 6–8 weeks	Participatory single sex, group-based programme in schools complemented by 3 meetings of male and female peer group and final community meeting.	Building stronger, more gender equitable relationships to improve sexual health	SHSE	none reported
				Participatory learning, approaches, including critical reflection, roleplay, and drama and draws the everyday reality of participants' lives into the sessions.			
				Implemented by project staff who were employed by partner organization the Planned Parenthood Association of South Africa. 11 facilitators delivered the intervention after 3 weeks of training and two practice groups. Facilitators were slightly older than			

				study participants, had post-school qualifications and were selected for their demonstration of open-mindedness and gender sensitivity			
Jewkes et al., 2017	Skhokho Supporting Success	A: School Strengthening: 1) Grade 8 Life Orientation Learner Workbook, Educator Guide, Life Orientation Educator Support workshop, 2) Educator training on values, positive discipline skills, adolescent development and stress and coping, 3) Learner club on safe and vibrant school communities, human rights, communication and conflict resolution	Unclear expect for learner club workshop which are 10 sessions x 30 mins.	School-based IPV prevention. Life Orientation delivered by teachers trained in the curriculum. No further information available	Prevention of IPV through addressing the underlying risk factors of IPV operating at different ecological levels. In order to prevent IPV the intervention's aim to build gender equality, challenge normative use of violence in schools and homes, strengthens teen-adult relationships and communication and builds on negotiation,	Safer schools	none reported

		B: School and Family Strengthening: as above plus 1) workshop for caregivers and adolescents aiming to promote supportive, open relationships between caregivers and teens, communication, negotiation, conflict resolution, positive discipline, child abuse, stress and coping and challenging traditional gender roles	4-day workshops		conflict resolution and coping skills.	Safer schools plus parenting	
Keller et al., 2015	No Means No Worldwide Your Moment Of Truth	Education: to address attitudes toward women, promote gender equality, development of positive masculinity, and teach boys how to safely and effectively intervene in GBV	Six 2-hr weekly sessions for 6 weeks immediately after school. 2-hr refresher courses were held at 4.5 and 9 months post-intervention.	After-school workshops. All instructors were males from the local region and ranged in age from 20–34 years. Average instructor to student ratio was 1:18.	Attitudes toward women can be an important barrier to intervening in situations involving GBV	GBV sensitisation	Approximately one dozen facilitated pilot classes with boys of the intended age participated in the curriculum development. Their opinions on relevant topics, such as gender, relationships, personal risks, violence, and so on, were obtained.

Kilburn et al., 2018	HPTN 068	Cash transfer conditional on young women's school attendance (80% month), ZAR 100 paid to young women, ZAR 200 paid to caregiver	3 years (while young woman is eligible for schooling)	Administered by study team, teachers had to take attendance	Cash transfers and education will empower young women and lead to improved sexual behaviour which will reduce young women's vulnerability to HIV and IPV	Economic	none reported
Mathews et al., 2016	PREPARE HIV prevention	Education: values and aspirations, assertive communication, gender power inequities, relationships, sexual decision making, IPV and sexual violence, support for victims of IPV	21 sessions, 1/week, 1.1-1.5hrs duration	25 participants, skill-based and interactive school-based workshops delivered by PREPARE staff who were screened for positive gender norms and comfort with sexuality education. Received 2-week training course and subsequent weekly training, supervision and session prep support.	Reasoned Action Framework with I-Change Theoretical model and Jewkes conceptual framework on IPV.	SHSE	pilot testing of educational component with Grade 8 students prior to RCT, formative qualitative research with adolescents to identify attitudes, beliefs and social norms re barriers and facilitators to safe sexual behaviour. Pilot testing including cognitive interviews of questionnaires
		School health service: SRH education, SRH services and referral to services or commodities	1/ week after school	Individual intervention delivered by nurses from nearest public clinic.	Modelled on the new South African Integrated School Health Policy		

		s where needed.					
		School safety program: knowledge about laws regarding sexual violence, participatory safety audits plus photovoice activities	2-day training course	School teams comprise principals, teachers, school safety officers, parent representatives and local police officers received training at central venue delivered by PREPARE team with Centre for Justice and Crime Prevention.			
		Photovoice: risk mapping of unsafe situations and places in school	5 2-hr sessions	2-day training on photovoice for 20 students at each school. Facilitated by 2 PREPARE researchers			
Pulerwitz et al., 2015	Engaging Boys and Men in Gender Transformation	A: Community engagement: newsletters, leaflets, drama skits, workshop meetings and distribution of condoms focusing on gender norm changes and HIV prevention	6 months	Designed by research intervention and research team took place in entire communities .	Promoting critical reflection regarding common gender norms to decrease the risk of gender-based violence, HIV and STIs.	SHSE	none reported

				Activities engaged the wider community in supporting a shift in	Informed by the theory of gender and power, a social structural theory that addresses environmental		
				specific harmful norms. Engaging Boys and Men in Gender Transformation, a manual based on Engender Health and Promundo's	and social issues relating to gender		
				gender-transformative programming.	dynamics, particularly sexual division of labour, sexual division of power, and the structure of		
					cathexis. According to this theory, various		
					negative health and other outcomes stem		
					from the socialisation of women to be sexually passive, women's economic reliance on men, and		
					abusive partnerships. The theory affirms—		
					that addressing		

					gender norms is		
					a core factor in reducing both IPV and related		
		B: Community engagement plus group education. Education: activities included role plays, group discussions, and personal reflection	8 sessions with 2-3 hrs duration over period of 4 months	Regularly scheduled youth groups in youth centres, usually on weekends using role plays, group discussion and personal reflection with approx. 20 participants. Sessions were facilitated by 2 or 3 peer educators with oversight from a master trainer.	health risks such as HIV and other STIs	SHSE	
Rijsdijk et al., 2011	The World Starts With Me	Interactive sex education program: self-esteem, decision making, personal norms and values, gender equity and sexual and reproductive rights, SRH and goal setting	14 sessions delivered over 6 months	School-based, low-tech and computer-based delivered outside of the normal curriculum using virtual peer educators and making use of adolescent's creative skills to solve tasks.	Using the Theory of Planned Behaviour and the Health Belief Model as a conceptual framework: knowledge on rights, health, behaviour and adolescent development aims to empower and support adolescents to make informed decisions about sex.	SHSE	questionnaire was pre-tested among adolescents

				Activities: theme-based warming-up activities, games and interactive assignments (e.g. role-plays)			
				Students are guided by teachers in their use of the program. Teachers receive 5–6 days of training.			
Rocha et al., 2013	Program M	Education: knowledge and skills on gender identity, sexuality, SRH, HIV prevention and GBV	18 workshops over period of 4 months	Workshops with group activities and peer discussions conducted by facilitators held in community centres. Activities involve role-playing, discussions and a cartoon video. Facilitators are aged 30-45 with experience in conducting workshops on health for women in low-income communities and receive 40hr training on facilitation with subsequent weekly 3hr supervision meetings. All facilitators have a Bachelors	To change women and their communities gender norms and attitudes and in turn increase women's self-efficacy in interpersonal relationships	SHSE	young men and women helped co-create the community radio intervention content

				degree in psychology or social work.			
		Social media communication campaign: Radio soap opera and strip booklets to engage within HIV prevention and strengthen gender equitable attitudes	Several times a day over 4 months	Social communication campaign written by young people in slums and aired through the community radio station			
			Animated strip booklets distributed in communities over 4 months	Distributed by young women who participate in the program			
Sarnquist et al. 2014	No Means No	Empowerment, de-escalation and self-defence skills and linkage of sexual assault survivors to self-help groups	6 sessions, 6 x 2hrs with 3x 2 hr refresher at 3, 6 and 10 months.	Role-play, discussion and extensive verbal and physical technique practice facilitated by local women instructors and their supervisors aged 20–34 years with at least 2 years of experience advocating to reduce GBV in their neighbourhoods. Trainers received 276 hours of training and hands-on practice monitored by supervisors.	The intervention was grounded in social learning theory and the health belief model and was adapted from existing empowerment and self-defence modules.	Self-defence	piloting of questionnaires

					Curriculum developed based on the special needs of women and children living in areas with high rape incidence. Based on women's empowerment and self-defence programs from high income countries.		
Sinclair et al., 2013	No Means No	Empowerment, de-escalation and self-defence skills	6 sessions, 6 x 2hrs with 4x2 hr refresher at 3, 6, 9 and 10 months.	Role-play, discussion and extensive verbal and physical technique practice facilitated by local women instructors in groups of 15. Instructors were 20–32 years of age and selected from the same neighbourhoods as the participants and trained over a 3 months period.	Curriculum developed based on the special needs of women and children living in areas with high rape incidence. Based on women's empowerment and self-defence programs from high income countries.	Self-defence	none reported
Taylor et al., 2011/2014	Teenage pregnancy (TP) prevention program	Gender norms, self-knowledge, relationships, sexual consensus, SRH, parenthood, human rights plus standard school life skills curriculum	16 modules over 4 months.	Classroom-based interactive intervention program implemented by 2 trained facilitators.	Based on the integrated model of behaviour change which assumes that predisposing factors such as knowledge influence	SHSE	none reported

					motivating factors such as attitudes and these lead to behaviour change.		
				Variety of activities: role plays, small and large group discussions, debates, and viewing of videos made especially for the discussions with students			

Figure 1: Prisma Flow Chart [58]

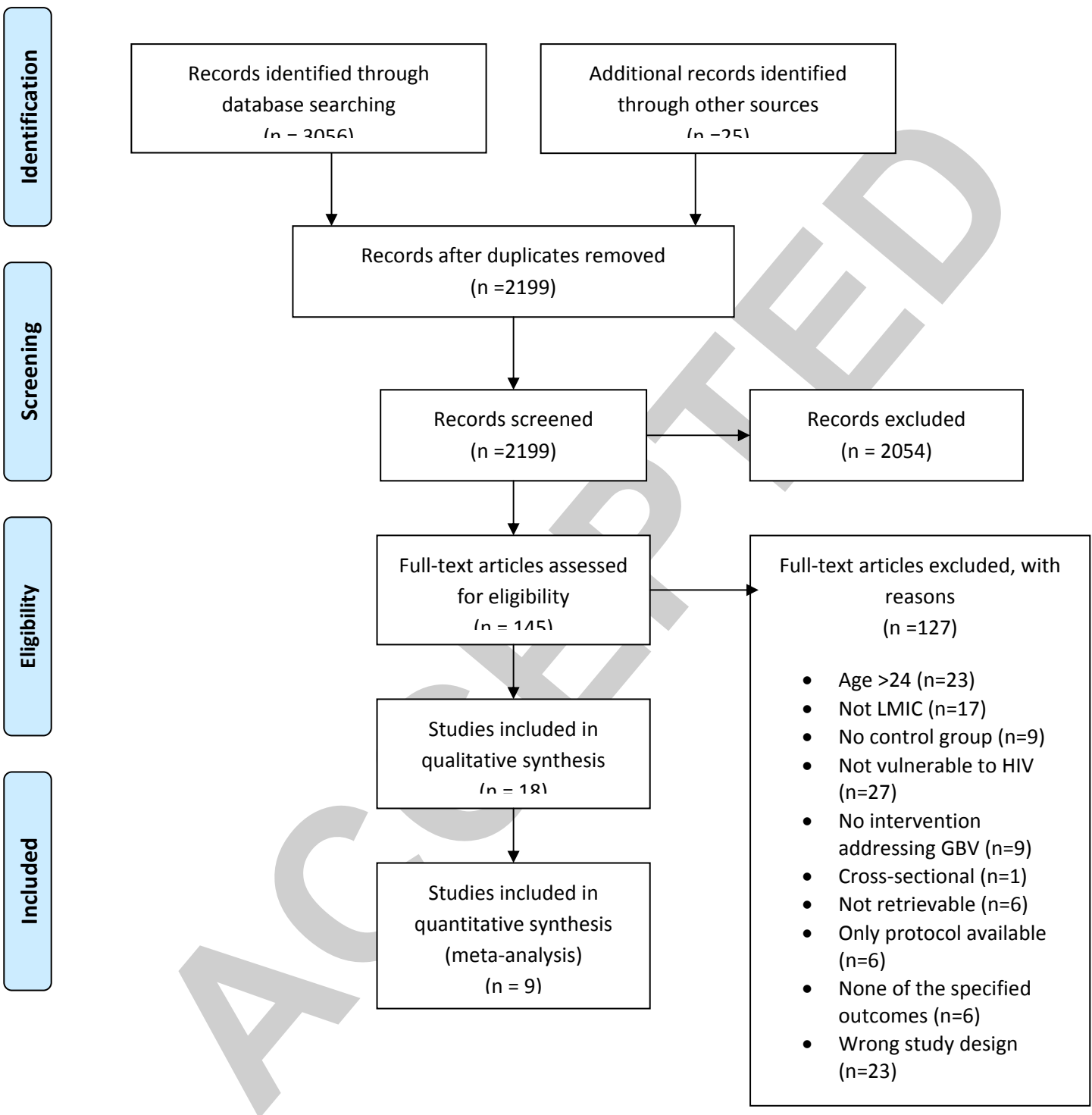


Figure 2: Risk of Bias in randomised studies

	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias
Baiocchi 2017	+	?	-	-	?	-	?
Bandiera 2017	-	-	-	-	+	?	-
Devries 2017	+	+	-	-	+	+	?
Dunbar 2014	+	+	-	-	-	?	-
Jemmott 2018	+	+	-	-	+	-	-
Jewkes 2008	+	?	-	?	+	+	+
Jewkes 2017	?	?	?	?	-	-	?
Kilburn 2017	+	?	+	+	+	+	?
Mathews 2016	+	+	-	-	-	?	-
Taylor 2014	?	?	?	?	-	-	?

Figure 3: ROBINS-I Risk of Bias Assessment

	Bias due to confounding	Bias in selection of participants into the study	Bias in classification of interventions	Bias due to deviations from intended interventions	Bias due to missing data	Bias in measurement of outcomes	Bias in the selection of reported results
Austrian 2014	?	?	?	-	-	-	?
Elrukar 2005	?	-	+	+	-	-	?
Keller 2015	?	+	+	+	-	-	-
Pulerwitz 2015	?	?	+	+	-	-	?
Rijsdijk 2011	?	-	+	-	-	-	?
Rocha 2013	?	?	+	+	+	-	-
Sarnquist 2014	-	?	+	+	-	-	?
Sinclair 2013	-	?	+	+	-	-	?