

**Features decisive for
effectiveness of school-based
sexuality education in low- and
middle-income countries**

A review

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FEATURES DECISIVE FOR EFFECTIVENESS OF SCHOOL-BASED SEXUALITY EDUCATION IN LOW- AND MIDDLE-INCOME COUNTRIES: A REVIEW

A thesis submitted in partial fulfilment of the requirement for the degree of Master in International Health

by

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ABSTRACT

Objectives: Sexuality education is the cornerstone of the combination approaches towards better sexual and reproductive health among young people. This study evaluates the efficacy of school-based sexuality education and quantifies the relative importance of the variations in content and delivery of programmes in low- and middle-income countries.

Methods: RCT and quasi-experimental studies were identified via: 1.Citations in the UNESCO International Technical Guidance on Sexuality Education; 2.Searching electronic databases hosted by EBSCO (MEDLINE, ERIC, PsychLIT, EMBASE, CINAHL, SSCI and other); and, 3.secondary reference searching of included articles. Immediate, short-term and long-term intervention effects on behavioural antecedents, sexual behaviour and SRH outcomes were synthesised as a function of frequency of studies reporting significant effects, and then segregated across variations of programmes' content and delivery.

Results: 51 studies in reference to 38 sexuality education programmes were included in this review. Their impact was found to be predominantly substantial and sustained at both urban and rural locations. Three distinct types of sexuality education emerged from the thematic analysis of their content: informative (providing relevant information), comprehensive (building positive attitudes and skills) and transformative (creating supportive environment). The effectiveness of programmes was found to be remarkably associated with its content, with transformative interventions being more effective than comprehensive and, by inference, informative. In addition, providing sexuality education at earlier age, distributing the content across longer time periods and engaging young people to assist teachers throughout the delivery were observed as beneficial strategies towards enhancing the effects.

Conclusions: Implementing sexuality education in schools is justified in light of its effectiveness. States should invest efforts in designing context and age appropriate programmes within a combination approach.

Keywords: sexuality education, developing countries, school-based programmes, sexual behaviour, sexual health, young people, effectiveness, characteristics

Word count: 12,876

ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
BZgA	Bundeszentrale für gesundheitliche Aufklärung, BZgA [Federal Centre for Health education (BZgA)]
FG(s)	Focus group(s)
FP	Family planning
GBV	Gender-based violence
HIV	Human Immunodeficiency Virus
HW(s)	Health worker(s)
ICPD	International Conference on Population and Development
IEC	Information, Education and Communication
IPV	Intimate partner violence
MDG	Millennium Development Goal(s)
MoE	Ministry of education
NGO	Non-Governmental Organization
RCT	Randomized control trials
SE	Sexuality education
SES	Socio-economics status
SRH	Sexual and Reproductive Health
SRHR	Sexual and Reproductive Health and Rights
STI(s)	Sexually Transmitted Infection(s)
PE(s)	Peer educator(s)
PICO	Participants, Intervention, Comparison, Outcomes

PLHIV	People living with HIV
UN	United Nations
UNAIDS	Joint United Nations Programme on HIV and AIDS
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
USA	United States of America
WHO	World Health Organization

INTRODUCTION

With the International Conference on Population and Development (UN 1994), the world recognized sexual and reproductive health and rights for all, and particularly for young people, as essential to individuals, couples and families, and as fundamental to the social and economic prosperity of nations. As the largest cohort of adolescents in history is now entering their sexual and reproductive lives, it becomes more urgent than ever to ensure access to relevant SRH education, services and commodities which will enable them to lead pleasurable and productive lives. Sexuality education is often regarded as cornerstone of the efforts that promote better sexual health in the younger generations (Bearinger et al. 2007). It empowers young people to make responsible choices, engage in safe, respectful and fulfilling relationships and achieve highest attainable standards of well-being and dignity (BZgA / WHO-Europe 2010).

Recent years have brought an increased global attention to the benefits of sexuality education, primarily due to the growing fears of the impact of HIV in developing countries (Ross, Dick & Ferguson 2006) and the recognition that teenage pregnancies and abortions are constraining the achievement of MDG 5a at many locations (UNFPA 2013). The interest has been further nourished by concerns about sexual abuse and violence, as well as the notion that the internet and social media are continuously producing risky behavioural patterns (Ketting, Winkelmann 2013). Academics, civil society and UN agencies have joined forces to consolidate the evidence around the effectiveness of sexuality education initiatives around the world. The efforts culminated with the UNESCO (2009) Technical Guidance, ultimately showing that sexuality education can be an effective strategy towards better SRH outcomes in young people. Yet, sexuality education is not readily available in many parts of the world. And moreover, at places where it is, it takes diverse forms with respect to normative assumptions, purpose and delivery methods, all of which factors are inevitably linked with the programmes' success.

This thesis is a continuation of my lifelong interest and dedication to youth SRHR. While working as educator in my teenage years, I have come to

realize that sexual health messages are better accepted by some groups than others, hold different relevance across age and setting, and that recipients react differently to various sources and manners of delivery. During my later engagement as programme manager and advocate in my country and worldwide, I was surprised by how little is known about the factors that may facilitate or hinder the effects of sexuality education. Such evidence is particularly needed in developing regions which face resource constraints and large, typically normative, opposition to providing sexuality education to young people. I hope that the work at hand will provide beneficial guidance for sexuality education practitioners and advocates, and that it will inspire future investigation towards designing more effective programmes.

CHAPTER ONE: BACKGROUND

1.1. Young people and their sexual behaviour

Young people constitute nearly one third of the world population and more than 80% of them live in low and middle income countries (UN 2014). The United Nations defines young people to be between 10 and 24 years of age, and further subdivides them to adolescents (10-19) and youth (15-24) based on the diversity of needs which vary considerably against age and circumstances (UNFPA 2013). These are dynamic years characterized by the progression from childhood to adulthood and can easily be influenced by many external factors which modulate young people's well-being. Sexuality and sexual health are prominent aspects of this experience and, as such, are interdependently related with other spheres of young people's life. The economic development brings shifts in values and today's young people in many countries attend school longer, seek careers and delay marriage (Kirby 2011). These changes have widened the gap between puberty and marriage, leading to higher portions of young people initiating sex and having more sexual partners before marriage (Wellings et al. 2006). In the absence of widely available, accurate and context relevant SRH information and skills, young people's sexual behaviour is shaped by different perceptions of risk, sexualisation of media and society, myths and prejudices and unequal gender and other power relations, among other social and structural forces. The interplay of these factors often creates risky behavioural patterns.

1.2. SRH outcomes

Young people are often presumed as relatively healthy assemblage and their health needs are frequently being neglected. However, this age group carries a noteworthy portion of the disease burden, comprising sexual and reproductive ill-health (Gore et al. 2011). In 2010, almost half of the new HIV infections were registered among youth aged 15-24 (Fonner et al. 2014, Braeken, Rondinelli 2012). Similar trends were observed in 2012, when an estimated 2.1 million adolescents were living with HIV in developing countries and young women continued to be disproportionately affected by the epidemic (UNAIDS 2013). Despite the patchy surveillance of STIs in this age group, best approximations indicate that they claim high share of curable sexually transmitted infections as well. (Dehne, Riedner 2005), for instance, discuss that more than half of STIs (excluding HIV) occur in young people, with as much as one third of Chlamydia and Gonorrhoea cases worldwide registered among teenagers. In addition, one in five adolescent girls in developing countries becomes pregnant by the age of 18, many of which pregnancies end in abortion (UNFPA 2013). Teenage childbearing

carries high risk of fatal complications, which are the leading cause of death in girls aged 15-19 (WHO 2011). Finally, young people in low and middle income countries face high levels of violence, including coerced sexual debut (3-37%), sexual abuse in schools and forced sex within marriage (UNFPA 2010). The poor SRH outcomes in this population worldwide, and particularly in low and middle income countries, point out that many governments, despite international commitments¹, continuously fail to address the changing SRHR needs of young people.

1.3. Sexuality education

Sexuality education is one of the possible strategies to reach out to young people in an attempt to prevent risky behavioural practices and possibly promote positive values and attitudes towards sexuality and relationships. The literature discusses three distinct approaches to sexuality education (Ketting, Winkelmann 2013, Boonstra 2011). Normative and politicized debates in the USA have produced two oppositely charged types of programmes grounded on public health concerns: abstinence-only interventions, which promote abstinence until marriage as the single effective practice that offers protection; and comprehensive interventions, which may teach abstinence, but always provide information about condoms/contraception. The European approach, on the other hand, is built on human rights grounds and considers sexuality as positive human potential and source of pleasure and satisfaction; thereby the prevention of sexual ill health comes second. Assumption is that existing interventions in developing countries would have adopted characteristics of these three approaches.

¹ ICPD Programme of Action (UN 1994); The Fourth World Conference on Women: Platform for Action (UN 1995); The Convention on the Rights of the Child (UN 1989); and The UNGASS Declaration of Commitment on HIV/AIDS (UN 2001), to name a few

CHAPTER TWO: PROBLEM STATEMENT AND JUSTIFICATION, AIMS AND OBJECTIVES, METHODOLOGY AND LIMITATIONS

2.1. Problem statement and justification

Sexuality education is one of the possible modalities to meet emerging SRH challenges, with the potential to reach large portion of young people (Kirby 2011). School-based programmes are, in addition, prospectively most (cost) efficient due to their compulsory nature (Kivela, Ketting & Baltussen 2013). While some countries have introduced sexuality education in the formal education systems decades ago, other, predominantly developing countries, still consider this approach to be controversial. The opposition is gathered around the absence of evidence of the effectiveness such programmes in similar developing settings, which promotes views that this approach is inappropriate in the local context and concerns that it may encourage earlier sexual debut, increase in number of partners and therefore stimulate risk behaviours in young people. This is despite the fact that all systematic reviews of effectiveness have confirmed that sexuality education rarely, if ever, has unintended consequences on young people's behaviour (Kirby, Obasi & Laris 2006, UNESCO 2009, Fonner et al. 2014). However, the evidence in support of sexuality education remains largely influenced by experiences in high income countries. For instance, Kirby (2008), Kohler, Manhart & Lafferty (2008) and Kirby et al. (1994), among others, confirm that comprehensive programmes in the USA are more effective than abstinence-only initiatives. Similarly, Bennett & Assefi (2005) argue the impact of US based interventions on the use of contraception and teenage pregnancy. There are just a few reviews of programmes taking place in developing countries, all of which have analysed only HIV interventions and related behaviours in isolation from broader SRH outcomes (Fonner et al. 2014, Kirby, Obasi & Laris 2006, Tan et al. 2012).

The sole systematic endeavour that evaluates the effectiveness of worldwide sexuality education programmes across multiple outcomes and intermediate indicators such as young people's knowledge, attitudes, skills and behaviour, is the study undertaken for the UNESCO (2009) International Technical Guidance on Sexuality Education. It ultimately concluded that sexuality education has the potential to reduce risky sexual practices among young people and, along with broader interventions, impact the rates of HIV, STIs and unintended pregnancies. It also referenced some important characteristics which can strengthen the programmes' success. However, only a third of the interventions analysed in this review originated from developing regions, while majority were located in high income countries, predominantly the USA. This may leave space for hesitation about the applicability of the recommendations in the context of the developing world.

Notably, there has been no systematic effort thus far that makes an attempt to identify which elements of the content of sexuality education can result in better and more sustained outcomes, as well as which features of the programme delivery can strengthen its effects in developing countries. Questions remain as to who should teach sexuality education, how long the programmes should last, at what age to start and whether to work in single-sex or co-ed classrooms. This information is critical for the design and implementation of more effective sexuality education, even more so in countries facing resource constraints.

2.2. Aim and objectives

This study aims to systematically assess and quantify the relative importance of the factors that promote or hinder the effectiveness of school-based sexuality education in developing countries. The specific objectives are the following:

- To scrutinize and categorise the divergent content of sexuality education in developing countries;
- To examine and classify the differing modes of implementation of sexuality education programmes;
- To evaluate the association between the content and mode of delivery of sexuality education with the effects on intermediate indicators (knowledge, attitudes, skills and intentions), sexual behaviour and SRH outcomes;
- To summarise the characteristics of effective sexuality education in developing countries and offer recommendations for future practice.

2.3. Methodology

2.3.1. Theoretical considerations and conceptual framework

This section portrays the most prominent concepts relevant for effective sexuality education. Detailed description of the theoretical considerations employed for this review is available in Annex 1.

Decision making related to sexual (or any other) behaviour does not occur merely at individual level, but rather in a particular social context. Social learning theories suggest that individual actions are a function of the dynamic interaction between four groups of behavioural determinants, also referred to as precursors, mediators or predictors. Cognitive factors, attitudes and behavioural skills interact with the environment to determine how a person behaves (Brindis, Sattley & Mamo 2005). This reciprocal determinism is illustrated in Figure 1.

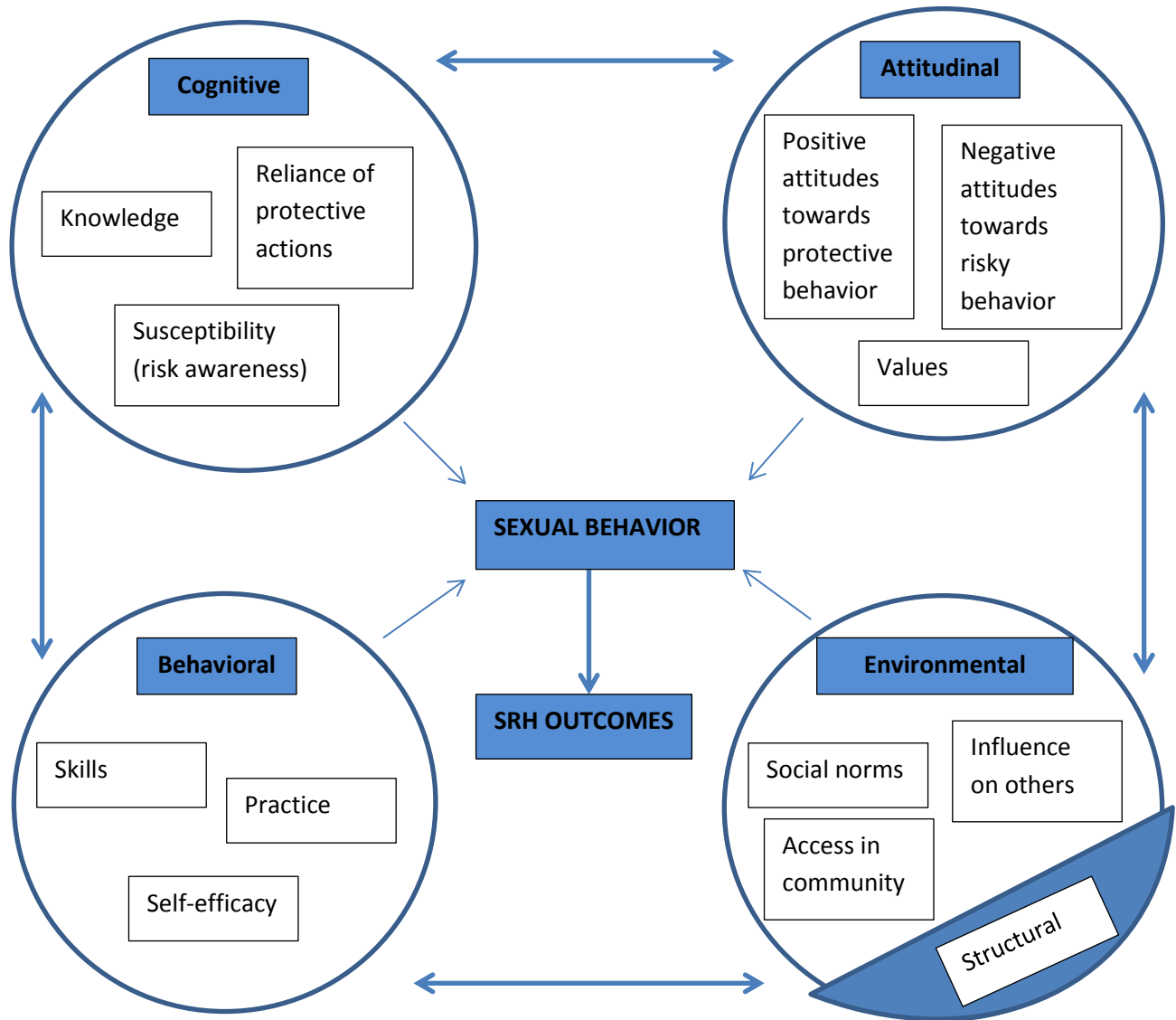


Figure 1: Reciprocal determinism of cognitive, attitudinal, behavioral and environmental mediators of sexual behavior

Sexuality education aims to build positive conducts by addressing elements of the four dimensions of behavioural mediators. Providing accurate and relevant SRH knowledge is the entry point to the personal (or cognitive) sphere. Its intent is to create realistic awareness of risks (susceptibility) and shape positive expectations about the reliance of protective measures (Hedgepeth, Helmich 1996). While cognition is an important requirement, it is often not sufficient to inspire and sustain positive practices (Bandura 1994). Individuals also need to develop positive attitudes towards protective behaviours, as well as a set of skills to act upon their beliefs (NIH 2005). Attitudes are internalized opinions and perceptions of normative values; a learnt way to respond to people and situations (BZgA / WHO-Europe 2010). Skills refer to interpersonal and intrapersonal capacities necessary for healthy sexuality and relationships, including abilities to analyse situations, communicate expectations and needs, and use prophylactic technologies correctly (NIH 2005). Moreover, individuals need to gain confidence in their personal ability to successfully exercise a certain action in the context of their own lives, a concept referred to as self-efficacy (Bandura 1994). Self-efficacy is built through personal experience, practice or observation. Therefore, providing relevant content and opportunities to observe and practice particular skills will ultimately determine the success of any behaviour change intervention. (NIH 2005)

In addition to the aforementioned individual factors, sexual behaviour is influenced by features of the environment. The context specific norms often dictate certain practices, and the access to community resources (education, employment, health services) can shape decisions around sex and sexual health (Shields 2008).

By touching upon factors across the cognitive, attitudinal, skills and environmental dimensions of behavioural determinants with relevant content and opportunities to rehearse protective practices, sexuality education programmes ultimately aim to empower young people to adopt and sustain positive and protective sexual practices. Embracing such practices would, in turn, improve SRH outcomes and contribute towards advancing the overall well-being.

2.3.2. Methods

Basic principles for systematic review of evidence, as recommended by the The Cochrane Collaboration (2011), were employed to the greatest extent possible considering the available resources for the current study. This section describes the approaches used to identify relevant literature and to extract and analyse the data.

2.3.2.1. Eligibility criteria

Based on the PICO (Participants, Intervention, Comparison, Outcomes) aspects of the research objectives, the following eligibility criteria were considered for including appropriate literature:

- Studies which report the effects of group-based sexuality education programmes targeting young people up to 24 years of age in developing countries;
- Report on interventions that are entirely or primarily implemented in educational institutions;
- Provide sufficient information to assess the content of the sexuality education programme and its implementation characteristics;
- Measure impact on one or more behavioural determinants, sexual behaviour or health outcomes;
- Engage reasonably sound randomized or quasi-experimental research design with pre and post-intervention data collection and indicate comparable cohorts at baseline, as per socio-demographic characteristics and outcomes of interest;
- Have a sample size of at least 100, as to ensure sufficient statistical power for assessing effects size (Stevens 1996, Pallant 2010);
- Have been published in English from 1990 onwards.

Studies in languages other than English, reporting on interventions which do not have school-based elements, or that engage cross-sectional designs were considered not suitable. The eligibility criteria were defined prior the literature search in order to minimize investigator bias.

2.3.2.2. Search strategy

Three approaches were used to locate relevant literature for this review. Firstly, the UNESCO (2009) International Technical Guidance on Sexuality Education was used as a starting point in identifying evaluation studies. The systematic review undertaken for the Guidance is thus far the most extensive endeavour to assess the effectiveness of sexuality education programmes throughout the world; a product of a two years' efforts by a research team of prominent experts in this field. It was therefore safe to presume that it comprises the entire body of related literature available between 1990 and 2008, being the search span of the review. Out of the 40 citations in reference to interventions in developing countries, 36 have been published and were obtained for full text screening.

Secondly, to locate relevant studies published after 2008, the EBSCO (2014) Discovery search engine was used as it allows for simultaneous access to major databases, including MEDLINE, ERIC, PsychLIT, EMBASE, CINAHL and SSCI. Boolean operations were performed using the following search terms and their synonyms: sexuality education, life skills education, risk reduction, STIs, teenage pregnancy, behaviour, condom use, GBV, effectiveness, impact and youth. A full list of terms and combinations is available in Annex 2. The search was narrowed to titles published in English between January 2009 and May 2014, and excluded newspapers, trade publications, audio and video resources. This strategy resulted in 6,094 titles which were screened for eligibility, narrowed to 217 references for abstract review, and to 78 for full text screening. Along with the studies from the UNESCO review, the full text of 114 papers was assessed, 42 of which met the inclusion criteria.

Lastly, additional 9 references were obtained through snowballing from the included studies, resulting in a final of 51 publications reporting on 38 sexuality education programmes that are the subject of this review. Figure 2 illustrates the search and screening process, while a complete list of included citations is available in Annex 3.

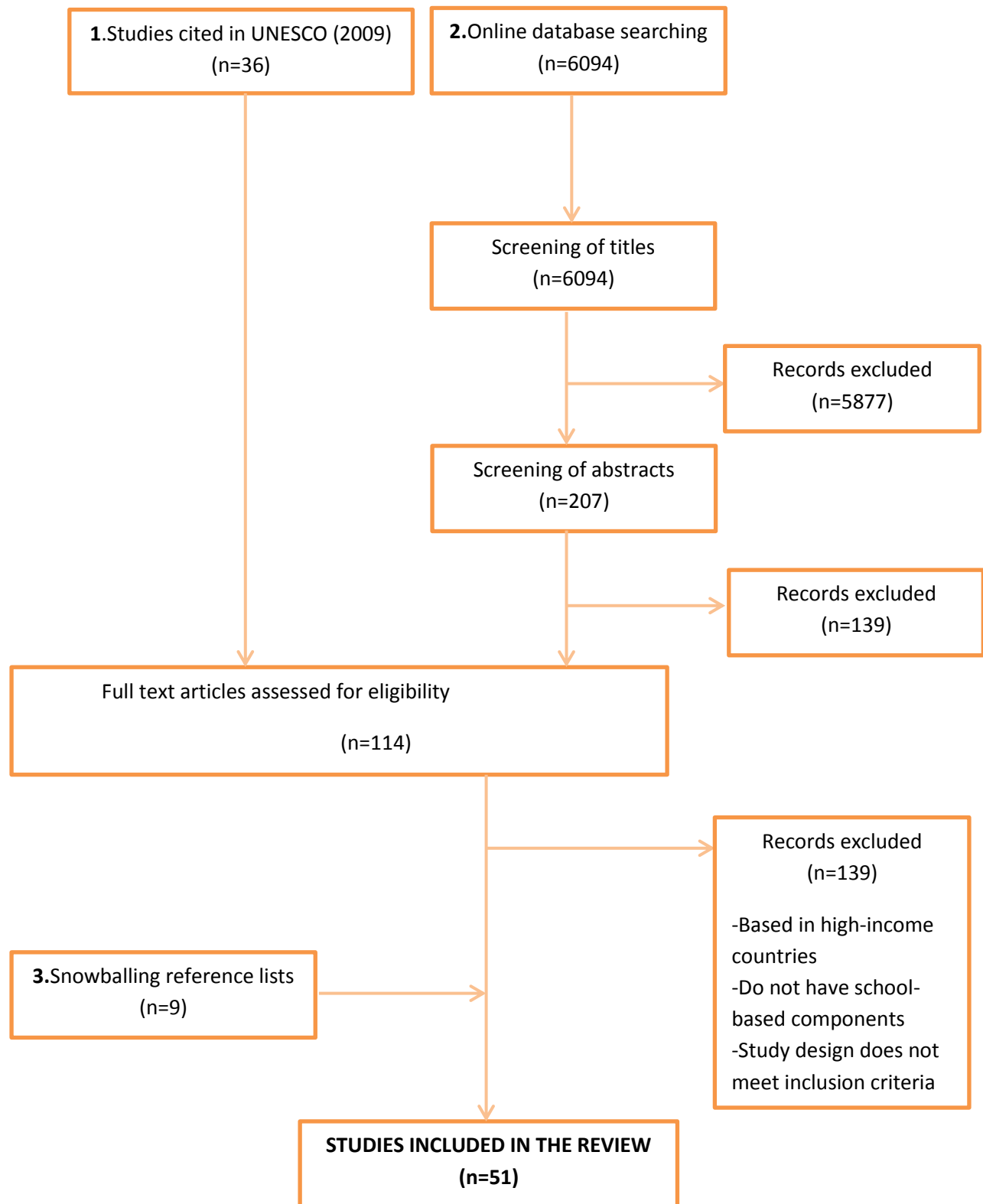


Figure 2: Disposition of citations during the search strategy and eligibility assessment

2.3.3. Data abstraction and analysis

All included study papers were observed for details across the three areas of interest in this thesis: structure and content of the intervention; characteristics of the implementation process; and the effects on behavioural mediators, reported sexual behaviour and biological SRH outcomes. A summary of each study was then created containing the aforementioned information (Annex 4).

The structure and content of the intervention arms of the evaluation studies was thematically analysed for common characteristics in terms of aims, covered SRH topics, teaching methods and accompanying elements. Programmes with similar features were grouped together to form types of sexuality education.

Specifics of the programme delivery (such as location, age of participants, instructors and their training, support and oversight, number of sessions and their duration, group composition, and length of the programme) were also recorded. Alike interventions were then clustered across all features of the delivery, based on the distribution that showed the most promising analytical potential.

The (between group) intervention effects and their direction across all measured indicators were recorded as non-significant (the intervention had no apparent effect over a particular outcome measure), positive (intervention effect at $p < .05$ level in the protective direction; for instance improving knowledge scores or increased condom use) or negative ($p < .05$ effects in the undesirable direction, for instance reducing risk perceptions or increasing the number of sexual partners within a certain recall period). Since the occurrence of HIV cases was too rare to reach statistical significance in any of the studies, marginal programmatic effects at $p < .1$ level were noted as substantial for HIV rates. In addition, all effects were coded according to their time of occurrence after the intervention completion. Immediate effects represent the impact of the intervention observed for up to 3 months after its completion; short-term effects occurred from 3 months to a year, while the long term impact was persistent for more than a year after the programme has concluded.

Finally, the cumulative effectiveness of sexuality education (or the clusters with similar content and delivery approaches) over a particular indicator was derived as a function of frequency of studies finding positive, negative or no intervention effect in the entire sample or an important sub-sample. For easier presentation and interpretation, the results have been summarized as follows: significant intervention effects on the behavioural mediators

(cognitive factors, attitudes, skills and intentions) occurring at any of the follow up measurement points are merged together; significant self-reported behavioural changes (sex initiation, frequency of sex, number of partners, use of prophylactics, GBV and sexual violence) had to be sustained for at least 3 months; while the impact on biological SRH outcomes indicates changes observed more than a year after the intervention. On occasions, however, the short and long term intervention effects on sexual behaviour showed insightful differences and were therefore segregated and presented separately.

2.4. Limitations

This study must be seen in light with its limitations. Firstly, the search, screening and appraisal of the evidence were done by one author. Despite best efforts, this might have introduced investigator bias or technical slips. Secondly, the resources allowed only for inclusion of published literature which may have positively skewed the findings due to publication bias. In addition, this review included only RCT and quasiexperiments which reduce, if not eliminate, the influence of confounders. However, their intervention arms are typically well monitored to ensure fidelity in implementation, which may not be the case during the large scale roll-outs.

It is also possible that the results from the primary studies have been influenced by social desirability and recall biases, since most used self-reports to measure intervention effects. Only few studies measured impact on HIV/STI/pregnancy rates, and even fewer have done so using laboratory tests. Some studies were underpowered and their results did not reach statistical significance at $p < .05$, even though, at occasions, these were programmatically meaningful. This problem was exacerbated by the need to observe effects in smaller subsamples, for instance, use of condoms only among sexually active students. Lastly, the authors of the primary studies have used diverse scales and recall periods to measure the intervention effect. For the purpose of this review, it was necessary to compile variables with similar ultimate outcome. To exemplify, "condom use at last sex", "consistent condom use in the last 3 months" and "condom use with casual partner" were all merged under "increased condom use".

CHAPTER THREE: RESULTS

This chapter presents the findings of the review of sexuality education programmes in developing countries. A summary of each observed sexuality education programme (content, implementation and results) is available in Annex 4, while the forthcoming sections describe the features of the evaluation studies, confer the cumulative effectiveness of sexuality education programmes and compare the effects of interventions with different content and delivery features.

3.1. Description of studies

3.1.1. Overview of the included studies

The search strategy identified 51 publications which report the effects of 38 school based sexuality education programmes in the developing world. More than one publication has been located for ten of these interventions, typically presenting the study design, intervention characteristics and/or baseline results in one paper, while publishing the findings from different follow-up measurement(s) in subsequent articles. The year of publication ranges from 1992 for the oldest (Wilson, Mparadzi & Lavelle 1992) to 2013 for the latest study (Heeren et al. 2013).

The sexuality education programmes that are the subject of this analysis took place in 20 countries across 5 regions: 20 in Sub-Saharan Africa (Kenya, Liberia, Namibia, Nigeria, South Africa, Tanzania, Uganda, Zambia and Zimbabwe), 9 in Latin America and the Caribbean (Belize, Brazil, Chile, Jamaica, Mexico and The Bahamas), 7 in South and South-East Asia (China, India and Thailand), 1 in Eastern Europe (Ukraine) and 1 in the Arab States (Yemen). More than half of the interventions were situated in urban environments, 26% took place at rural locations, and the remaining 7 programmes have been scattered across both urban and rural sites. Low socio-economic surroundings were specified for one in four of the analysed programmes, while majority of interventions either took place in balanced setting, or the research teams have matched the socio-economic characteristics of the environment through the study design.

Mainstream young people were the target of all reviewed sexuality education efforts, with the mean / median age at baseline ranging from 10 (Stanton et al. 2012, Chen et al. 2010, Gong et al. 2009) to 22 years of age (Saad et al. 2012). Notably, none of the programmes was specifically designed for youth engaging in same-sex relationships and only few have noted that the content was sensitive to this subgroup. Secondary schools were the most

common place of implementation of sexuality education, whereas smaller portions of the interventions have been delivered in primary schools (16%) and tertiary education institutions (11%). Six of the evaluated programmes had supplementary components that went beyond the educational system, such as interventions with health workers and awareness rising campaigns.

3.1.2. Methodological characteristics

Quasi-experiments were used to evaluate the impact of 24 programmes, whereas 14 have been assessed through randomized control trials. Five studies used factorial designs to appraise the exclusive and composite impact of particular set of interventions, at least one of which was some form of school-based sexuality education. Parallel group method was employed to randomize the subjects in one third of the experiments, while the remaining RCTs, along with the quasi-experiments, have utilized clusters (most commonly schools, but also classrooms and communities / villages) as units for randomization or assignment to intervention or control groups. Nearly all studies have observed the relative changes in the outcomes of interest among cohorts of young people matched from baseline through follow-up; though, three of the articles reported nested surveys among random samples from the intervention and control participants.

Authors used diverse outcome measures and scales to assess the impact of sexuality education programmes over behavioural mediators, reported sexual behaviour or SRH outcomes in the target populations. One evaluation has exclusively utilized school records to observe pregnancy rates among female students (Cabezón et al. 2005, Vigil, Cortes & Klaus 2008). The remaining studies relied on self-reported surveys, most commonly self-administered paper questionnaires, but also interviewed questionnaires and computer assisted instruments. Only three of these studies have additionally used biomarkers in the form of serological tests on collected blood samples.

There was significant variation in the length of the follow up periods across the reports, ranging from immediate post intervention assessments through observation of sustained effects over years upon completion. The longest follow up evaluation has been reported by Doyle (2010), taking place nearly nine years after the initiation of the MEMA kwa Vijana Project in rural Tanzania. Notably, about two thirds of the observed studies had more than one follow up measurement.

It is also important to highlight that while the widely held control conditions across the observed studies have assumed neutral association with sexual

behaviour, its precursors or outcomes (absence of intervention, delayed intervention or sessions unrelated to SRH), as much as one third of the evaluation reports have derived the relative effect sizes compared to interventions which might as well have had some influence on the variables of interest. These ranged from single HIV informative sessions (Jewkes et al. 2007, Jewkes et al. 2008) and IEC distribution activities (Kinsler et al. 2004), to fully integrated life skills education programmes containing SRH components (Smith et al. 2008, Walker et al. 2006, McCauley, Pick & Givaudan 2004, Karnell et al. 2006). As such, these control conditions may have reduced the relative impact of the particular interventions.

3.2. Effectiveness of sexuality education in developing countries

Vastly diverse sexuality education programmes were used in the intervention arms of the observed studies. Variations were present in terms of the primary goals and underlying paradigms used to construct the desired effects, the content of the intervention and its implementation. This segment lays out the overall effectiveness of sexuality education programmes with respect to the behaviour change they aimed to promote, while sections 3.3. and 3.4. make associations with the content and implementation.

All sexuality education programmes aimed to result in adopting sexual behaviours that would presumably offer protection against SRH risks in the target audience. However, the desired behaviour change varied from primary or secondary abstinence, to using condoms and contraceptives or utilizing health services. An initial attempt was made to apply the continuum from abstinence-only (through abstinence-plus and comprehensive) to holistic sexuality education typical for western based programmes; however, it was instantly apparent that the sexuality education programmes evaluated in this set of studies does not follow similar pattern. Notably, only two of the interventions in this set have offered abstinence as the exclusive protection practice (Li et al. 2011, Klepp et al. 1997, Klepp et al. 1994), while none of the programmes conceptualized sexuality as positive human potential nor were lengthy enough to be characterized as holistic.

3.2.1. Impact of abstinence-only sexuality education

It was somewhat surprising to have identified only two interventions which promoted abstinence as the single desirable practice that offers protection against sexual risks. These programmes were seen as fundamentally different due to the failure to recognize young people as sexual beings, and were therefore observed separately. Their impact on behavioural precursors was moderate at best, while neither of the two abstinence-only programmes resulted with significant intervention impact on delaying sexual initiation, which was the only observed measure of sexual behaviour. In light of the small number of abstinence-only programmes, their trivial impact and their conceptual contrast with the remaining set of interventions, these two studies were excluded from the imminent analysis.

3.2.2. Impact of sexuality education programmes which promoted diverse protective measures

The remaining 36 evaluated programmes aimed to encourage adoption of responsible sexual behaviour by teaching students about diverse protective measures. Some covered a limited span of topics (for instance only HIV or pregnancy), other enclosed a range of SRH issues, but all provided at least information about condoms and/or contraceptives and encouraged their consistent utilization among students who were sexually active. It is apparent from the summary of evaluation studies (Annex 4) that programmes which acknowledged young people as sexual beings and empowered them to make responsible choices through the promotion of diverse safe options are better accepted by participants and result with noteworthy behaviour change. On a summary note, of the 29 studies that measured the behavioural impact of such programmes, 93% found significant protective changes on at least one indicator, 59% improved at least two, while 24% had an effect on three or more self-reported sexual behaviour measures.

The aggregated effects of these programmes are presented in Table 1 as a function of frequency of studies that have detected positive, negative or absence of intervention effects over a particular outcome.

Table 1: Effectiveness of sexuality education programmes in developing countries					
Outcome	No. ¹	(-) ²	(0) ²	(+) ²	% ³
Cognitive factors					
Increase knowledge	29		2	27	93
Susceptibility (risk awareness)	12	1	6	5	33
Reliability (Abstinence)	5			5	100
Reliability (Condoms and/or contraceptives)	8		1	7	88
Attitudes and values					
Attitudes (Abstinence)	20		3	17	85
Attitudes (Condoms and/or contraceptives)	26		5	21	81
Attitudes (PLHIV)	10		2	8	80
Perceived norms and social support	7		2	5	71
Behavioural skills					
Self-Efficacy	25		5	20	80
Partner communication	9		4	5	56
Other communication (peers, adults)	8		1	7	88
Behavioural intentions					
Intentions (Abstinence)	9		5	4	44
Intentions (Condoms and/or contraceptives)	13			13	100
Sexual behaviour and other risk or protective practices					
Delay initiation of sex	20	1	9	10	45
Reduce number of partners	14		6	8	57
Reduce frequency of sex	9	2	4	3	11
Increase use of condoms	26		11	15	58
Increase use of contraception	6		2	4	67
Increase use of condom or contraception	28		11	17	61
Reduce GBV/IPV	3		1	2	67
Reduce transactional or cross-generational sex	3	2		1	-33
Reduce use of alcohol and/or drugs	5			5	100
Increase utilization of SRH services	2		1	1	50
SRH outcomes					
Reduce STIs (self-reports)	3		1	2	67
Reduce STIs (laboratory tests)	3		2	1	33
Reduce HIV (laboratory tests)	3		1	2 ⁴	67
Reduce pregnancy	6		2	4	67
*Applies to all tables					
1: Number of studies measuring the outcome					
2: Frequency of studies reporting non-significant (0), positive (+) or negative (-) effects on particular outcome					
3: % = $[f(+)-f(-)] / [f(+)+f(-)+f(0)] \times 100$					
4: The effects on HIV rates did not reach $p < .05$ significance, but were programmatically meaningful					

It can be observed from Table 1 that these programmes have resulted with substantial positive change across all but one outcome measures. The effects are prominent on behavioural mediators, such as knowledge, attitudes, skills and intentions; from four fifths to all of the studies which evaluated these variables have found significant impact attributable to the intervention. Young people's susceptibility to risk and intentions to abstain from sex were somewhat less prone to change as a result of the programme; about a third of the studies have found significant protective alterations, while the remaining ones did not detect significant change. One intervention (Duflo et al. 2006) has reduced the individual HIV risk awareness among male participants.

Majority of the evaluation studies have also found substantial effects of sexuality education programmes on young people's sexual behaviour. Two out of three interventions have significantly reduced the number of sexual partners and the incidence of coercive sex, and have increased the use of condoms and contraceptives. Half (10/20) of the appraised programmes have inspired young people to postpone sexual initiation until later age, while one has observed earlier sexual debut among intervention participants. This study (Ajuwon & Brieger 2007) employed factorial design and only the arm instructed by peer educators has resulted in earlier coitarche, whereas no effect has been detected in the arms taught by teachers.

Sexuality education programmes were rarely able to affect the frequency of sexual encounters among young people. The rate of occurrence of sexual acts was similar among intervention and control groups' participants in four out of nine studies, while three have detected a reduction. Two have observed an increase of sexual activity due to the intervention; the first one spotted this upsurge only in the groups facilitated by peer educators (Ajuwon & Brieger 2007), while in the other one, the increased frequency of sex among same age participants was on the account of reduced sexual encounters with older partners (Duflo et al. 2006, Dupas 2006).

The only variable where sexuality education programmes might have disinhibited risky sexual practices is the engagement in transactional or cross-generational sex (sex with older partners). Two out of the three studies evaluating such practices have noted an increase attributable to the intervention. Jewkes et al. (2007) and Jewkes et al. (2008) reported short term proliferation of transactional sex among female participants in the programme taking place in South Africa. This effect disappeared at the long term follow up. Females were also more likely to report an older sexual partner if participating in the intervention in the study done by (Walker et al. 2006) in Mexico. These findings, however, must be interpreted alongside the observation of increased condom/contraception use in both studies, which

suggests that even though somewhat more risky sexual behaviour has proliferated on the short term, it was most likely protected.

Risky practices associated with impaired sexual decision making were typically susceptible to intervention effects. All programmes aiming to reduce the use of alcohol and illicit drugs among young people have resulted with significant drops of these practices.

Only seven of the studies have assessed the intervention impact on SRH outcomes. Three have employed biomarkers (laboratory screening), one used official records, and three solely relied on self-reports. Two out of three studies observing self-reported pregnancies or STIs have found significant reduction of cases in the programme participants. The one study using official pregnancy records have also noted substantial decrease of teenage pregnancies four years after the intervention (Vigil, Cortes & Klaus 2008, Cabezón et al. 2005). One of the three studies evaluating the intervention impact on STI biomarkers reported significant reduction of cases at the two years follow up (Jewkes et al. 2007, Jewkes et al. 2008). Lastly, three studies have assessed the programmes' effects on HIV seroconversion, none of which could find significant reduction in the incidence of HIV. However, two of these studies reported marginal programmatic effects: one detected a 25% decrease of HIV cases among female participants after 3 years of programme implementation (Hayes et al. 2005, Ross et al. 2007, MEMA kwa Vijana 2008b, MEMA kwa Vijana 2008a, Doyle et al. 2010), and the other (Jewkes et al. 2007, Jewkes et al. 2008) noted a 15% reduction in HIV incidence in females at the 2 years follow up.

3.2.3. Short term and long term effects of sexuality education programmes

In order to investigate if the effects of sexuality education programmes are sustained over time, the results from the short and long term follow ups were segregated and observed separately. Table 2 allows comparative observation of intervention effects on selected outcomes. The impact on most behavioural mediators did not show particular differences dependent on the time of the follow up data collection (data not presented). This suggests that these factors are easily susceptible to intervention effects and sustain over time. Significant improvements in self-efficacy, however, were more frequently detected in the long term follow ups. Similarly, consistent use of condoms among intervention participants was somewhat more likely

to be spotted at least a year after the programmes' completion. The impact on the remaining behavioural outcomes showed interchangeable variations with time.

Table 2: Short term and long term effects of sexuality education programmes on selected outcomes

	Short-term				Long-term			
	-	0	+	%	-	0	+	%
Behavioural skills								
Self-Efficacy		6	13	68		1	10	91
Partner communication		4	4	50		1	1	50
Other communication (peers, adults)		1	3	75			3	100
Sexual behaviour and other risk or protective practices								
Delay initiation of sex	1	7	5	31		7	6	46
Reduce number of partners		4	7	64		5	4	44
Reduce frequency of sex	1	3	2	17	1	2	1	0
Increase use of condoms		9	11	55		4	9	69
Increase use of contraception		1	2	67		3	2	40
Reduce GBV/IPV		1	2	67		1	1	50
Reduce transac. or cross-gener. sex	1			-100	1	1	1	0
Reduce use of alcohol and/or drugs			4	100			3	100
Increase utilization of SRH services		1		0		1	1	50
*Refer to Table 1 for Legend								

3.3. Types of sexuality education programmes in developing countries and associated effectiveness

As previously discussed, majority of the observed sexuality education programmes encouraged multiple options to safeguard against sexual risks, with the purpose to empower young people to make responsible decisions regarding their sexual behaviour and health. However, these programmes have chosen diverse means to reach their desired results. The thematic analysis of the content of the observed interventions showed a noteworthy variation with respect to the content and the volume of behavioural determinants addressed through the programme. Most interventions intended to enhance decision making at individual level, by either providing only relevant information or going further to build protective attitudes and skills; although a fraction of the observed programmes assumed young people as part of the societal context and also made efforts to create supportive environment and to empower students to utilize its resources. This pattern indicated a promising analytical potential and was therefore used to categorize sexuality education into three groups (types) of programmes, prospectively titled as informative, comprehensive and transformative.

The impending units lay out the common characteristics of the emerged types of sexuality education and lastly present the effectiveness associated with the programme type.

3.3.1. Informative sexuality education programmes

The primary focus of interventions in this group surrounds the cognitive precursors of sexual behaviour. The emphasis is on providing relevant information on SRH topics, including prevention strategies, based on which students are supposed to become more aware of the risks and develop positive efficacy expectations towards preventive measures. These programmes assume that if students are familiarized with the potential risks and know how to prevent them, they would make rational choices regarding their sexual behaviour. Hence, the curricula do not make any attempts on building positive attitudes or skills, aside from proper condom use demonstration existent in most of the interventions. Seven of the observed studies have evaluated interventions with these characteristics. Typically, these were short programmes, ranging from single few hours sessions (Wilson, Mparadzi & Lavelle 1992) to several workshops delivered over a couple of months (Liao et al. 2010). All but one of the interventions were only related to HIV prevention and employed either mostly didactic teaching

methods or rudimentary forms of interactive exercises. One of the programmes, however, took place over a full academic year and covered a range of SRH topics, but was classified in this group since the authors have stressed that the large groups' size of about 60 students did not allow for any meaningful participation (Eggleston et al. 2000).

3.3.2. Comprehensive sexuality education programmes

A fraction of the observed sexuality education interventions had the common construct that decision making regarding sexual practices is not merely rational, but rather a function of individual cognitive factors, normative beliefs and abilities to adopt and sustain safe actions. Hence, these programmes contained the informative elements of the previous cluster, but have gone further to provide space for young people to develop positive attitudes and build necessary skills. The curriculum of the interventions in this group would naturally employ a range of participatory methods through which young people could grow individual and shared values regarding sex and protective measures. For instance, working in small groups, video projections, life stories, essay assignments, debates and other techniques were frequently used to initiate normative discussions about relationships, sex and using condoms and/or contraception, often in relation to the context specific gender, marriage and fertility expectations. Some of the interventions have targeted perceived norms about particular risky practices, such as transactional and cross-generational sex (Duflo et al. 2006, Dupas 2006) or gender and sexual violence (Stanton et al. 1998, Fitzgerald et al. 1999). In addition to value clarification exercises, comprehensive sexuality education programmes also provided opportunities for students to develop practical skills for protective behaviour. The curricula aimed to increase young people's aptitudes to refuse unwanted or unprotected sex, acquire and effectively negotiate use of condoms and/or contraceptives, properly use the protective methods, and/or be able to utilize available SRH services. Various role-play approaches, scenarios and theatre methods were used to build student's communication skills, while the correct use of condoms was thought by means of demonstration and simulated practice. Through repeated observation and exercise, young people were presumed to also gain confidence that they can apply these skills in real world situations (self-efficacy). Eighteen of the observed studies have assessed interventions with these characteristics and were therefore classified as comprehensive. The programmes lasted from one month (Heeren et al. 2013) to a full academic year (Ajuwon & Brieger 2007) and were more likely to cover a range of SRH topics.

3.3.3. Transformative sexuality education programmes

The final group of observed studies was in reference to interventions which did not only target individual decision making processes, but also aimed to craft an environment supportive of responsible sexual behaviour. Aside from their school based components which employed the principles of comprehensive sexuality education, transformative programmes would typically contain additional mechanisms for reaching out to the nearest surrounding. A variety of approaches were used for this purpose:

- Sessions with parents, family, prominent community members and religious leaders, which aimed to mobilize support around sexuality education, improve youth – adult communication on SRH matters and enable adults to support safe sexual practices (Stanton et al. 2012, Chen et al. 2010, Gong et al. 2009);
- Presentations of theatre products, posters or essays developed by participants in the programme, with the intention to raise awareness about young people’s needs adjacent to sexuality (Duflo et al. 2006, Dupas 2006);
- Public debates, campaigns or educational activities aiming to change harmful norms (Pulerwitz, Barker & Segundo 2004);
- Improving access to relevant and youth friendly services through capacity building of health workers, referral mechanisms and cost waivers (Cowan et al. 2008, Cowan et al. 2010);
- And/or targeting more distal determinants of sexual behaviour, such as educational attainment by reducing the cost of schooling (Duflo et al. 2006, Dupas 2006).

As it can be observed, some of these supplementary components could be easily affixed to the school based programme, while other required multi – sectorial engagement. Overall, there were 11 transformative interventions in the observed set of studies; most of them were implemented for more than a year and addressed a range of SRH topics.

3.3.4. Effectiveness of different types of sexuality education

This section presents the impact of sexuality education programmes segregated according to the intervention type. The results are displayed in Table 3 as a function of frequency of studies detecting absent, positive or negative change. As it can be seen, all three programme categories had similar impact over cognitive factors, attitudes and behavioural intentions. Differences start to occur on the variables assessing the skills, with an

observable gradual increase from informative to transformative programmes. Informative curricula were rarely found to affect self-efficacy among intervention participants, with only one of the four studies detecting significant improvements; Comprehensive programmes resulted with substantial effects in 86% of the studies, while all transformative interventions have brought about noteworthy enhancements of self-efficacy perceptions. Similar gradation can be observed on the "partner communication" variable.

The small number of studies evaluating the effects of informative sexuality education programmes on young people's sexual practices showed mixed results. One of the two studies detected sexual initiation at later age, two interventions have significantly reduced the number of sexual partners and 50% of informative programmes have increased the use of condoms and contraceptives.

There were much more studies assessing the effectiveness of comprehensive and transformative programmes over these events. The general observation indicates that transformative interventions were more likely to result with protective changes, with at least two thirds of the studies detecting significant positive impact across most of the behavioural measures. On the other hand, the portion of comprehensive programmes' evaluations which reported significant improvements in sexual behaviour ranges in the lower mid quarter, suggesting that from one fourth to about half of these programmes were found to be effective. Comprehensive interventions were only more successful in reducing the occurrence of sexual encounters among young people. The detailed distribution of frequencies is available in Table 3.

Few of the factorial studies included in this review have also suggested that adding elements which reach out to the community might enhance the effects of sexuality education conducted in schools. For instance, Pulerwitz, Barker & Segundo (2004) have found that young people at intervention sites were more likely to adopt condom use if the programme was supported by a community-wide lifestyle campaign. Similarly, Duflo et al. (2006) and Dupas (2006) reported more substantial behavioural impact in the arms which have accessed the environment with theatre plays and essays prepared during classroom hours, or have reduced the cost of schooling by providing free uniforms.

Table 3: Effectiveness of different types of sexuality education

	Informative				Comprehensive				Transformative			
	-	0	+	%	-	0	+	%	-	0	+	%
Cognitive factors												
Knowledge			6	100		2	15	88			6	100
Susceptibility		3		0		3	4	57	1	0	1	0
Reliability (Abs)			2	100			2	100			1	100
Reliability (C&C)		1	3	75			3	100			1	100
Attitudes and values												
Attitudes (Abs)			4	100		3	7	70			6	100
Attitudes (C&C)		1	5	83		3	10	77		1	6	86
Attitudes (PLHIV)			1	100		2	6	75			1	100
Perceptions (N&SS)		1	1	50			2	100		1	2	67
Behavioural skills												
Self-Efficacy		3	1	25		2	12	86			7	100
Partner communication		2		0		2	3	60			2	100
Other communication			1	100		1	4	80			2	100
Behavioural intentions												
Intentions (Abs)			1	100		4	3	43		1		0
Intentions (C&C)			2	100			9	100			2	100
Sexual behaviour and other risk or protective practices												
Delay sex		1	1	50	1	5	3	22		3	6	67
Reduce No. of partners			2	100		4	2	33		2	4	67
Reduce frequency of sex		2		0	1	2	2	20	1		1	0
Use of condoms		2	1	33		8	6	43		1	8	89
Use of contraception			1	100		1		0		2	2	50
Use of C&C		2	2	50		8	6	43		1	9	90
GBV/IPV						1		0			2	100
Trans. or cross-gen. sex					1			-100	1		1	0
Alcohol/drugs							4	100			1	100
Utilization of services										1	1	50
SRH outcomes												
STIs (self-reports)										1	2	67
Reduce STIs										2	1	33
Reduce HIV										1	2	67
Reduce pregnancy										2	4	67

*Refer to Table 1 for Legend

In order to investigate if there is a difference in sustainability of the effects of the three types of sexuality education, the results from the short term and long term follow ups were segregated and are presented in Tables 4 and 5 respectfully. It appears that informative programmes have done well in improving the behavioural precursors, but their impact on sexual behaviour is mixed in the short term follow ups. Their influence on mediators seems to have weakened over time, while the one study evaluating behaviour change on the long term did not find any significant results (Eggleston et al. 2000). Comprehensive programmes, on the other hand, have brought partial short term behavioural improvements; yet, their impact on some variables (sex initiation and use of condoms and contraceptives) appears to have sustained through the long term observations. Finally, transformative sexuality education programmes were consistent in their positive impact, with most of the studies reporting significant protective changes at both short and long term follow ups. For instance, all five studies assessing the use of condoms have detected significant short term increase, and seven of the eight long term evaluations have detected significant effects sustained for at least one year after the end of the programmes.

Only transformative interventions have been evaluated for their impact on biological SRH outcomes, the results of which are presented in unit 3.2.2.

Table 4: Short term effects of different types of sexuality education

	Informative				Comprehensive				Transformative			
	-	0	+	%	-	0	+	%	-	0	+	%
Short term												
Cognitive factors												
Knowledge			4	100		3	12	80			3	100
Susceptibility		3		0		2	3	60			1	100
Reliability (Abs)			2	100			1	100				
Reliability (C&C)		1	3	75			3	100				
Attitudes and values												
Attitudes (Abs)			3	100		5	5	50			3	100
Attitudes (Cond.)		1	3	75		3	7	70			4	100
Attitudes (Contr.)		1		0			1	100			1	100
Attitudes (C&C)		2	3	60		3	6	67			4	100
Attitudes (PLHIV)		2	5	71								
Perceptions (N&SS)		1	1	50			2	100		1	1	50
Behavioural skills												
Self-Efficacy		3	1	25		3	8	73			4	100
Partner communication		2		0		2	3	60			1	100
Other communication						1	3	75				
Behavioural intentions												
Intentions (Abs)			1	100		2	2	50		1		0
Intentions (C&C)		1	1	50		2	5	71			1	100
Sexual behaviour and other risk or protective practices												
Delay sex		1	1	50	1	4	2	14		2	2	50
Reduce No. of partners			2	100		3	3	50			2	100
Reduce frequency of sex		2		0	1	1	2	25				
Use of condoms		2	1	33		6	5	45			5	100
Use of contraception			1	100						1	1	50
GBV/IPV						1		0			2	100
Trans. or cross-gen. sex									1			-100
Alcohol/drugs							3	100			1	100
Utilization of services											1	100

*

Table 5: Long term effects of different types of sexuality education

	Informative				Comprehensive				Transformative			
	-	0	+	%	-	0	+	%	-	0	+	%
Long term												
Cognitive factors												
Knowledge		1	2	67			4	100			6	100
Susceptibility						1		0	1		1	0
Reliability (Abs)							1	100			1	100
Reliability (C&C)		1		0			2	100			1	100
Attitudes and values												
Attitudes (Abs)		1	1	50		1		0			6	100
Attitudes (condoms)			1	100		1	3	75	1	6		86
Attitudes (contrac.)		1		0			1	100				
Attitudes (C&C)		1	1	50		1	3	75	1	6		86
Attitudes (PLHIV)			1	100			1	100			1	100
Perceptions (N&SS)		1		0					1	2		67
Behavioural skills												
Self-Efficacy							5	100	1	5		83
Partner communication						1		0			1	100
Other communication			1	100							2	100
Behavioural intentions												
Intentions (Abs)		1		0		1		0				
Intentions (C&C)						1	1	50			2	100
Sexual behaviour and other risk or protective practices												
Delay sex		1		0		2	1	33		3	5	63
Reduce No. of partners						3		0		1	4	80
Reduce frequency of sex						2		0	1		1	0
Use of condoms						3	2	40		1	7	88
Use of contraception		1		0			1	100		1	1	50
GBV/IPV						1		0			1	100
Trans. or cross-gen. sex					1			-100		1	1	50
Alcohol/drugs							2	100			1	100
Utilization of services										1	1	50

*Refer to Table 1 for Legend

3.4. Variations in the delivery of sexuality education programmes in developing countries and their associated effectiveness

Only few of the studies included in this review have provided a full description of the implementation process in their intervention arms. However, the authors were consistent in reporting several characteristics of the programmes' delivery, which allowed for comparative analysis of effectiveness across these variations. The implementation of sexuality education programmes differed across few noteworthy features, such as the:

- Age of participants enrolled in the programme;
- Number of sessions, total hours spent in sessions and overall duration of the programme;
- Lead facilitator(s) who delivered the content;
- Gender composition of the groups; and the
- Background of recipients with respect to location.

The forthcoming sections lay out a description of these common variations and their associated impact on behavioural mediators and sexual practices among young people.

3.4.1. Sexuality education programmes for young people at different age

The interventions in this set have been implemented in groups of young people of diverse age. Ten years old students in Bahamian primary schools were the youngest recipients of sexuality education (Stanton et al. 2012, Chen et al. 2010, Gong et al. 2009), while 22 years old university students in Zaria, northern Nigeria were the oldest beneficiary group (Saad et al. 2012). The mean, median or the mid-range of the participant's age at the baseline of each study was recorded as the age of delivery of the programme. Since most programmes were implemented in secondary schools, 80% of the studies have noted the age of the participants in the range of 14-17. Hence, the comparative analysis of effectiveness for the youngest and oldest age groups was obstructed by the limited number of evaluations. However, an observation of the contrast across the median age of 16 showed some insightful results which are presented in Table 6.

Table 6: Effectiveness of sexuality education programmes delivered to participants of different age

	<16 y.o.				>16 y.o.			
	-	0	+	%	-	0	+	%
Cognitive factors								
Knowledge			11	100		2	16	89
Susceptibility	1		3	50		6	2	25
Reliability (Abs)			1	100			4	100
Reliability (C&C)			2	100		1	5	83
Attitudes and values								
Attitudes (Abs)			9	100		3	8	73
Attitudes (C&C)		3	8	73		2	13	87
Attitudes (PLHIV)		1	3	75		1	5	83
Perceptions (N&SS)			3	100		2	2	50
Behavioural skills								
Self-Efficacy		2	8	80		3	12	80
Partner communication		2	1	33		2	4	67
Other communication		1	4	80			3	100
Behavioural intentions								
Intentions (Abs)		3	1	25		2	3	60
Intentions (C&C)			6	100			7	100
Sexual behaviour and other risk or protective practices								
Delay sex		4	5	56	1	5	5	36
Reduce No. of partners		1	3	75		5	5	50
Reduce frequency of sex	1	1	2	25	1	3	1	0
Use of condoms		3	6	67		8	9	53
Use of contraception		2	1	33			3	100
Use of C&C		3	7	70		8	10	56
GBV/IPV						1	2	67
Trans. or cross-gen. sex			1	100	2			-100
Alcohol/drugs			1	100			4	100
Utilization of services						1	1	50
SRH outcomes								
STIs (self-reports)		1	1	50			1	100
Reduce STIs		2		0			1	100
Reduce HIV		1	1	50			1	100
Reduce pregnancy		1	3	75		1	1	50

*Refer to Table 1 for Legend

The distribution of frequencies of studies detecting significant changes across a number of behavioural precursors suggests somewhat similar effects in both age groups. However, participants younger than 16 were more likely to develop positive attitudes towards abstinence and adopt protective perceptions of gender and fertility norms, while older age group were more acceptant of protective views about using condoms and contraceptives and were more likely to improve the communication with their sexual partners under the influence of the interventions. Programmes delivered to participants before the age of 16 appear to have had greater impact on all but one of the measures of sexual behaviour. While this observation is perhaps not surprising for postponing sexual initiation and reducing the frequency of sex or the number of partners, it is interesting to see that younger age groups are also more likely to adopt condom use after receiving sexuality education. Interventions targeted at older participants were only more successful in promoting the use of contraceptives. The small number of studies evaluating biological measures does not allow conclusive observations of any potential divergent impact on STIs and HIV rates; however, there might be a suggestion that programmes were more efficient in reducing teenage pregnancies if delivered at younger age. Three of the four interventions which resulted with significant reduction of pregnancies were provided to young people before the age of 16.

In addition to these findings, several studies of the observed set have stressed the importance of providing sexuality education before the sexual debut of young people. This was based on the discoveries of more substantial programme effects among participants who were sexually inexperienced at baseline. For instance, Maticka-Tyndale, Wildish & Gichuru (2007) have found greater improvements across several measures of behavioural precursors, as well as a smaller number of sexual partners among participants in the intervention group who were virgins at the baseline survey. Similarly, Stanton et al. (1998) and Fitzgerald et al. (1999) have observed better adoption of condom use among young people who initiated sex after the intervention has begun; and Eggleston et al. (2000) have reported the same pattern on the use of contraceptives.

3.4.2. Effectiveness of sexuality education programmes with different duration

There were major discrepancies in the duration of the analysed programmes. Three interventions were delivered in a single session of about 2-3 hours (Wilson, Mparadzi & Lavelle 1992), while three programmes were spread out across several years (Hayes et al. 2005, Ross et al. 2007, MEMA kwa Vijana 2008b, MEMA kwa Vijana 2008a, Doyle et al. 2010). Most interventions, however, lasted in the range from three months to one (academic) year. Variations were also present in the number of sessions (from 1 to 40) and the total time spent in sessions (from 1,5 to 50 hours), though these did not appear to follow a parallel progression with the duration of the programme. This suggests that shorter interventions were conducted in more dense sessions, while longer lasting programmes had more even distribution of the content over time. For instance, even though the curricula of the programmes evaluated by Jewkes et al. (2007) and Smith et al. (2008) was delivered in about 16 sessions, the first one lasted 2 months, while the other one was implemented over 2 years.

A comparative distribution of the impact of programmes with different duration is presented in Table 7. 3 months and 1 year were used as cut off points since it allowed sufficient distribution of studies in each group for insightful observation. As it can be observed, interventions of different length were equally successful in improving the cognitive factors, attitudes and behavioural intentions. However, the longer lasting the programme, the more frequently it was found to significantly improve behavioural skills. Similar pattern occurs on most measures of sexual behaviour. For instance, the proportion of studies finding significant rises in condom use graduates from 33%, 57% to 83% for short, mid and longer lasting programmes respectively. Interventions implemented in less than three months appear to be more effective only in reducing the frequency of sexual acts among young people. The small number of studies evaluating biological SRH outcomes did not provide any insightful observations across these measures.

Table 7: Effectiveness of sexuality education programmes with different duration

	<3 months				3months -1 year				>1 year			
	-	0	+	%	-	0	+	%	-	0	+	%
Cognitive factors												
Knowledge		1	9	90		1	13	93			5	100
Susceptibility		3	3	50		3	1	25	1		1	0
Reliability (Abs)			2	100			2	100			1	100
Reliability (C&C)		1	3	75			3	100			1	100
Attitudes and values												
Attitudes (Abs)		1	4	80		2	9	82			4	100
Attitudes (C&C)		1	7	88		4	8	67			6	100
Attitudes (PLHIV)			3	100		2	4	67			1	100
Perceptions (N&SS)		1		0			5	100		1		0
Behavioural skills												
Self-Efficacy		3	5	63		2	9	82			6	100
Partner communication		2		0		2	3	60			2	100
Other communication			2	100		1	4	80			1	100
Behavioural intentions												
Intentions (Abs)		2	3	60		2	1	33		1		0
Intentions (C&C)			6	100			5	100			2	100
Sexual behaviour and other risk or protective practices												
Delay sex			2	100	1	6	4	27		3	4	57
Reduce No. of partners		1	2	67		5	4	44			2	100
Reduce frequency of sex		3	1	25	1		1	0	1	1	1	0
Use of condoms		4	2	33		6	8	57		1	5	83
Use of contraception						1	2	67		1	2	67
Use of C&C		4	2	33		6	9	60		1	6	86
GBV/IPV						1	1	50			1	100
Trans. or cross-gen. sex					2			-100			1	100
Alcohol/drugs			1	100			1	100			1	100
Utilization of SRH services							1	100		1		0
SRH outcomes												
STIs (self-reports)						1	1	50			1	100
Reduce STIs						1	1	50		1		0
Reduce HIV						1	1	50			1	100
Reduce pregnancy						1	2	67		1	2	67

*Refer to Table 1 for Legend

3.4.3. Instructors of sexuality education programmes and their success in delivering effects

The evaluations of sexuality education programmes included in this review diverged over the type of instructor(s) who deployed the curriculum. Few programmes were taught by peer educators, while most interventions were facilitated by adults. Peer educators were chosen to deliver six of the observed programmes; they were always well trained and supervised and were either of the same age or slightly older than the target group. For instance, Kinsler et al. (2004) recruited and trained young people from the intervention schools to deliver the intervention, while the programme assessed by Cowan et al. (2008) and Cowan et al. (2010) was instructed by school leavers in the year before they went to university. The adult-led interventions, on the other hand, were either facilitated by external consultants or deployed (exclusively or primarily) by teachers. The external facilitators who delivered thirteen of the programmes in this collection had miscellaneous background: professional health educators (Atwood et al. 2012), health workers (Martinez-Donate et al. 2004), psychologists (Wilson, Mparadzi & Lavelle 1992), NGO experts (Jewkes et al. 2007, Jewkes et al. 2008) or the researchers themselves (Thato, Jenkins & Dusitsin 2008). Teachers were the most common lead instructors and they were typically invited to complete about a week long specialized training on SRH information and teaching methodology before the onset of the of sexuality education programme. In ten interventions teachers were the single facilitators, while in nine they were assisted by peer educators or externals. In eleven of these nineteen teacher-led programmes, the sexuality education curriculum was integrated in other school subjects such as life skills, health education or biology.

An observation of the effects segregated by type of instructor is available in Table 8. The first column represents the distribution of studies evaluating peer education programmes. Even though the small frequency does not allow any conclusive remarks, it can be seen that peer instructed interventions were predominantly successful in improving most of the mediating factors and measures of sexual behaviour. The proportions of studies finding significant impact on the use of condoms, delaying sex and reducing the number of sexual partners appears to be similar for peer and adult led programmes. The third and fourth columns compare the results from adult led interventions delivered by external facilitators and teachers respectfully. Both instructor types were equally efficient in enhancing knowledge, attitudes and intentions, though teachers were more capable to improve self-efficacy and communication with sexual partners among participants. With regards to the effects on behavioural indicators, sessions facilitated by teachers were more likely to be found effective in postponing

sexual initiation and decreasing the number of sexual partners, while external consultants were more often able to motivate young people to use condoms and contraceptives and to reduce the frequency of sexual encounters.

As mentioned before, teachers were at times assisted by peer educators and external consultants throughout the programme implementation. The isolated effects of interventions exclusively delivered by teachers, ones supported by peer educators and those engaging external helpers are laid out in the last three columns of table 8. While this break down has left far too few studies in each of the subgroups to allow for any definite annotations, the trend of more positive results leans in favour of the teacher and peer educator combination. It appears that, when assisted by peer educators, teachers were more likely to deliver a programme with positive results on nearly all indicators of behavioural mediators and sexual practices. This tendency was also observed in one of the factorial studies included in this review. Namely, Ajuwon & Brieger (2007) have found more substantial positive impact in the schools where peer educators were part of the programme implementation, as compared to the schools in which teachers delivered the curriculum by themselves.

Finally, most of the teacher led programmes did engage some form of continuous support and monitoring of the degree of implementation. For that purpose, coordinators were often assigned at school / district level or mentoring and oversight was provided by the research teams or specially formed bodies. This was deemed necessary since teachers, at times, demonstrated reluctance to deliver some parts of the programme grounded on personal beliefs and convictions. Some of the studies in this review have detected that the effectiveness is dependent on the degree of programme implementation. For instance, Maticka-Tyndale, Wildish & Gichuru (2007) were more likely to find significant improvements across most indicators in experimental schools with high exposure to the intervention. Likewise, James et al. (2006) and Reddy, James & McCauley (2003) have observed that the sexuality education programme was only effective at sites where at least two thirds of the content was implemented. Few more of the included studies have reported challenges in the full delivery of the curricula at the intervention sites. This notation was more frequent in programmes which integrated the sexuality education curricula in other school subjects.

Table 8: Different instructors of sexuality education programmes and associated effectiveness

	Peer				Adult																							
									External				Teacher-led				Teacher only				Teacher+ peer				Teacher+ external			
	-	0	+	%	-	0	+	%	-	0	+	%	-	0	+	%	-	0	+	%	-	0	+	%	-	0	+	%
Cognitive factors																												
Knowledge			6	100		2	21	91		1	6	86		1	15	94			8	100		1	5	83			2	100
Susceptibility		1	1	50	1	5	4	30		3	1	25	1	2	3	33			1	100		2	1	33	1		1	0
Reliability (Abs)			1	100			3	100			1	100			2	100			1	100							1	100
Reliability (C&C)			1	100		1	6	86		1	3	75			3	100			1	100							2	100
Attitudes and values																												
Attitudes (Abs)			4	100		3	13	81			4	100		3	9	75		2	3	60		1	5	83			1	100
Attitudes (C&C)		1	4	80		4	17	81		1	6	86		3	11	79		2	5	71		1	5	83			1	100
Attitudes (PLHIV)		1	2	67		1	6	86			1	100		1	5	83		1	3	75							2	100
Perceptions N&SS			1	100		2	4	67		1	3	75		1	1	50		1	1	50								
Behavioural skills																												
Self-Efficacy		2	2	50		3	18	86		2	6	75		1	12	92		1	5	83			6	100			1	100
Partner communication		2		0		2	5	71		1	1	50		1	4	80		1	1	50			3	100				
Other communication			4	100		1	3	75						1	3	75		1	1	50			2	100				
Behavioural intentions																												
Intentions (Abs)			1	100		5	3	38		1	2	67		4	1	20		2		0		2	1	33				
Intentions (C&C)			3	100			10	100			3	100			7	100			3	100			4	100				
Sexual behaviour and other risk or protective practices																												
Delay sex		1	1	50	1	8	9	44		3	2	40	1	5	7	46		5	2	29	1		3	50			2	100
Reduce No. of partners		1	2	67		5	6	55		3	2	40		2	4	67		1		0		1	2	67			2	100
Reduce frequency of sex		1		0	2	3	3	13		2	1	33	2	1	2	0		1	1	50	1		1	0	1			100
Use of condoms		2	3	60		9	12	57		2	6	75		7	6	46		4	2	33		2	3	60		1	1	50
Use of contraception		1		0		1	4	80			2	100		1	2	67			2	100		1		0				
Use of C&C		2	3	60		9	14	61		2	7	78		7	7	50		4	3	43		2	3	60		1	1	50

GBV/IPV					1	2	67			2	100		1		0						1		0
Trans. or cross-gen. sex				2		1	-33	1			-	1		1	0	1			-			1	100
Alcohol/drugs			1	100			4	100			1	100			3	100			1	100		2	100
Utilization of SRH services			1	100		1	0	0						1		0						1	0
SRH outcomes																							
STIs (self-reports)										1	100		2	0	0			1		0		1	0
Reduce STIs		1		0		1	1	50			1	100		1	0	0						1	0
Reduce HIV		1		0		0	2	100			1	100		0	1	100						1	100
Reduce pregnancy			1	100		2	3	60		1	1	50		1	2	67			1	100		1	0
*Refer to Table 1 for Legend																							

3.4.4. Group composition and gendered impact of sexuality education programmes

Most of the interventions included in this collection were implemented in mixed gender groups. Only two programmes were designed exclusively for either male (Pulerwitz, Barker & Segundo 2004) or female (Cabezón et al. 2005, Vigil, Cortes & Klaus 2008) students, while two executed the same curricula in separate gender classrooms (Jewkes et al. 2007, Jewkes et al. 2008). The small distribution of studies across these categories did not allow for observation of any potential divergence of effectiveness dependent on the gender composition of the participants. However, a subgroup analysis in more than a few evaluation reports has pointed out that programmes were unevenly beneficial for female and male students. At some occasions, the intervention resulted with different effects across a range of indicators, while in others, the entire programme was found to be more effective for either males or females. This distribution of dissimilar effects is noted in the summary of programme results in Annex 4. Overall, three of the interventions were more advantageous for female participants; two had greater impact on male students; while six programmes have brought about scattered results across different variables. In the latter, there is a tendency for females to be more likely to adopt primary or secondary abstinence practices, whereas male students were more often found to start using condoms under the influence of the intervention.

3.4.5. Effectiveness of sexuality education programmes at urban and rural locations

Twenty of the 36 programmes took place at urban locations, ten were implemented in rural areas, and the remaining six were distributed across both urban and rural sites. Comparing the results of the interventions based on their location showed interchangeable variations over the observed measures. This suggests that programmes were equally effective regardless of their location. The distribution of studies and their segregated impact with respect to the programme location is available in table 9.

Table 9: Effectiveness of sexuality education programmes at urban and rural locations

	Urban				Rural			
	-	0	+	%	-	0	+	%
Cognitive factors								
Knowledge		2	13	87			8	100
Susceptibility		3	4	57	1	2		-33
Reliability (Abs)			3	100			2	100
Reliability (C&C)		1	4	80			2	100
Attitudes and values								
Attitudes (Abs)		2	5	71		1	7	88
Attitudes (C&C)		1	12	92		1	6	86
Attitudes (PLHIV)		1	8	89			2	100
Perceptions (N&SS)		2	2	50			1	100
Behavioural skills								
Self-Efficacy		3	10	77		1	6	86
Partner communication		2	2	50		1	2	67
Other communication			3	100			3	100
Behavioural intentions								
Intentions (Abs)		2	3	60		1		0
Intentions (C&C)			6	100		2		0
Sexual behaviour and other risk or protective practices								
Delay sex		5	5	50	1	3	1	0
Reduce No. of partners		3	2	40		2	6	75
Reduce frequency of sex		3	1	25	2	1		-67
Use of condoms		7	7	50		3	5	63
Use of contraception			2	100		2		0
Use of C&C		7	8	53		3	5	63
GBV/IPV			1	100		1	1	50
Trans. or cross-gen. sex					1		1	0
Alcohol/drugs			3	100			2	100
Utilization of services						1	1	50
SRH outcomes								
STIs (self-reports)			1	100		1		0
Reduce STIs						2	1	33
Reduce HIV						1	2	67
Reduce pregnancy			2	100		2	2	50

CHAPTER FOUR: DISCUSSION

This study and its findings are noteworthy in two aspects. First, it updates the literature in support of school-based sexuality education with evidence specific to developing countries. And second, this review is original in its attempt to quantify the relative importance of the variations in content and delivery of sexuality education programmes that may strengthen or hinder the effects. The imminent chapter discusses the results alongside previous evidence in the field of sexuality education and seeks for explanations for the original observations.

4.1. The evidence in support of sexuality education is consistent and strong

This review found that sexuality education delivered in schools has the potential to be an effective strategy for improving a range of behavioural precursors, promoting safe sexual practices and reducing the occurrence of negative SRH outcomes in young people living in developing countries. Moreover, these goals can be met without unfavourable effects on decisions about sexual initiation and without proliferation of sexual activity among the participants in the interventions. It is clear that providing information and building skills for proper and consistent use of condoms and/or contraceptives does not deliver mixed messages and does not disinhibit sexual risk taking in the target population, as some have stipulated (Stanger-Hall & Hall 2011). Rather, it enables young people to make responsible choices about their sexual behaviour and health. Programmes which acknowledged young people as sexual beings and promoted safe options beyond abstinence were found to be substantially more effective than (even though fewer) abstinence only programmes across all measures of sexual behaviour. This observation is consistent with the findings of several reviews of sexuality education programmes in high income countries. For instance, the study by Kirby (2008) of sexuality education initiatives in the United States has concluded that abstinence only interventions rarely produce positive behavioural change and are not effective even for delaying the initiation of sex as their primary target. In contrast, programmes that encouraged multiple options for safer sex practices were found to be effective across numerous indicators of sexual behaviour (Kirby 2008). The comparison of effectiveness of sexuality education programmes between developing and developed countries has, on several occasions, shown consistent impact regardless of the setting (Kirby, Laris & Roller 2005, UNESCO 2009, Picot et al. 2012). In addition, few reviews of HIV education programmes in the developing world have demonstrated beneficial reductions of sexual risk taking and enhancement of psychological factors

(mediators) that promote safe practices (Kirby, Obasi & Laris 2006, Tan et al. 2012, Fonner et al. 2014). This review, therefore, adds to and updates the large body of evidence in favour of school-based sexuality education in developing countries.

4.2. The need for context-specific content and monitoring for results

Unintended effects of sexuality education programmes are extremely rare and short term events which are typically accompanied with adoption of protective sexual habits that supersede the risk. Nonetheless, these point out the need for continuous monitoring of the outcomes and urge for greater attention on clear and appropriate messaging grounded on understanding of the context specific factors which shape sexual behaviour. For instance, in settings where transactional sex is common, it may come up in group discussions as a normative practice for easy access to desired items. If facilitators fail to emphasize the negative impact by attempting to avoid moralization, some participants may take away a wrong message (Jewkes et al. 2008). Conducting needs assessment, using behavioural theories or logic models to design the content towards the desired health goals, as well as piloting the programme prior its onset, might be valuable strategies for enhancing the positive and avoiding any negative effects of sexuality education. These are commonly discussed features for designing effective programmes (Kirby, Laris & Roller 2006, Goldman 2011, FSEI 2012). Adopting such practices may also be a useful pathway in overcoming the dissimilar intervention impact on male and female participants observed at some occasions.

4.3. Building positive attitudes and skills and going beyond individual behaviour change constructs

Sexuality education in developing countries follows a gradual progression with regards to the outreach of its content. There are interventions which provide only information, ones that also attempt to build positive attitudes and skills, and others which go beyond individual constructs of behaviour change to address the environmental determinants of sexual behaviour. The proposed nomenclature (informative, comprehensive and transformative

programmes, respectfully) was considered appropriate to capture the essence of these three types of interventions.

This study observed notable impact disparities dependent on the content of sexuality education programmes. Informative interventions delivered in didactic manner have only modest and short term effect on sexual behaviour. This is perhaps because information provided in such fashion, as accurate as it may be, is rarely perceived as relevant to the realities of young recipients (FSEI 2012) and is therefore insufficient to inspire behaviour change. In order for young people to adopt and sustain safe practices, they also need to develop protective attitudes, obtain the necessary skills and gain sense of control over personal actions. This can only be done by employing participatory and active learning methods which allow participants to personalize the content through open discussion and reflection, and which create space for repeated observation and exercise of interpersonal communication and decision making skills (Bearinger et al. 2007). The findings from the current study support this line of argument with the observation that programmes which engage participatory learning techniques for building skills and attitudes (comprehensive and transformative interventions) are more likely to result in significant and longer-lasting protective changes across multiple measures of behavioural mediators and practices. This observation is consistent with results from previous studies and should serve in support of numerous expert recommendations and national/international standards/guidelines for sexuality education, which have claimed the need for building skills and positive attitudes as a precondition for programmes' success (Kirby, Laris & Roller 2006, Population Council 2009, UNESCO 2009, BZgA / WHO-Europe 2010, UNFPA 2010, FSEI 2012).

Finally, the current study affirms that (transformative) programmes which, in addition to the school-based individual behaviour change elements, extend community components or work in combination with broader sexual health efforts bring the most consistently positive and enduring effects on young people's sexual behaviour. It appears that working with parents, community and religious leaders, community organizations and/or other state sectors enhances the effects of sexuality education initiatives. The recent academic literature is frequent with discussions about the importance of combined multi-sectorial approaches to sexual health. Wellings et al. (2006), for instance, have argued that the effects of individual behaviour change interventions will be short-lived if participants do not return in supportive environment. Societal norms and power inequalities are strong structural forces that may act against protective practices (Seeley et al. 2012, Rotheram-borus et al. 2009), and, if left unchallenged, can diminish the impact of school-based programmes. In addition, people need to be both

willing and able to adopt and sustain preventive behaviour (Ogden et al. 2011) and their access to the environment will strongly influence decisions about sexual behaviour. Availability of health services and prophylactics are among the more proximal environmental determinants, while access to education and livelihood opportunities and the existence of rights based legislation act from a greater distance to shape the uptake and maintenance of protective practices. This calls for coordinated action between stakeholders towards the development of multi component interventions which will mutually reinforce the positive effects. The experience from countries adopting a combined multi-sectorial approach to young people's sexual health has demonstrated consistently positive results, even though the impact cannot be tracked to a single component (Ketting, Winkelmann 2013). Nonetheless, sexuality education remains the cornerstone in promoting sexual health and reducing risky behaviour among young people (Wellings et al. 2006).

4.4. Reinforcement of positive behaviour with longer-lasting programmes

Previous literature in this field has discussed the importance of providing sufficient number of sessions to address both risk and protective factors that influence sexual decision making. Douglas Kirby and his associates, for instance, have argued on various occasions that effective programmes contain at least 12 sessions of about 50 minutes (Kirby, Laris & Rolleri 2005, Kirby, Laris & Rolleri 2006, Kirby, Rolleri & Wilson 2007, UNESCO 2009). Findings from this review support these recommendations, but add an important observation with regards to the spread of the sessions. Namely, programmes conveyed in similar number of sessions tend to have superior impact if delivered over longer period of time. This is perhaps because longer lasting interventions continuously reinforce positive attitudes towards safe practices, which act in balance with various peer and social stimuli that modulate sexual behaviour (Hedgepeth, Helmich 1996). Instantaneous and dense programmes, while effective on the short term, may lose their relevance over time under the influence of harmful environmental forces. On the other hand, interventions which spread out the curricula in age appropriate sessions over several years repeatedly strengthen the behavioural precursors, which, in turn, have better chances to supplant external influences and shape safe sexual practices. This observation supports implementation of enduring sexuality education programmes with content and messages reflective of the needs of young people at different ages.

4.5. Lifelong sexuality education

This review observed a notable association between the age of participants enrolled in the programme and its effectiveness. Interventions provided before the age of 16 tend to have greater impact on nearly all measured behavioural mediators and sexual practices. To the author's knowledge, this is the first composite effort that compares the between-age impact variations of sexuality education programmes in developing countries. Several primary studies throughout the world have also found that early intervention exposure results with larger and enduring effects on young people's sexual behaviour (Hawkins et al. 1999, Gottlieb, Blair 2004, Dinaj-Koci et al. 2014). The argument for providing sex education at earlier age is twofold. Firstly, younger age groups rarely have access to relevant sexual health information and skills, even though a portion of them would (inevitably) initiate sex. This leaves them vulnerable to various sexual risks (WHO 2004). And secondly, safe sexual behaviour is a function of complex factors, among which is its consistent practice (Hedgepeth, Helmich 1996). This means that if young people begin to exercise safe practices from the beginning of their sexual lives, it will be easier to sustain them over time. On the other hand, those who have already begun to engage in some form of risky behaviour might find it more difficult to adopt protective actions later in their lives. This idea is supported by the findings of greater intervention effect among those participants who are sexually inexperienced prior the onset of the programme (Stanton et al. 1998, Fitzgerald et al. 1999, Eggleston et al. 2000, Maticka-Tyndale, Wildish & Gichuru 2007).

It must be noted, though, that the diminished impact of sexuality education delivered at later age may be due to the notion that young people by the time of enrolment might have assimilated some amount of sexual health knowledge and skills from other sources. In such case, the ceiling effect would reduce the between-group differences and the programme appears as less efficacious (Dinaj-Koci et al. 2014). This, however, does not dismiss the account that younger age groups, being less equipped with relevant information and skills, are more vulnerable to sexual risks and would therefore benefit the most from earlier intervention. European experts and the concept of holistic sexuality education argue that sexuality education is a lifelong process that starts at birth and continues well into adulthood (BZgA / WHO-Europe 2010). Programmes in European countries typically start at early age, extend through the primary and/or secondary education and, within a combination approach, evidently result with better SRH outcomes in young people (Ketting, Winkelmann 2013). The finding that early provision of sexuality education is also more efficacious in developing countries, along with the observation that longer-lasting programmes may be more

beneficial, lays out a clear argument for similar practice in developing regions.

4.6. Instructor types and their proficiency

Different choices are available as per who should instruct the sexuality education curricula. The results from this review suggest that, if well trained and monitored, peer educators may be as effective as adults in delivering the programme. The evidence base for effectiveness of peer education programmes is mixed. Some authors have argued in favour (Agha, van Rossem 2004, Caron et al. 2004, Mash, Mash 2012), while other have dismissed the value of peer programmes for mainstream young people (Borgia et al. 2005, Stephenson et al. 2008, Tolli 2012). Kirby, Laris & Rolleri (2006) have summarized that while both peer and adult led programmes have their benefits, the evidence is stronger in favor of adult instructed interventions. However, they also note that this may be due to the larger amount of studies evaluating adult-led interventions. Nonetheless, the constant turnover and the cost implication for continuous training and oversight, make peer programmes unsuitable for large scale delivery of sexuality education (UNESCO 2008). Their value remains in reaching out to out-of-school young people, providing sexuality education at sites where school programmes are not available, as well as for delivering relevant information and skills for marginalized youth (those with diverse gender identity and sexual orientation, sex workers and young people who use drugs, among others) (Wellings et al. 2006).

The current review lays out an observation that teachers are at least as, if not more, proficient in delivering high quality curricula as other highly trained sexuality education experts. This finding is noteworthy because teachers are the most obvious and feasible choice for large scale programmes, given their number and proximity to young people. Previous evidence also confirms that teacher- led intervention have the greatest potential in promoting safe sexual practices among young people (Kirby, Laris & Rolleri 2006, UNESCO 2008). Challenges remain as to ensure full implementation of the curricula, particularly when it is integrated in other school subjects. Teachers often feel uncomfortable to speak about topics surrounding sexuality and therefore choose not to adhere to the content (LaChausse, Clark & Chapple 2014). Moreover, based on personal convictions, they might deliver messages which are inconsistent with the curricula (Brouillard-Coyle 2005, Francis 2013). These challenges may be addressed by providing good training programmes and ensuring that monitoring and support is available throughout the implementation. In

addition, engaging peer educators as teacher assistants has shown to be beneficial towards greater programme impact. This may be because young people feel more comfortable to discuss topics surrounding sexuality and can therefore deliver clear messages with the added element of relevance to their peer's experience. If teachers are enabled to continuously train their peer assistants, this may become a feasible option for large scale sexuality education. The benefits of the teacher and peer combination should be further explored as new evidence arrives.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

5.1. Conclusions

In light of the poor sexual and reproductive health outcomes among young people, particularly in low- and middle income countries, it is essential to develop and adopt effective strategies to address the changing needs. Providing sexuality education is among the critical prevention assets. School based programmes are, in addition, potentially most efficient due to their compulsory nature and large outreach.

The evidence in support of implementing sexuality education is strong, regardless of the setting. Programmes can work well in both developed and developing regions, at both urban and rural sites, and can be beneficial for females and males. Clearly, providing sexuality education does not disinhibit sexual activity and risky practices, contrary to what some may unjustly argue. It rather enables young people young people to make responsible choices regarding their sexual practices, achieve better SRH outcomes and, ultimately, lead pleasurable and productive lives.

Programmes can result with substantial effects on mediators (knowledge, attitudes, skills and intentions), sexual behaviour and SRH outcomes, and the impact can be sustained over time. It is, therefore, perhaps time to move beyond the question *if* providing sexuality education is justified, and instead focus on *how* to develop and implement more effective programmes.

While it is unreasonable to presume that similarly designed sexuality education will work everywhere, there are some core features that are likely to enhance the programmes' success. Since sexual behaviour is vastly affected by the context, it will be crucial to understand the patterns of risky practices and their drivers. Conducting a needs assessment would therefore help towards crafting sexuality education curricula relevant to young people's lives. Using behavioural theories, as well as engaging experts and young people during the programme design may additionally strengthen its content and relevance.

Providing only SRH information in a didactic manner is rarely, if ever, sufficient to inspire adoption of protective practices. Hence, implementation of such interventions is unjustified. Sexuality education programmes need to be comprehensive in nature and allow building of positive attitudes, values and skills through participatory and active learning techniques. Still, individual behaviour change interventions may have limited and short term potential if their aims are not reinforced by a supportive environment.

Programmes which invest efforts in engaging with the surrounding are virtually always able to bring about significant and sustained results. Some elements with transformative potential can easily be adjoined to school based sexuality education and should be considered for standard practice. Working with parents, community or religious leaders and reaching out to the broader community with products developed in schools (theatre plays, essays or other) are all feasible and beneficial strategies towards generating normative support for safe sexual practices.

Younger age groups are more in need of sexuality education and their behaviour is, in addition, more susceptible to intervention effects. Programmes delivered at earlier age are more likely to result with consistent adoption of safe sexual practices and it is therefore both justified and necessary to introduce sexuality education at younger age. This will require crafting of age appropriate content reflective of the development-bound diversity in needs. However, it will be also important to reinforce the positive attitudes and skills over time, in order for the protective behaviour to be sustained. Longer lasting programmes have superior impact compared to short and dense interventions delivered in similar number of sessions. It may therefore be reasonable to spread out the content of sexuality education programmes over several years, starting at pre-puberty age and continuing well into adolescence. Undertaking such approach will require similar amount of resources while producing better results.

Teachers are the most feasible choice for instructors of school based sexuality education. They can be proficient in delivering effective programmes, conditional on their willingness and ability to loyally adhere to the curricula. Strategies to identify the most appropriate teachers and provide them with pre- or in-service training on SRH information and teaching methodology should be developed in accordance to the structure of the education system and the available resources. Proper monitoring and support mechanisms should always be in place, as to ensure fidelity in programme implementation. Engaging young people as teachers' assistants may also contribute towards better results. While resource limitations and turn-over challenges may constrain the continuous training of peer assistants, if teachers are enabled to capacitate their junior aides, this may become a feasible option for large scale sexuality education.

It must be noted, however, that relying solely on school based programmes will leave out the portion of young people who do not attend educational institutions. Supplementary approaches will be necessary to provide relevant sexuality education for this segment of the population. In addition, not much is known about the relevance of school based programmes for young people with diverse gender identities and sexual orientation in the developing world. Further research is needed to clarify this uncertainty and complimentary

strategies might be required to reach out with relevant content for this portion of young people as well.

Finally, sexuality education must be in line with other systemic efforts aiming to improve young people's SRH. This includes and goes beyond providing access to youth friendly SRH services, adopting human rights oriented legislation and broader youth development strategies such as improving educational attainment and social security. While adopting such combination approach will require long term commitment, it will ultimately yield benefits beyond SRH.

5.2. Recommendations

Informed by the observations of the review at hand, these final two units lay out recommendations for practice and future research.

5.2.1. Recommendations for practice

- Invest in providing school based sexuality education, preferably with features which enhance its effects;
- Ensure that the curricula is reflective of the contexts specific needs by informing the design with accurate evidence;
- Engage experts with relevant background, as well as young people in the process of curricula development. Use behavioural theories and logic models to construct the content and messages towards the desired behaviour change;
- In addition to accurate information, provide sufficient time and opportunities for building positive attitudes, values and relevant skills through participatory and active learning methods;
- Distribute the content over several years, instead of implementing short and dense interventions;
- Start delivering age and development appropriate sessions at younger age, preferably pre-puberty, and continue well into adolescence;
- Provide high quality pre- or in-service training for teachers on SRH information and teaching methodologies. Consider building their capacity to train peer assistants;
- Develop proper monitoring and support mechanisms to ensure fidelity in implementation;
- Make efforts to create supportive environment by working with parents, community or religious leaders, role models or the broader community;
- Ensure linkages with youth friendly SRH and other relevant services;

- Reinforce sexuality education with other systemic efforts within a more holistic multi-sectorial approach towards improved SRH among young people, and in line with broader development goals;
- Invest in continuous monitoring of the results.

5.2.2. Recommendations for future research

- Conduct meta-analysis of the effects of sexuality education programmes to overcome the limitations of primary studies such as the insufficient statistical power;
- As new evidence arrives, further investigate and quantify the relative importance of the variations in content and delivery associated with programme's success;
- Report more accurately the details of the content and implementation of the interventions, as to allow for more meaningful synthesis of effective programmes' characteristics;
- Investigate the relevance of school based sexuality education for subgroups of young people at higher SRH risks, such as young people with diverse gender identities and sexual orientation;
- When possible, use biomarkers as more reliable instruments for assessing intervention impact;
- Move beyond evaluating solely indicators of public health concern (initiation or frequency of sex) and measure the effects on positive aspects of sexuality and relationships (bodily satisfaction, self-esteem, satisfactory relationships, gender equality, acceptance of diversity and other);
- As nationwide programmes become more available, RCT/quasiexperiments may become obsolete for assessing the success of sexuality education. Innovative approaches will need to arise in order to monitor the effects, such as observation of trends in sexual behaviour and SRH outcomes.

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ANNEX

ANNEX 1: THEORETICAL CONSIDERATIONS

Decision making related to sexual or (any other behaviour) does not occur merely at individual level, but rather in a particular social context. Social learning theories suggest that individual actions are a function of the dynamic interaction between four groups of behavioural determinants, also referred to as precursors, mediators or predictors. Cognitive factors, attitudes and behavioural skills interact with the environment to determine how a person behaves (Brindis, Sattley & Mamo 2005).

If a sexuality education programme aiming to build positive conducts were to achieve its desired effects, it must address elements of all four dimensions of behavioural determinants. Providing accurate and relevant SRH knowledge is the entry point to the personal (or cognitive) sphere. Its intent is to help learners assess the benefits and risks of their actions, as well as to create positive expectations around the efficacy (reliance) of safe sexual behaviour. Risk awareness is the perception of young people that they are susceptible to the treats of certain harmful practices. The content of sexuality education curricula should help students accurately assess the risks of their (potential) actions in a balanced and realistic manner, since moderate levels of risk perception can inspire protective practices, while excessive may immobilize the person (Hedgepeth, Helmich 1996). It should also build confidence in the preventive measures.

The cognitive dimension of behavioural determinants is the most easily accessible, which is perhaps the reason why societal efforts intending to improve young people's SRH have often been exceedingly reliant on it, particularly in the context of the HIV epidemic over the last decades. While providing information about risks and how to safeguard against them is an important requirement towards adopting protective behaviours, in many occasions this is not sufficient to inspire and sustain positive practices (Bandura 1994). Individuals also need to develop positive attitudes towards protective behaviours, as well as a set of skills to act upon their beliefs (NIH 2005). Attitudes are internalized opinions and perceptions of normative values; a learnt way to respond to people and situations (BZgA / WHO-Europe 2010, Hedgepeth, Helmich 1996). The concept of skills refers to intrapersonal (ability to analyse situations and clarify values) and interpersonal (communication around beliefs, expectations, needs and

feelings; negotiation and self-protection) capacities necessary for healthy sexuality and relationships, as well as aptitudes for using prophylactic technologies correctly (condom, contraceptive pill) and locating additional resources, such as health clinics or counselling units, when needed (Hedgepeth, Helmich 1996). In order to be able to utilize these skills in real world situations, the person also needs to be assured that s/he has the power to regulate his/her own behaviour. This sense of control over personal actions, referred to as self-efficacy, is the central construct in social learning theories and, according to its creator Albert Bandura, the strongest predictor of human behaviour (Bandura 1994). People develop self-efficacy through personal experience, practice or observation and can sustain it if encouraged by others. The existence of such encouragement comes from the environmental dimension of behavioural determinants, dominated by social norms which dictate models of behaviour (Hedgepeth, Helmich 1996). Young people typically tend to conform to socially constructed identities by the virtue of belonging to particular group with regards to gender, sexual orientation, ethnicity, geographical setting or class (Shields 2008). While changing norms might be challenging and may require longer time periods, helping young people understand the social construction of norms and their temporal and special plasticity will certainly increase their ability to manage external influences and take action towards altering the milieu. Nonetheless, because peer and social enforcement is essential for sustaining healthy behaviour, effective sexuality education may need “booster shoots” in form of follow up sessions, as well as elements that reach out to parents, family or influential community members (Hedgepeth, Helmich 1996). Another prominent environmental factor, which needs to be taken into account even though it falls beyond the scope of sexuality education, is young people’s access in the community. It includes availability of youth friendly SRH services, education, access to the labour market and other life opportunities which are a reflection of the broader socio-cultural, economic and political structures.

There are several other social learning concepts implicit across the determinants of human behaviour, two of which are particularly important for sexuality education. The first one is constructed as “personalization” and requires for the educational material to hold personal relevance for the students (NIH 2005). It is only if young people perceive the core content and skills as relevant to their realities will they be able to adopt and retain them (FSEI 2012). Therefore, programmes which invest efforts in creating

relevant curriculum through needs assessment, recognition of the diverse and development-bound needs of young people and which involve them in the design and implementation, may bring about better results (Hedgepeth, Helmich 1996). The second overarching construct postulates that individuals do not learn solely from personal experience, but also by observation and modelling the actions and reactions of others (Thato, Jenkins & Dusitsin 2008). Since some portion of young people would not have had the chance to practice skills in their own experience at the time of receiving sexuality education, it will be important for interventions to include opportunities for learners to exercise and observe positive behaviours, such as negotiation and condom use (Brindis, Sattley & Mamo 2005).

By touching upon factors across the cognitive, behavioural and environmental dimensions of behavioural determinants with relevant content and opportunities to rehearse and observe protective practices, sexuality education programmes ultimately aim to empower young people to adopt and sustain positive and protective sexual behaviour. These include but are not limited to: capability to decide if and when to have sex, get married or have children; effectively utilize condoms, contraceptives or other prophylactic measures; build affectionate, pleasurable and safe relationships based on mutual respect and understanding of needs and boundaries, and free of any form of coercion or discrimination; be able to access relevant SRH services, as necessary; and contribute to tolerant and respectful social climate (BZgA / WHO-Europe 2010). Embracing such practices would, in turn, improve SRH outcomes, contribute towards advancing overall well-being in young people and yield better society.

ANNEX 2: SEARCH TERMS AND BOOLEAN COMBINATIONS

	AND			
OR	Sex* education Comprehensive sex* education CSE Sexed Abstinence education Holistic sex* education Life skill* education	Knowledge Attitude* Behavio* Awareness Condom* Contracepti* Pregnanc* Abortion STI* STD* Sex* transmitted infection* Sex* transmitted disease* HIV Gender GBV Sex* violence Self-efficacy	Youth Adolescen* Teen* School* Child* Young Student*	Effect* Efficacy Efficienc* Evaluat* Impact Outcome* Assess* RCT Random* Experiment* Quasi- experiment* Cohort Systematic Meta-analysis Study Evidence Intervention Program*
Total hits	181,416	39,230,983	46,855,490	100,282,084
Total hits	38,713			
Limiters - Date Published: 2009/01/01-2014/05/31; Language: English				6,573
Narrow by source type: (excluded news, trade publications, audio and video)				6,094

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ANNEX 4: SUMMARIES OF INCLUDED STUDIES

LEGEND			
Study characteristics	Intervention characteristics (content & delivery)	Results	Intervention type & Notes
<p>Citation</p> <p>-Location (place/district, country) (urban/rural)</p> <p>-Setting: type of educational institution</p> <p>-SES: socio-economic status of participants (low/high/mixed)</p> <hr/> <p>Methodological characteristics of the study: (in the following order) - Study design, matching, randomization, number of participants at baseline, instruments,</p>	<p>-SE content: topics covered</p> <p>-Aim: Abstinence and/or safe sex and/or other</p> <p>-Methods: Teaching methods</p> <p>-Supportive elements: Components outside of schools</p> <p>-Programme development: i.e. expert consultation needs assessment, pilots, involvement of young people, theory or logic models etc.</p> <p>Intervention type: categorized as informative, comprehensive or transformative</p> <hr/> <p>-Integration: Yes – in</p>	<p>Indicator: intervention effect on a particular measure and time of occurrence, as follows:</p> <p>0 – the study observed the indicator, but no significant effect was found</p> <p>(+/-) 1 – significant between group differences observed at immediate follow up (up to 3 months after the end of the intervention) and the direction of the effect (“+” for the protective, “-” for the unfavourable)</p> <p>(+/-) 2 significant between group differences observed at short term follow up (from 3 months to 1 year after the end of the intervention, or at least 1 month after interventions longer than 3 months) and the direction of the effect</p>	<p>Important notations</p>

<p>baseline data collection and follow up periods, control condition</p>	<p>other subjects; No – stand alone or extracurricular -Instructor: who delivers the sessions -Training, h: training of the instructors and duration -Monitoring& support: available or not during the implementation -Duration: length of the programme from the first to the last session -No. of sessions: number of sessions delivered -Total hours: time spent in session -Group size: average number of participants in groups -Group composition: single-sex (males/females) or co-ed (mixed) -Age at start: average age of the participants at the onset of the programme (baseline)</p>	<p>(+/-) 3 significant between group differences observed at long term follow up (at least 1 year after the end of the intervention) and the direction of the effect</p> <p>NR: not reported</p> <p>(m) significant effect observed only in male students</p> <p>(f) significant effect observed only in female students</p> <p>(↑m)/(↑f) significant effect observed in male and female students, but the size was larger in one of the subgroups</p>	
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	* NR: not reported		
SUMMARY OF STUDIES			
Study characteristics	Intervention characteristics (content & delivery)	Results	Notes
<p>1- (Agha, van Rossem 2004)</p> <p>-Location: Lusaka, Zambia (rural)</p> <p>-Setting: secondary schools</p> <p>-SES: mixed</p> <hr/> <p>Quasiexperimental, matched cohorts, cluster (school) assigned, 416 participants, self-administered questionnaire, baseline / 3 months / 6 months; control to no intervention</p>	<p>-SE content: HIV, condom demonstration, basic skills</p> <p>-Aim: Abstinence and safe sex</p> <p>-Methods: Lecture, demonstration, role play, IEC</p> <p>-Supportive elements: No (no access to condoms)</p> <p>- Programme development: FG, literature reviews (NGO). No theory or logic used. Pilot NR</p> <hr/> <p>-Intervention type: Informative</p> <hr/> <p>-Integration: No</p> <p>-Instructor: PEs (18-22yo)</p>	<p>Knowledge: 1, 2, Reliability (abstinence) 1,2 Reliability (condom): 1,2 Risk awareness: 0, 0</p> <p>Attitudes (abstinence): 1, 2 Attitudes (condom): 1, 0</p> <p>Intention (abstinence): NR Intention (condoms, cont): 1, 0</p> <p>Partner communication: 0, 0 Self-efficacy: 0, 0 Other skills: NR</p> <p>Delay sex: NR No. of partners: 0, 2* Abstained with regular partner: 0, 0 Condom use: 0, 0 Contraception use: NR Coercion: NR</p> <p>STI (self-report): NR</p>	<p>Intentions to use condoms (lost at 2nd follow up) may be influenced by the church and politicized statements, as well as lack of access to condoms</p> <p>*Not significant at immediate follow up, as the recall was 3 months</p> <p>Single session with primary focus on HIV, did provide some skills (demonstration, negotiation, refusal through role play) but the time was too short.</p>

	<ul style="list-style-type: none"> -Training, h: Yes, NR h -Monitoring& support: NR -Duration: single -No. of sessions: 1 -Total hours: 1h 45min -Group size: NR -Group composition: mixed -Age at start: 14-23 (17-18) 	<ul style="list-style-type: none"> STI: NR HIV: NR Pregnancies: NR 	
<p>2-(Ajuwon, Brieger 2007)</p> <ul style="list-style-type: none"> -Location: Ibarapa, Nigeria (Rural) -Setting: Secondary school -SES: Mixed <hr/> <p>Quasiexperimental factorial (T, PE, TPE, C), unmatched (2 random nested cross-sections), cluster (school) assigned, 1010 participants, self-administered</p>	<ul style="list-style-type: none"> -SE content: HIV/STIs/ pregnancy, sexuality, condoms, drug use -Aim: condom use and abstinence -Methods: lectures, group work, role play, drama, films Supportive elements: Condoms and IEC -Programme development: Content was developed following the baseline survey - Intervention type: Comprehensive <hr/>	<ul style="list-style-type: none"> Knowledge: 2 Risk awareness: NR Attitudes (sex): 2 Attitudes (condom): 2 (↑PE&TPE) Attitudes (contraception): 2 (↑PE&TPE) Attitudes (PLHIV): NR Intention (abstinence): NR Intention (condoms, cont): NR Partner communication: 2 Self-efficacy: 2 (PE) Delay sex: -2 (PE), 0 (TPE&T) No. of partners: 2 (T&TPE) 	<ul style="list-style-type: none"> T - Teachers PE – Peer educators TPE – Teacher and peer educators C – Control

<p>questionnaire, baseline / post-intervention, controlled against no intervention</p>	<p>-Integration: Yes, in subjects -Instructor: T / PE / TPE -Training, h: Yes, 5 days -Monitoring& support: continuous, manuals -Duration: 9 months (1 ac. year) -No. of sessions: NR -Total hours: NR -Group size: NR -Group composition: mixed -Age at start: 16</p>	<p>Condom use: 2 (TPE&PE) Contraception use: NR Coercion: NR STI (self-report): NR STI: NR HIV: NR Pregnancies: NR Other: Frequency of sex: -2 (PE) (increased frequency in last 3 months) Communication on RH: 2 (all)</p>	
<p>3- (Al-Iryani et al. 2011) -Location: Aden, Yemen (Urban) -Setting: Secondary schools -SES: mixed</p> <hr/> <p>Quasiexperimental, matched cohorts, cluster (school) assigned, 2510</p>	<p>-SE content: HIV info and prevention, values -Aim: ABC+D (drugs) -Supportive elements: No -Methods: poster presentation, basic interaction -Programme development: Developed by experts, following a baseline survey to address the</p>	<p>Knowledge: 3 Risk awareness: NR Attitudes (sex): NR Attitudes (condom): NR Attitudes (contraception): NR Attitudes (PLHIV): 3 Intention (abstinence): NR Intention (condoms, cont): NR Partner communication: NR Self-efficacy: NR</p>	

<p>participants, self-administered questionnaire, baseline / 3 years, controlled against no intervention</p>	<p>gaps in knowledge and high stigma - Intervention type: Informative</p> <hr/> <p>-Integration: extracurricular -Instructor: PE -Training, h: Yes, 10 days -Monitoring& support: Available, by school staff -Duration: 2 weeks -No. of sessions: 2 x 90 min -Total hours: 3h -Group size: NR -Group composition: separate genders -Age at start: 16</p>	<p>Other skills: Communication skills: 3 (peers)</p> <p>Delay sex: NR No. of partners: NR Condom use: NR Contraception use: NR Coercion: NR</p> <p>STI (self-report): NR STI: NR HIV: NR Pregnancies: NR</p> <p>Other: NR</p>	
<p>4 (Atwood et al. 2012)</p> <p>-Location: Monrovia, Liberia (Urban, post-conflict) -Setting: Primary/middle</p>	<p>-SE content: HIV info, condoms, self-efficacy, negotiation -Aim: condom use and safe behaviors, delay initiation -Methods: NR -Supportive elements:</p>	<p>Knowledge: 0, 0 Risk awareness: 0, marg.at.2</p> <p>Attitudes (abstinence): 0,2 Attitudes (condom): 1,2 Attitudes (contraception): NR Attitudes (PLHIV): NR</p>	

<p>schools -SES: Mixed</p> <hr/> <p>RCT, matched cohorts, cluster (school +class) randomized, 812 participants, self-administered questionnaire, baseline/ 3 months/ 9 months , controlled against health education (inc.basic HIV info)</p>	<p>No - Programme development: Social cognitive and theory for reasoned action, FG with youth and stakeholders (local post conflict realities), pilot tested - Intervention type: <u>Comprehensive</u></p> <hr/> <p>-Integration: health education class -Instructor: Health educators -ext -Training, h: NR -Monitoring& support: NR -Duration: 2 months -No. of sessions: 8 -Total hours: presumed=6h -Group size: 50 -Group composition: mixed -Age at start: 16,5</p>	<p>Intention (abstinence): NR Intention (condoms, cont): NR</p> <p>Partner communication: NR Self-efficacy: 1,2 (condom use) Other skills: NR</p> <p>Delay sex: 0, 0 No. of partners: 1, 0 (last 3 months) Condom use: 0, 2 Contraception use: NR Coercion: NR</p> <p>STI (self-report): NR STI: NR HIV: NR Pregnancies: NR</p> <p>Other: Perceived peer norms (abstinence): 1,2 Sexual refusal self-efficacy: 0</p>	
<p>5- (Baker et al. 2003) -Location: Bangkok,</p>	<p>-SE content: Comprehensive (HIV, (+pregnancy), love,</p>	<p>Knowledge: 1, 2 Risk awareness: NR</p>	<p>*perceived peer pressure **sexually</p>

<p>Thailand (Urban) -Setting: Teachers colleges -SES: NR</p> <hr/> <p>Quasiexperimental, matched cohorts, college assigned, 2450, computer self-interviews / FGs / interviews, baseline / post-intervention / 4 months; control to no intervention</p>	<p>sexuality, skills, services) -Aim: condom use, delay sex -Methods: Participatory (NC) - Supportive elements: NR -Programme development: Theory of reasoned action behavior change model, NR on how it was developed, pilot NR</p> <hr/> <p>-Integration: No (extracurricular) -Instructor: Teachers -Training, h: Yes, 6 day -Monitoring& support: Yes -Duration: 4 months -No. of sessions: 8 x2h -Total hours: 16h -Group size: NR -Group composition: mixed -Age at start: 19-21</p>	<p>Attitudes (abstinence): 0*, 0* Attitudes (condom): 1, 2 (↑f) Attitudes (contraception): NR Attitudes (PLHIV): 1, 2</p> <p>Intention (abstinence): NR Intention (condoms, cont): NR</p> <p>Partner communication: 1 (f)**, 2 (f)** Self-efficacy: NR</p> <p>Delay sex: 0, 0 No. of partners: NR Condom use: 1 (f), 0 Contraception use: NR Coercion: NR</p> <p>STI (self-report): NR STI: NR HIV: NR Pregnancies: NR</p> <p>Other: NR</p>	<p>inexperienced at baseline</p>
<p>6- (Cabezón et al. 2005, Vigil, Cortes &</p>	<p>-SE content: FP info, love, family, emotions,</p>	<p>Knowledge: NR Risk awareness: NR</p>	

<p>Klaus 2008)</p> <p>-Location: San Bernardo - Santiago, Chile (Urban) -Setting: secondary school -SES: NR</p> <hr/> <p>RCT, individual randomization, 1256 participants, official school records (pregnancy rates), baseline / 4 years, control to no intervention</p>	<p>self-awareness, sexuality, norms, skills (negotiation, refusal, communication) -Aim: Abstinence and use of contraception -Methods: Interactive discussions, videos, skills building exercises (role playing, drama), homework, reflections -Supportive elements: Confidential interviews, meetings with parents, FP services - Programme development: adapted US curricula evaluated as effective - Intervention type: Transformative</p> <hr/> <p>-Integration: Yes -Instructor: Teachers -Training, h: Yes, 45h -Monitoring& support: Yes -Duration: 1 year -No. of sessions: 14 x 45min -Total hours: 10h 30</p>	<p>Attitudes (abstinence): NR Attitudes (condom): NR Attitudes (contraception): NR Attitudes (PLHIV): NR</p> <p>Intention (abstinence): NR Intention (condoms, cont) NR</p> <p>Partner communication: NR Self-efficacy: NR Other skills: NR</p> <p>Delay sex: 3 No. of partners: NR Condom use: NR Contraception use: NR Coercion: NR</p> <p>STI (self-report): NR STI: NR HIV: NR Pregnancies: 3</p> <p>Other: NR</p>	
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	<p>min</p> <ul style="list-style-type: none"> -Group size: 35 -Group composition: females -Age at start: 15-16 		
<p>7-(Cheng et al. 2008)</p> <ul style="list-style-type: none"> -Location: Henan Province, China (Rural) -Setting: Secondary schools -SES: Mixed <hr/> <p>Quasiexperimental, matched cohorts, cluster (school) assigned, 1174 participants, self-administered questionnaire and FGs, baseline / 3 months, controlled against no intervention</p>	<ul style="list-style-type: none"> -SE content: HIV/STIs, FP, sexuality, development, drug use, skills (communication, decision making, and self-protection) -Aim: abstinence and safe sex -Methods: group discussions, role play, case studies -Supportive elements: No - Programme development: Cognitive/ Social learning theory, NGO developed based on best practices in western countries - Intervention type: Comprehensive <hr/> <ul style="list-style-type: none"> -Integration: No -Instructor: Teachers 	<p>Knowledge: 2 Risk awareness: NR</p> <p>Attitudes (sex): 0 Attitudes (condom): NR Attitudes (contraception): NR Attitudes (PLHIV): 2</p> <p>Intention (abstinence): NR Intention (condoms, cont): NR</p> <p>Partner communication: NR Self-efficacy: 2 Other skills: NR</p> <p>Delay sex: NR No. of partners: NR Condom use: NR Contraception use: NR Coercion: NR</p> <p>STI (self-report): NR STI: NR HIV: NR Pregnancies: NR</p>	

	<ul style="list-style-type: none"> -Training, h: Yes, 5 days -Monitoring& support: Yes, manuals -Duration: 3 months -No. of sessions: 9 x 90 min -Total hours: 13,5h -Group size: NR -Group composition: mixed -Age at start: 15-17 	<p>Other:</p> <ul style="list-style-type: none"> Communication with parents: 0 Communication with teachers: 2 Communication with peers: 2 	
<p>8- (Chhabra et al. 2008)</p> <ul style="list-style-type: none"> -Location: Mumbai, India (Urban) -Setting: secondary schools -SES: mixed <hr/> <p>RCT, cluster (classroom) randomized, 1846 participants, self-administered questionnaire, baseline / post intervention (6 weeks), control against no</p>	<ul style="list-style-type: none"> -SE content: HIV and prevention, attitudes toward abstinence/ condom use, peer pressure, and confidence in dealing with risky social situations -Aim: abstinence and safe sex -Methods: participatory -Supportive elements: No - Programme development: Combination of US sexed and local drug prevention programme, social learning theory, 	<ul style="list-style-type: none"> Knowledge: 1 (↑f) Risk awareness: 1 (↑f) Attitudes (abstinence): 1 (↑f) Attitudes (condom): 1 Attitudes (contraception): NR Attitudes (PLHIV): 1 (↑f) Intention (abstinence): 1 Intention (condoms, cont): 1 (↑f) Partner communication: NR Self-efficacy: 1 (↑f) Other skills: Delay sex: NR No. of partners: NR Condom use: NR 	<ul style="list-style-type: none"> -Expected diffusion of effects, as one class in each school was intervention and other was control -Female participants benefited more

<p>intervention</p>	<p>context appropriate - Intervention type: Comprehensive</p> <hr/> <p>-Integration: No -Instructor: PE (undergraduate students) -Training, h: yes, 2 days (16h) -Monitoring& support: Yes, manual</p> <p>-Duration: 6 weeks -No. of sessions: 6 -Total hours: 6h -Group size: NR -Group composition: single sex and co-ed -Age at start: 13-15</p>	<p>Contraception use: NR Coercion: NR</p> <p>STI (self-report): NR STI: NR HIV: NR Pregnancies: NR</p> <p>Other: Resist peer pressure: 1 (↑f) peer communication Attitudes towards drug and steroid use: 0</p>	
<p>9- (Cowan et al. 2010, Cowan et al. 2008)</p> <p>-Location: Zimbabwe (Rural) -Setting: School and communities -SES: low</p> <hr/> <p>Experimental,</p>	<p>-SE content: HIV STI, pregnancy: Information, skills, gender, stereotypes, risks -Aim: safe behaviors, change norms -Methods: Active learning - Supportive elements: interventions for</p>	<p>Knowledge: 3 Risk awareness:</p> <p>Attitudes (sex): 3 (f) Attitudes (condom): 0 Attitudes (contraception): NR Attitudes (PLHIV): NR</p> <p>Intention (abstinence): NR Intention (condoms, cont): NR</p>	

<p>unmatched cohorts (2 nested cross-sections), communities, 4684, interviewed questionnaire and biological tests, baseline 4 years, controlled against no intervention</p>	<p>parents, family, health workers, YFC available and promoted -Programme development: Developed by NGO (adaptation of MEMA kwa Vijana curriculum), social learning theory -Intervention type: transformative</p> <hr/> <p>-Integration: No -Instructor: Professional PEs -Training, h: yes, NR -Monitoring& support: -Duration: 3 years (10 months) -No. of sessions: 30-50 -Total hours: NR -Group size: NR -Group composition: mixed -Age at start: 15</p>	<p>Partner communication: NR Self-efficacy: 3 (f) Other skills:</p> <p>Delay sex: 0 No. of partners: 0 (lifetime & last year) Condom use: 0 Contraception use: 0 Coercion: NR</p> <p>STI (self-report): 0 STI: 0 HIV: 0 Pregnancies: 3</p> <p>Other: Gender empowerment: 3 (Jewkes scale) Use of services: 3 (f)</p>	
<p>10- (Duflo et al. 2006, Dupas 2006) -Location: Western Kenya (Rural) -Setting: Primary</p>	<p>-SE content: Information based (T, R), skills and reflections (A) Topics: HIV -Aim: Reduce HIV risk by reducing cross-</p>	<p>Knowledge: 3 A, T (m) Risk awareness: -3 C (m) Reliability (condoms): 3 Reliability (abstinence): 3 Attitudes (abstinence): 3 A, T</p>	<p>The factorial design allowed for comparison of effects of different elements: T - teacher training (without assigning</p>

<p>schools -SES: low</p> <hr/> <p>RCT factorial, cluster (school) randomized, matched controls, 74000 participants, self-administered questionnaire, baseline / 1 year ® 3 years (T,A,C), control to standard sexed curriculum (HIV informative, emphasis on abstinence)</p>	<p>generational sex, promote condom use -Methods: Lectures / essay and debates / risk awareness and video -Supportive elements: reduces cost of schooling (clusters), presentations for parents -Programme development: Expert consultation, targeted to specific need (cross-generational, transactional sex), -Intervention type: transformative</p> <hr/> <p>-Integration: T, A integrated in subjects -Instructor: Teachers, externals -Training, h: Yes, 5 days -Monitoring& support: Yes -Duration: 2 years /R- single -No. of sessions: NR /R- 1x40min -Total hours: NR</p>	<p>(m) Attitudes (condom): 3 A Attitudes (contraception): NR Attitudes (PLHIV): 3 T (f), A Intention (abstinence): NR Intention (condoms, cont): NR Partner communication: NR Self-efficacy: 3 C Other skills: Delay sex: 3 R, C (f) No. of partners: 3 A (f); (has had more than one partner) Frequency of sex: -3 (R) – same generation Condom use: 3 A, R, T (m) Contraception use: NR Coercion: NR STI (self-report): NR STI: NR HIV: NR Pregnancies: 3 A, R, C (f) Other: Early marriage:3 C, A If pregnant, likely to be married: 3 C, T (f) Cross-generational sex: 3 R</p>	<p>specific curriculum and classroom hours); R – single targeted session to increase HIV risk awareness on cross- generational sex, A – active participation (clubs, essays, roleplays) and C - reducing schooling costs (provision of uniforms) *R reduced cross generational sex (as observed by pregnancy by older partners), likely to increased same generation sex, but also increased use of condoms T- increased consistent teaching about HIV and condoms</p>
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	<ul style="list-style-type: none"> -Group size: 35 -Group composition: mixed -Age at start: 11-14 		
<p>11- (Eggleston et al. 2000)</p> <ul style="list-style-type: none"> -Location: Jamaica (mixed) -Setting: Vocational schools -SES: low <hr/> <p>Quasiexperimental, matched cohorts, cluster (schools) assigned, 945 participants, self-administered questionnaires, baseline / post-intervention (9m) / 1 year post-completion, control to family life education (abstinence centered)</p>	<ul style="list-style-type: none"> -SE content: range of SRH topics (focus on pregnancy prevention) -Aim: Abstinence and safe sex (use of contraceptives) -Methods: Largely didactic, basic forms of participation (lecture, video aids, discussions) -Supportive elements: NR -Programme development: NGO developed and implemented, details NR Intervention type: Informative <hr/> <ul style="list-style-type: none"> -Integration: Stand-alone -Instructor: External/counselors -Training, h: Yes/NR -Monitoring& support: Yes 	<p>Knowledge: 2,0 Risk awareness: NR Reliability (condoms, contraceptives): 2, 0</p> <p>Attitudes (abstinence): 2, 0 Attitudes (condom): NR Attitudes (contraception): 0, 0 Attitudes (PLHIV): NR</p> <p>Intention (abstinence): NR Intention (condoms, cont): NR</p> <p>Partner communication: NR Self-efficacy: NR Other skills: NR</p> <p>Delay sex: 0, 0 No. of partners: NR Condom use: NR Contraception use: 2*, 0 Coercion: NR</p> <p>STI (self-report) NR STI: NR HIV: NR</p>	<p>*Among baseline virgins</p> <p>None of the effects were sustained after 1 year</p> <p>Authors reported that the large group did not allow for participation and skill-building exercises</p>

	<ul style="list-style-type: none"> -Duration: 9 months -No. of sessions: 30x 45 min -Total hours: aprox. 25 -Group size: 30-60 -Group composition: mixed -Age at start: 12-14 	<p>Pregnancies:NR</p> <p>Other: Norms about fertility: 2 (it is expected for a teenage girl to have baby to prove her fertility)</p>	
<p>12- (Erulkar et al. 2004)</p> <ul style="list-style-type: none"> -Location: Nyeri, Kenya (rural) -Setting: Schools and community -SES: Mixed <hr/> <p>Quasiexperimental, unmatched cohorts, cluster (community) assigned, 1544 participants, interviewed questionnaire, baseline / 3 years (end-line, after project completion), controlled to no intervention</p>	<ul style="list-style-type: none"> -SE content: comprehensive, included values, life plans, skills building, diversity, supportive environment -Aim: delay sex, safe sex -Methods: group discussions, drama, role play, lectures -Supportive elements: working with adults (influential) and teachers; referral and voucher for health services -Programme development: Developed by NGO, adjusted for age needs, included needs 	<p>Knowledge: NR Risk awareness: NR</p> <p>Attitudes (sex): NR Attitudes (condom): NR Attitudes (contraception): NR Attitudes (PLHIV): NR</p> <p>Intention (abstinence): NR Intention (condoms, cont): NR</p> <p>Partner communication: NR Self-efficacy: NR Other skills:</p> <p>Delay sex: marginal (at 3, ↑m) No. of partners: 3 (f); p<0.1 (m) Condom use: 3 (m), p<0.1 (f) Contraception use: NR Coercion: NR</p>	<p>Recognized diversity of young people, and worked with community to create supportive environment.</p> <p>Discussions for life plans</p> <p>Provided vouchers for services</p> <p>Focus on puberty and values with younger participants; Focus on STI, HIV and pregnancy with older participants.</p>

	<p>assessment and youth involvement, considered traditional practices</p> <p>-Intervention type: Transformative</p> <hr/> <p>-Integration: No</p> <p>-Instructor: counselor (young parents)</p> <p>-Training, h: yes, 1 month</p> <p>-Monitoring& support: Yes</p> <p>-Duration: 1-2 months (3 year project)</p> <p>-No. of sessions: aprox.6x90-120m</p> <p>-Total hours: 10</p> <p>-Group size: NR</p> <p>-Group composition: mixed</p> <p>-Age at start: 10-24 (median 15)</p>	<p>STI (self-report): NR</p> <p>STI: NR</p> <p>HIV: NR</p> <p>Pregnancies: NR</p> <p>Other:</p> <p>Communication with parents and other adults: 3</p>	
<p>13- (Fawole et al. 1999)</p> <p>-Location: Ibadam, Nigeria (Urban)</p> <p>-Setting: Secondary</p>	<p>-SE content: HIV and prevention</p> <p>-Aim: prevent risky practices and improve knowledge and attitudes</p> <p>-Methods: Lectures,</p>	<p>Knowledge: 2</p> <p>Risk awareness: 2</p> <p>Reliability (abs): 2</p> <p>Reliability (condom): 2</p> <p>Attitudes (abstinence): NR</p>	

<p>schools -SES: Low</p> <hr/> <p>Quasiexperimental, matched cohorts, cluster (school) assigned, 450, self-administered questionnaire, baseline / 6 months, controlled to no intervention</p>	<p>films, essays, debates, role play, condom demonstration</p> <p>- Supportive elements: No</p> <p>-Programme development: Expert and NGO consultation based on results from baseline, it was piloted</p> <p>-Intervention type: Comprehensive</p> <hr/> <p>-Integration: Extracurricular /mandatory</p> <p>-Instructor: Teachers, Physicians</p> <p>-Training, h: Yes, NR</p> <p>-Monitoring& support: NR</p> <p>-Duration: 6 weeks</p> <p>-No. of sessions: 6x2-6h</p> <p>-Total hours: aprox.20</p> <p>-Group size: 20-25</p> <p>-Group composition: mixed</p> <p>-Age at start: 17,7</p>	<p>Attitudes (condom): NR</p> <p>Attitudes (contraception): NR</p> <p>Attitudes (PLHIV): 2</p> <p>Intention (abstinence): NR</p> <p>Intention (condoms, cont): NR</p> <p>Partner communication: NR</p> <p>Self-efficacy: NR</p> <p>Other skills:</p> <p>Delay sex: 2</p> <p>No. of partners: 2</p> <p>Condom use: p<0.1</p> <p>Contraception use: NR</p> <p>Coercion: NR</p> <p>STI (self-report): 0</p> <p>STI: NR</p> <p>HIV: NR</p> <p>Pregnancies: NR</p> <p>Other: NR</p>	
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<p>14- (Stanton et al. 2012, Chen et al. 2010, Gong et al. 2009)</p> <p>-Location: The Bahamas, Caribbean (mixed)</p> <p>-Setting: primary school</p> <p>-SES: Mixed</p> <hr/> <p>RCT, matched cohorts, cluster (school) randomized, 1360 participants, self-administered questionnaire, baseline / every 6 months through 3 years / 4 years, controlled against sessions around ecology</p>	<p>-SE content: healthy decision-making, goal setting, communication, negotiation, consensual relationships, and information regarding abstinence, safer sex (mainly HIV related)</p> <p>-Aim: Safe practices</p> <p>-Methods: Active learning</p> <p>-Supportive elements: sessions with parents</p> <p>-Programme development: Protection motivational theory and social cognitive theory, adapted from US intervention and best practices, expert consultation incl. educators, counsellors and physicians</p> <p>Intervention type: Transformative</p> <hr/> <p>-Integration: Yes</p> <p>-Instructor: Teachers</p> <p>-Training, h: NR</p> <p>-Monitoring& support:</p>	<p>Knowledge: 1, 2, 3 (4,5)*</p> <p>Risk awareness: 0, 2,3 (4, 0at5)*</p> <p>Attitudes (sex): 1, 2, 3 (45)</p> <p>Attitudes (condom): 1,2,3 (45)</p> <p>Attitudes (contraception): NR</p> <p>Attitudes (PLHIV): NR</p> <p>Intention (abstinence): 0, 0, 0</p> <p>Intention (condoms, cont): 0, 2, 3 (4, 0at5)</p> <p>Partner communication: NR</p> <p>Self-efficacy: 1,2,3 (4, 5)</p> <p>Other skills:</p> <p>Delay sex: 0, 0, 0</p> <p>No. of partners: NR</p> <p>Condom use: 0, 2, 3 (4 0at5)</p> <p>Contraception use: NR</p> <p>Coercion: NR</p> <p>STI (self-report): NR</p> <p>STI: NR</p> <p>HIV: NR</p> <p>Pregnancies: NR</p> <p>Other:</p>	<p>*4- 3 year follow up</p> <p>*5 – 4 year follow up</p>
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	<p>NR</p> <ul style="list-style-type: none"> -Duration: 2 years (10 sessions over 3 months in the first year, 2 booster sessions in the second) -No. of sessions: 12 (10+2 booster) x 75 min -Total hours: 15h -Group size: -Group composition: -Age at start: 10.5 		
<p>15- (Hayes et al. 2005, Ross et al. 2007, MEMA kwa Vijana 2008b, MEMA kwa Vijana 2008a, Doyle et al. 2010)</p> <ul style="list-style-type: none"> -Location: Mwanza, Tanzania (rural) -Setting: Community, primary schools -SES: NR <hr/> <p>RCT, matched cohorts, cluster (community)</p>	<ul style="list-style-type: none"> -SE content: HIV/STI/Pregnancy, prevention, gender, sexuality, risk assessment, negotiation -Aim: delay/reduce sex/use condom (developing skills, changing attitudes, self-efficacy) -Methods: Active learning (Drama, stories, role-play, skills building, reflections) - Supportive elements: health services 	<p>Knowledge: 2,3 (sustained mean 5,4 years)</p> <p>Risk awareness: NR</p> <p>Attitudes (sex): 2,3</p> <p>Attitudes (condom): 2,3</p> <p>Attitudes (contraception): NR</p> <p>Attitudes (PLHIV): NR</p> <p>Intention (abstinence): NR</p> <p>Intention (condoms, cont): NR</p> <p>Partner communication: NR</p> <p>Self-efficacy: 2 (f), 0</p> <p>Other skills: NR</p>	<p>-different level of impact associated with years of participation (dose)</p> <p>*25% decrease in the intervention communities, did not reach statistical significance. Substantially greater effect in never married women.</p>

<p>randomized, 9645 participants, interviewed questionnaire and biological measures, baseline/post intervention (3 years)/ 9 years, controlled against no intervention</p>	<p>(training), community awareness, condom distribution -Programme development: Social learning theory, designed by experts Intervention type: Transformative</p> <hr/> <p>-Integration: Yes (other subjects) -Instructor: Teachers, PE -Training, h: Yes -Monitoring& support: Continuous, manuals -Duration: 3 years -No. of sessions: 30-40 x 40 min -Total hours: 20-25h -Group size: NR -Group composition: mixed -Age at start: 14-17</p>	<p>Delay sex: 2(m), 3 (m) No. of partners: 2(m), p<0.1 at Condom use: 2(m) 3 Contraception use: NR Coercion: NR</p> <p>STI (self-report): 2, p<0.1 at3 STI: 0, 0 HIV: p<0.1* (0at3) Pregnancies: 0, 0</p> <p>Other: Use of YFS: 0, 0</p>	
<p>16- (Heeren et al. 2013) -Location: Eastern</p>	<p>-SE content: HIV, STIs, gender norms and peer pressure, refusal and negotiation skills</p>	<p>Knowledge: 0,3 Risk awareness: NR Reliability (condom): 2,3</p>	<p>-Intervention had greater effect on non-South African students</p>

<p>Cape Province, South Africa (Urban) -Setting: University -SES: mixed</p>	<p>-Aim: condom use and HIV risk reduction. (abstinence is secondary) -Methods: interactive exercises, videos, group discussions, role play - Supportive elements: No -Programme development: Social cognitive theory and needs assessment (survey, FGs with youth) Intervention type: Comprehensive</p>	<p>Attitudes (sex): NR Attitudes (condom): 0, 3 Attitudes (contraception): NR Attitudes (PLHIV): NR Intention (abstinence): NR Intention (condoms, cont): NR Partner communication: NR Self-efficacy: 0, 3 Other skills: NR Delay sex: NR No. of partners: 0, 0 Condom use: 2, 3 Frequency of sex: 0, 0 Contraception use: NR Coercion: NR</p>	
<p>RCT, individual randomization, 176 participants, computer-assisted self-interviews, baseline/6 months / 12 months, controlled against health education (unrelated to sex),</p>	<p>-Integration: extracurricular -Instructor: External (post-graduate students) -Training, h: Yes, 5 days -Monitoring& support: Yes, manual -Duration: 1 month -No. of sessions: 8 x45min -Total hours: 6h -Group size: 8.8</p>	<p>STI (self-report): NR STI: NR HIV: NR Pregnancies: NR Other: NR</p>	

	<ul style="list-style-type: none"> -Group composition: -Age at start: 21 (18-24) 		
<p>17- (Jewkes et al. 2008, Jewkes et al. 2007)</p> <ul style="list-style-type: none"> -Location: Eastern Cape province, South Africa (rural) -Setting: Schools and communities -SES: mixed (low) <hr/> <p>RCT, matched cohorts, cluster (village) randomized, 2776 participants, interviewed questionnaire and biological tests, baseline/12 months /24 months, controlled against single 3 hour HIV session</p>	<ul style="list-style-type: none"> -SE content: knowledge, risk awareness, communication skills, gender norms, sex and love, violence, reflections -Aim: HIV prevention through gender equitable relationships -Methods: Active participation -Supportive elements: clinics and condoms were available in every village -Programme development: NGO developed, adapted from Uganda -Intervention type: Transformative <hr/> <ul style="list-style-type: none"> -Integration: No -Instructor: External (NGO), same gender -Training, h: Yes, 3 	<p>Knowledge: NR Risk awareness: NR</p> <p>Attitudes (sex): NR Attitudes (condom): NR Attitudes (contraception): NR Attitudes (PLHIV): NR</p> <p>Intention (abstinence): NR Intention (condoms, cont): NR</p> <p>Partner communication: NR Self-efficacy: NR Other skills:</p> <p>Delay sex: NR No. of partners: 2(m), 3 (m) Condom use: 2 (m), 3 (m) Contraception use: NR Coercion: 2, 3 (m)</p> <p>STI (self-report): NR STI: 3 (HSV-2) HIV: 0, p<0.1 at 3 Pregnancies: 0, 0</p> <p>Other:</p>	<p>Lack of reported behavioral impact on women justified with biased reporting, as HSV-2 rates were lowered, suggesting that behavior change did occur.</p> <p>Increase in transactional sex in women might have occurred by discussing it as common way to obtain goods and avoiding moralization.</p>

	<p>weeks</p> <ul style="list-style-type: none"> -Monitoring& support: Yes -Duration: 2 months -No. of sessions: 15x3h -Total hours: 50h -Group size: 20 -Group composition: separate+ joint meetings -Age at start: 15-26 (15-19) 	<p>Transactional sex with casual partner: -2(f), 2(m); 0 at 3</p> <p>Drug use: 3 (m)</p> <p>alcohol use: 2 (m)</p> <p>depression: p<0.1 at 2&3 (m)</p>	
<p>18-(Karnell et al. 2006)</p> <ul style="list-style-type: none"> -Location: KwaZulu-Natal, South Africa (Urban) -Setting: Secondary schools -SES: low <hr/> <p>Quasiexperimental, controlled for baseline differences, cluster (school) randomized, 661 participants, self-administered questionnaire, baseline / 3 months</p>	<ul style="list-style-type: none"> -SE content: HIV related behaviors, peer pressure and resisting, alcohol use, safe alternatives -Aim: alcohol and HIV prevention -Methods: testimonial tapes, discussions, role play -Supportive elements: NR -Programme development: US based intervention adapted to local context (testimonials), expert consultation, used 	<p>Knowledge: 0</p> <p>Risk awareness: 2</p> <p>Attitudes (sex): 0</p> <p>Attitudes (condom): 0</p> <p>Attitudes (contraception): NR</p> <p>Attitudes (PLHIV): NR</p> <p>Intention (abstinence): 0</p> <p>Intention (condoms, cont): 2</p> <p>Partner communication: NR</p> <p>Self-efficacy: 2(f)</p> <p>Other skills: NR</p> <p>Delay sex: NR</p> <p>No. of partners: NR</p> <p>Condom use: 0</p>	<p>*baseline virgins</p>

<p>after intervention, controlled against life skills curricula</p>	<p>exercises from curricula that have been evaluated as effective</p> <p>-Intervention type: Comprehensive</p> <hr/> <p>-Integration: Yes (Life skills)</p> <p>-Instructor: Teacher and 4 PEs</p> <p>-Training, h: Yes, 2 day</p> <p>-Monitoring& support: Monitored</p> <p>-Duration: 2 months</p> <p>-No. of sessions: 7 x 30 min</p> <p>-Total hours: 5h</p> <p>-Group size: NR</p> <p>-Group composition: mixed</p> <p>-Age at start: 16</p>	<p>Contraception use: NR</p> <p>Coercion: NR</p> <p>STI (self-report): NR</p> <p>STI: NR</p> <p>HIV: NR</p> <p>Pregnancies: NR</p> <p>Other:</p> <p>Alcohol use and attitudes: 0</p> <p>Alcohol during last sex: 2*</p>	
<p>19- (Kinsler et al. 2004)</p> <p>-Location: Belize City, Belize (Urban)</p> <p>-Setting: Primary and secondary schools</p> <p>-SES: mixed</p>	<p>-SE content: HIV information, positive attitudes, skills building (resisting pressure)</p> <p>-Aim: safe practices</p> <p>-Methods: role play, testimonials, skills building, lectures, reflections</p>	<p>Knowledge: 2</p> <p>Risk awareness: NR</p> <p>Attitudes (abstinence): 0 (perceived peer norm)</p> <p>Attitudes (condom): 2</p> <p>Attitudes (contraception): NR</p> <p>Attitudes (PLHIV): NR</p>	

<p>Quasiexperimental, matched cohorts, cluster (school) assigned, 150 participants, self-administered questionnaire, baseline / 1 month post intervention, controlled against IEC distribution</p>	<p>-Supportive elements: NR</p> <p>-Programme development: US developed, adapted to local settings (excluded sensitive issues such as homosexuality, anal sex). Experts, religious leaders, teachers, NGOs, HWs and youth participated in consultations. Reasoned action and social cognitive theory. Pilot tested</p> <p>-Intervention type: Comprehensive</p> <hr/> <p>-Integration: extracurricular (voluntary)</p> <p>-Instructor: PE</p> <p>-Training, h: yes, 4 day</p> <p>-Monitoring& support: NR</p> <p>-Duration: 3 months</p> <p>-No. of sessions: 7 x2h</p> <p>-Total hours: 14h</p> <p>-Group size: 25</p>	<p>Intention (abstinence): NR</p> <p>Intention (condoms, cont): 2</p> <p>Partner communication: 0</p> <p>Self-efficacy: 0</p> <p>Other skills: NR</p> <p>Delay sex: NR</p> <p>No. of partners: NR</p> <p>Condom use: 2</p> <p>Contraception use: NR</p> <p>Coercion: NR</p> <p>STI (self-report): NR</p> <p>STI: NR</p> <p>HIV: NR</p> <p>Pregnancies: NR</p> <p>Other:</p> <p>Parent communication: 2</p>	
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	-Group composition: mixed -Age at start: 15.3 (13-17)		
20- (Klepp et al. 1994, Klepp et al. 1997) -Location: Arusha and Kilimanjaro, Tanzania (mixed) -Setting: Primary schools -SES: mixed Quasiexperimental, nested cross-sectional, cluster (school) assigned, 2026 participants, self-administered questionnaire, baseline / 6 months / 12 months, controlled against no intervention	-SE content: HIV info, refusal skills (condoms were not discussed in the curricula, but answered questions if any) -Aim: delay initiation, reduce No. of partners -Methods: Participatory, group works, role play, posters, poetry, reflection, skills building - Supportive elements: public debates, engaging community leaders -Programme development: Developed by health educators and research team, Theory of reasoned action and social cognitive, allowed for context adaptation by teachers Intervention type: Abstinence only	Knowledge: 2, 3 Risk awareness: NR Attitudes (sex):2, 3 Attitudes (condom): 0, 0* Attitudes (contraception): NR Attitudes (PLHIV): 2, 0 Intention (abstinence): 2 Intention (condoms, cont): 0, 0* Partner communication: NR Self-efficacy: NR Other skills: NR Delay sex: p<0.1 at 2, 0 at 3 No. of partners: NR Condom use: NR Contraception use: NR Coercion: NR STI (self-report): NR STI: NR HIV: NR Pregnancies:	*Condom was not part of the curriculum

	<ul style="list-style-type: none"> -Integration: No -Instructor: Teachers and HWs -Training, h: Yes, 1 week -Monitoring& support: manuals -Duration: 2-3 months -No. of sessions: NR -Total hours: 20h -Group size: NR -Group composition: mixed -Age at start: 13,6 	<p>Other: NR</p> <p>Communication with peers about HIV: 2, 3</p>	
<p>21 - (Kyrychenko, Kohler & Sathiakumar 2006)</p> <ul style="list-style-type: none"> -Location: Vinnitsa, Ukraine (urban) -Setting: secondary school -SES: mixed <hr/> <p>Quasiexperimental, matched cohorts, non-equivalent control, cluster</p>	<ul style="list-style-type: none"> -SE content: HIV biology, transmission, condom-negotiation skills, illicit drug use -Aim: reduce risky practices -Methods: visual, group work, role-play, discussions -Supportive elements: No -Programme development: Expert developed, 	<p>Knowledge: 1, 2</p> <p>Risk awareness: 1, 2</p> <p>Attitudes (sex): NR</p> <p>Attitudes (condom): NR</p> <p>Attitudes (contraception): NR</p> <p>Attitudes (PLHIV): 1, 2</p> <p>Intention (abstinence): 0, 0</p> <p>Intention (condoms, cont): 1, 2 (but decreased from 1)</p> <p>Partner communication: NR</p> <p>Self-efficacy: 1, 2 (resist peer</p>	

<p>(school) assigned, 200 participants, self-administered questionnaire, baseline / post-intervention / 3 months, controlled against no intervention</p>	<p>following FGs with administrators, parents and youth, based on WHO Training and resource manual</p> <p>-Intervention type: comprehensive</p> <hr/> <p>-Integration: No -Instructor: Physicians -Training, h: No -Monitoring& support: No -Duration: 6 weeks -No. of sessions: 6 -Total hours: 6h -Group size: NR -Group composition: mixed -Age at start: 15-16</p>	<p>pressure) Other skills: NR</p> <p>Delay sex: NR No. of partners: NR Condom use: NR Contraception use: NR Coercion:</p> <p>STI (self-report): NR STI: NR HIV: NR Pregnancies: NR</p> <p>Other: Intend to use alcohol: 1, 2 Intend to use drugs: 1, 2</p>	
<p>22- (Li et al. 2011)</p> <p>-Location: Nanjing, China (Urban) -Setting: secondary schools -SES: mixed</p> <hr/> <p>Quasiexperimental, matched cohorts,</p>	<p>-SE content: HIV related, no condom info -Aim: abstinence -Methods: Participatory (forms of group work) -Supportive elements: No -Programme development: Protection motivation</p>	<p>Knowledge: 2 Risk awareness: 0</p> <p>Attitudes (sex): 0 Attitudes (condom): NR Attitudes (contraception): NR Attitudes (PLHIV): 2</p> <p>Intention (abstinence): 0 Intention (condoms, cont): NR</p>	

<p>cluster (school) assigned, 304 participants, self-administered questionnaire, baseline / 6 months, controlled against no intervention</p>	<p>(social cognitive) theory, US developed and adapted to context (qualitative and quantitative research), - condom use has been removed -Intervention type: Abstinence only</p> <hr/> <p>-Integration: No -Instructor: External (university students) -Training, h: Yes, NR -Monitoring& support: -Duration: 2 months -No. of sessions: 8 x 90 min -Total hours: 12h -Group size: NR -Group composition: mixed -Age at start: 16</p>	<p>Partner communication: NR Self-efficacy: 0 Other skills: NR</p> <p>Delay sex: 0 No. of partners: NR Condom use: NR Contraception use: NR Coercion:</p> <p>STI (self-report): NR STI: NR HIV: NR Pregnancies: NR</p> <p>Other: NR Perceived norms (abstinence) 0</p>	
<p>23-(Liao et al. 2010) -Location: Hainan province, China (Rural) -Setting: Primary schools</p>	<p>-SE content: adolescence, HIV, drugs, avoiding risks -Aim: Safe practices -Methods: group discussions, case studies</p>	<p>Knowledge: 1, 3 Risk awareness: NR</p> <p>Attitudes (sex): 0, 3 Attitudes (condom): 0, 3 Attitudes (contraception): NR Attitudes (PLHIV): NR</p>	

<p>-SES: Mixed</p> <hr/> <p>Quasiexperimental, matched cohorts, cluster (school) assigned, 2413 participants, self-administered questionnaire, baseline / 1 month / 16 months, controlled against no intervention</p>	<p>-Supportive elements: No</p> <p>-Programme development: Experts adapted UNICEF HIV curriculum</p> <p>Intervention type: Informative</p> <hr/> <p>-Integration: NR</p> <p>-Instructor: Teachers</p> <p>-Training, h: Yes, NR</p> <p>-Monitoring& support: NR</p> <p>-Duration: 1 month</p> <p>-No. of sessions: 4 x 45min</p> <p>-Total hours: 3h</p> <p>-Group size: NR</p> <p>-Group composition: mixed</p> <p>-Age at start: 12</p>	<p>Intention (abstinence): NR</p> <p>Intention (condoms, cont): NR</p> <p>Partner communication: NR</p> <p>Self-efficacy: NR</p> <p>Other skills: NR</p> <p>Delay sex: NR</p> <p>No. of partners: NR</p> <p>Condom use: NR</p> <p>Contraception use: NR</p> <p>Coercion: NR</p> <p>STI (self-report): NR</p> <p>STI: NR</p> <p>HIV: NR</p> <p>Pregnancies: NR</p> <p>Other: NR</p>	
<p>24 (Martinez-Donate et al. 2004)</p> <p>-Location: Tihuaná, Mexico (Urban)</p> <p>-Setting: Secondary schools</p> <p>-SES: mixed</p>	<p>-SE content: HIV info, effects, prevention, condoms and negotiation skills</p> <p>-Aim: delay sex and safe behaviors</p> <p>-Methods: lectures, video, role play,</p>	<p>Knowledge: NR</p> <p>Risk awareness: NR</p> <p>Attitudes (sex): NR</p> <p>Attitudes (condom): 1, 2 (WK&K) (K had no effect)</p> <p>Attitudes (contraception): NR</p> <p>Attitudes (PLHIV): NR</p>	<p>W-Workshop WK- Work&Kiosk K - Kiosk C - Control</p> <p>-Included basic forms of role play, but it was</p>

<p>Quasiexperimental factorial design (workshop and condom kiosk), matched cohorts, cluster (school x class) assigned, 320 participants, interviewed questionnaire, baseline / 3 months / 6 months, controlled against no intervention</p>	<p>testimonials -Supportive elements: condom distribution – kiosk Programme development: Expert consultation, health belief and social learning theory, tailored to meet cultural and social context -Intervention type: Informative</p> <hr/> <p>-Integration: No -Instructor: External (NGO), HW, PE -Training, h: NR -Monitoring& support: NR -Duration: single -No. of sessions: 1 -Total hours: 3 -Group size: 17-36 -Group composition: mixed -Age at start: 17,7</p>	<p>Intention (abstinence): NR Intention (condoms, cont): NR</p> <p>Partner communication: NR Self-efficacy: 0, 0 Other skills:</p> <p>Delay sex: 1, 2 No. of partners: NR Frequency of sex: 0, 0 (sex in last 3 months) Condom use: 0, 0 Contraception use: NR Coercion: NR</p> <p>STI (self-report): NR STI: NR HIV:NR Pregnancies: NR</p> <p>Other: NR</p>	<p>only one session overall</p>
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<p>25- (Maticka-Tyndale, Wildish & Gichuru 2007)</p> <p>-Location: Nyanza, Kenya (mixed) -Setting: Primary schools -SES: mixed</p> <hr/> <p>Quasiexperimental, matched cohorts, cluster (school) randomized, 3452 participants, self-administered questionnaire and FGs, baseline / 2 years, controlled against teachers receiving no training (only manuals)</p>	<p>-SE content: HIV info and prevention, gender norms, self-efficacy for alternative practices, critical thinking skills, condoms upon questions -Aim: delay or reduce sexual activity, use condoms, improve knowledge and communication -Methods: Interactive approach, role plays, essays, skills building -Supportive elements: health clubs and question boxes, community sensitization -Programme development: Social learning theory, pre-programme focus group with youth, teachers and community leaders, pilot tested. Experts developed the curricula following consultation with MoE -Intervention type: Transformative</p> <hr/>	<p>Knowledge: 3 (m*) Risk awareness: NR</p> <p>Attitudes (sex): 3* Attitudes (condom): 3* Attitudes (contraception): NR Attitudes (PLHIV): NR</p> <p>Intention (abstinence): NR Intention (condoms, cont): 3*</p> <p>Partner communication: 3 Self-efficacy: 3 (f*)-abstinence, 3* - condom negotiation Other skills: NR</p> <p>Delay sex: 3 No. of partners: NR Frequency of sex: 3 (f*) – (sex in last 3 months) Condom use: 3(m) Contraception use: NR Coercion: NR</p> <p>STI (self-report): NR STI: NR HIV: NR Pregnancies: NR</p> <p>Other: Communication with teachers</p>	<p>*Baseline virgins</p> <p>**Presented results for high exposure to intervention</p> <p>-HIV education is mandatory once per week (directed by MoE) and questions are included in students' assessment -Teacher training improved delivery of weekly lessons education (number of hours)</p>
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	<ul style="list-style-type: none"> -Integration: Integrated in other curricula throughout the year -Instructor: Teachers and PE -Training, h: Yes, 2 weeks -Monitoring& support: Continuous, manuals -Duration: 1 year -No. of sessions: NR (ap.30-40) -Total hours: NR (aprox.30h) -Group size: NR -Group composition: mixed -Age at start: 14 (11-16) 	<ul style="list-style-type: none"> about HIV: 3 Communication with parents about HIV: 3 Helped a friend to avoid high risk: 3* 	
<p>26 - (McCauley, Pick & Givaudan 2004)</p> <ul style="list-style-type: none"> -Location: Toluca, Mexico (urban) -Setting: Secondary schools -SES: mixed 	<ul style="list-style-type: none"> -SE content: sexuality, anatomy, HV prevention, gender, skills building, sexual orientation, negotiation, communication, values, life planning -Aim: to equip students with information and 	<ul style="list-style-type: none"> Knowledge: 1,2,3 Risk awareness: NR Reliability (abstinence): 1,2,3 Reliability (condoms) 1,2,3 Attitudes (sex): NR Attitudes (condom): NR Attitudes (contraception): NR Attitudes (PLHIV): 1,2,3, 	<ul style="list-style-type: none"> -Increased ability of teachers to deliver the curricula

<p>Quasiexperimental, matched cohorts, cluster (school) assigned, 2064 participants; self-administered questionnaire and FGs, baseline/ post intervention / 6 months / 12 month, controlled against standard sexed</p>	<p>skills to prevent HIV infection. -Methods: participatory -Supportive elements: NR -Programme development: Developed by NGO experts, no theory/logic specified -Intervention type: Comprehensive</p> <hr/> <p>-Integration: NR -Instructor: Teachers -Training, h: Yes, 36h (+self-assessment) -Monitoring& support: -Duration: 1 year -No. of sessions: 30 -Total hours: -Group size: -Group composition: mixed -Age at start: 16</p>	<p>Intention (abstinence): NR Intention (condoms, cont): NR</p> <p>Partner communication: NR Self-efficacy: 0,2,3 (condom use) Other skills: NR</p> <p>Delay sex: 0,0,0 No. of partners: NR Condom use: 0, 0, 0 Contraception use: NR Coercion: NR</p> <p>STI (self-report): NR STI: NR HIV: NR Pregnancies: NR</p> <p>Other: NR</p>	
<p>27- (Murray et al. 2000) -Location: Santiago, Chile (urban)</p>	<p>-SE content: Pregnancy, STI, contraception, sexuality, gender, relationships, communication, future goals, other risks</p>	<p>Knowledge: 2,3 Risk awareness: Attitudes (sex): Attitudes (condom): 2, 3 Attitudes (contraception): 2, 3</p>	<p>-Results of high exposure to intervention (dose)</p>

<p>-Setting: Secondary schools -SES: low</p> <hr/> <p>Quasiexperimental, matched cohorts, cluster (school) assigned, 4238 participants, self-administered questionnaire, baseline –beginning of academic year/ 3 rounds of follow up at the end of 3 academic years, controlled against no intervention</p>	<p>(drugs, alcohol) -Aim: prevent pregnancy, delay sex, safe behavior -Methods: Lectures, discussions, group work, role play -Supportive elements: Referrals to psychologist counseling and YFS/FP -Programme development: Adaptation of US based intervention (experts), considered needs of youth locally, feedback from teachers. -Intervention type: Transformative</p> <hr/> <p>-Integration: Yes, in other curricula -Instructor: Teachers -Training, h: Yes, 5 day -Monitoring& support: Yes, but limited -Duration: 2 years (maximum) -No. of sessions: NR -Total hours: NR -Group size: NR</p>	<p>Attitudes (PLHIV): NR Intention (abstinence): NR Intention (condoms, cont): NR Partner communication: NR Self-efficacy: NR Other skills: NR Delay sex: 2,3 No. of partners: NR Condom use: NR Contraception use: 3 (f) Coercion: NR STI (self-report): NR STI: NR HIV: NR Pregnancies: NR Other: Acceptability of teenage pregnancy: 0</p>	
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	<ul style="list-style-type: none"> -Group composition: mixed -Age at start: 16 (14-17) 		
<p>28- (Ndebele, Kasese-Hara & Greyling 2012)</p> <ul style="list-style-type: none"> -Location: Alexandra township, Johannesburg, South Africa (Urban) -Setting: Secondary school -SES: Mixed <hr/> <p>Quasiexperimental, matched cohorts, cluster (school) assigned, 259 participants, self-administered questionnaire. Baseline / 1 month / 3 months, controlled against delayed intervention</p>	<ul style="list-style-type: none"> -SE content: HIV information and skills (negotiation, refusal) -Aim: abstinence and safe practices - Methods: NR (likely to be didactic to participatory) -Supportive elements: No -Programme development: IMB, designed by research team -Intervention type: Informative <hr/> <ul style="list-style-type: none"> -Integration: No -Instructor: External (researcher) -Training, h: NA -Monitoring& support: NA -Duration: 3 weeks -No. of sessions: 3 x 45 min 	<ul style="list-style-type: none"> Knowledge: 1, 2 Risk awareness: 0, 0 Reliability (condom): 1, 2 Reliability (abstinence): 1, 2 Attitudes (sex): 1, 2 Attitudes (condom): 1, 2 Attitudes (contraception): NR Attitudes (PLHIV): NR Intention (abstinence): 1,2 Intention (condoms, cont): 1,2 Partner communication: 0,0 Self-efficacy: 0, 0 Other skills: Delay sex: NR No. of partners: NR Condom use: NR Contraception use: NR Coercion: NR STI (self-report): NR STI: HIV: 	<ul style="list-style-type: none"> -discusses testing effect in control group (influence of the instrument)

	<ul style="list-style-type: none"> -Total hours: 2,15h -Group size: NR -Group composition: mixed -Age at start: 17,5 	<p>Pregnancies:</p> <p>Other:</p>	
<p>29- (Pulerwitz, Barker & Segundo 2004)</p> <ul style="list-style-type: none"> -Location: Rio, Brazil (urban) -Setting: Secondary schools and community -SES: Low <hr/> <p>Quasiexperimental factorial design (education x campaign), matched cohorts, cluster (community) assigned, 780 participants, self-administered questionnaire, baseline / post intervention (6 months) / 1 year, controlled against no intervention</p>	<ul style="list-style-type: none"> -SE content: HIV, STIS, violence, sexual orientation, pregnancy, relationships, condoms, gender norms, emotions -Aim: gender equity, reduce (HIV) risk behavior incl. violence -Methods: Interactive learning, videos, reflection, skills, role plays -Supportive elements: lifestyle campaign -Programme development: Field-tested curriculum, developed by NGO -Intervention type: Transformative <hr/> <ul style="list-style-type: none"> -Integration: No -Instructor: External (NGO) -Training, h: Yes 	<p>Knowledge: NR</p> <p>Risk awareness: NR</p> <p>Attitudes (sex): 2, 3 (E, CE)</p> <p>Attitudes (condom): 2, 3 (E, CE)</p> <p>Attitudes (contraception): NR</p> <p>Attitudes (PLHIV): NR</p> <p>Intention (abstinence): NR</p> <p>Intention (condoms, cont): NR</p> <p>Partner communication: NR</p> <p>Self-efficacy: 2, 3 (E, CE)</p> <p>Other skills:</p> <p>Delay sex: NR</p> <p>No. of partners: p<0.1 at 2 and 3</p> <p>Condom use: 2, 3 (CE)</p> <p>Contraception use: NR</p> <p>Coercion: NR</p> <p>STI (self-report): 2, 3 (CE, E)</p> <p>STI: NR</p>	<p>E - Education</p> <p>CE – Campaign & education</p> <p>GEM scale:</p> <p>“-Men are always ready to have sex.</p> <p>-Women who carry condoms on them are “easy.”</p> <p>-I would never have a gay friend.</p> <p>-Changing diapers, giving the kids a bath, and feeding the kids are the mother’s responsibility.</p> <p>-I would be outraged if my wife asked me to use a condom.</p> <p>-A woman should tolerate violence in order to keep her family together.</p> <p>-There are times that</p>

	<ul style="list-style-type: none"> -Monitoring& support: Continuous, manual -Duration: 6 months -No. of sessions: 20 x 2h -Total hours: 40h -Group size: NR -Group composition: males only -Age at start: 17 (14-25) 	<p>HIV: NR Pregnancies: NR</p> <p>Other: Gender norms (GEM scale): 2,3 (E, CE)</p>	a woman deserves to be beaten."
<p>30- (James et al. 2006, Reddy, James & McCauley 2003)</p> <ul style="list-style-type: none"> -Location: KwaZulu-Natal, South Africa (mixed) -Setting: secondary schools -SES: mixed <hr/> <p>RCT, matched cohorts, cluster (school) randomized, 1141 participants, self-administered questionnaire, baseline / post-intervention (6</p>	<ul style="list-style-type: none"> -SE content: Information(HIV), values about sex, gender, condoms, relationships, violence, self-awareness, assertiveness, alcohol -Aim: increase knowledge, positive attitudes and practices (abstinence and condom) -Methods: Didactic and interactive, group work, role play -Supportive elements: NR -Programme development: 	<p>Knowledge: 1,2 Risk awareness: NR</p> <p>Attitudes (abstinence): 1*,2* Attitudes (condom): 0, 0 Attitudes (contraception): 0, 0 Attitudes (PLHIV): 0, 0 Perceived social support 0, 2*</p> <p>Intention (abstinence): 0, 0 Intention (condoms, cont): 1,0</p> <p>Partner communication: 0, 0 Self-efficacy: 0, 0 Other skills: Peer communication: 0, 0</p> <p>Delay sex: NR No. of partners: NR</p>	*stratifying for degree of implementation (sig. for high exposure)

<p>months) / 4 months after t2; control to unstructured basic lessons</p>	<p>Developed by experts, no other aspects reported, theory of planned behavior and social learning theory -Intervention type: Comprehensive</p> <hr/> <p>-Integration: Yes, Life-skills classes -Instructor: Teachers -Training, h: Yes, NR -Monitoring& support: No-Limited -Methods: Didactic and interactive, group work, role play -Duration: 6 months -No. of sessions: 20 -Total hours: 16h -Group size: NR -Group composition: mixed -Age at start: 15,5 (12-18)</p>	<p>Frequency of sex: 1*, 2* (Sex in last 6 months) Condom use at last sex: 1*, 0 Contraception use: NR Coercion: NR</p> <p>STI (self-report): NR STI: NR HIV: NR Pregnancies: NR</p> <p>Other: NR</p>	
<p>31- (Rijsdijk et al. 2011) -Location: Uganda</p>	<p>-SE content: self-esteem, norms, positive sexuality, gender, rights,</p>	<p>Knowledge: 2 Risk awareness: 0 Attitudes (abstinence): 2</p>	<p>Implementation challenges (access to computers), doubtful full implementation</p>

<p>(mixed) -Setting: Secondary schools -SES: Mixed</p> <hr/> <p>Quasiexperimental, matched cohorts, cluster (school) assigned, 1864 participants, self-administered questionnaire, baseline / post-intervention, controlled against no intervention</p>	<p>HIV/STI/pregnancy, goal setting, peer communication and support -Aim: delay; condom use and non-coercive sex (empower to make informed decisions) -Methods: computer based (active involvement with assignments, discussions, quizzes, storyboards), possibility to read without computers, if not available -Supportive: No -Programme development: NGO developed, drawing from evidence informed approaches, theory of planned behavior and health belief model -Intervention type: comprehensive</p> <hr/> <p>-Integration: Extracurricular</p>	<p>Attitudes (condom): 2 Attitudes (contraception): NR Attitudes (PLHIV): NR</p> <p>Intention (abstinence): 2 Intention (condoms, cont): 2</p> <p>Partner communication: NR Self-efficacy: 2 (condom and refusal) Other skills: NR</p> <p>Delay sex: NR No. of partners: NR Condom use: NR Contraception use: NR Coercion: NR</p> <p>STI (self-report): NR STI: NR HIV: NR Pregnancies: NR</p> <p>Other: Self-efficacy in dealing with coercion: 2</p>	
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	<p>(voluntary)</p> <ul style="list-style-type: none"> -Instructor: Teachers facilitate and PE -Training, h: Yes, 6 day -Monitoring& support: Yes -Duration: 6 months -No. of sessions: 14 -Total hours: NR -Group size: NR (presumably 50)-clubs -Group composition: same gender and coed -Age at start: 16 		
<p>32- (Saad et al. 2012)</p> <ul style="list-style-type: none"> -Location: Zaria, northern Nigeria (Urban) -Setting: University -SES: Mixed <hr/> <p>RCT, individual randomization, 240 participants, self-administered questionnaire, baseline / post-intervention/ 3 month</p>	<ul style="list-style-type: none"> -SE content: HIV/STIs, gender, peer pressure and self-control, refusal and negotiation skills -Aim: encourage abstinence, information about condoms -Methods: lectures, group discussions, role play, negotiation exercises -Supportive elements: No -Programme development: Information-Motivation- 	<p>Knowledge: 1, 2 Risk awareness:</p> <p>Attitudes (sex): 1, 2 Attitudes (condom): 1, 2 Attitudes (contraception): NR Attitudes (PLHIV): 0, 0</p> <p>Intention (abstinence): NR Intention (condoms, cont): NR</p> <p>Partner communication: NR Self-efficacy: NR Other skills:</p> <p>Delay sex: NR</p>	<p>Much greater improvements were observed at 6 months, highlighting the importance of booster sessions.</p>

<p>/ 6 months, controlled against career development intervention</p>	<p>Behavioral Skills model, expert consultation, efforts for culturally appropriate, pilot tested -Intervention type: <u>Comprehensive</u></p> <hr/> <p>-Integration: No -Instructor: PE -Training, h: Yes, 3 days -Monitoring& support: Yes, manual -Duration: 3 months -No. of sessions: 4 x 2h (+booster 4h) -Total hours: 8h+4 (booster) -Group size: 30 -Group composition: mixed -Age at start: 22</p>	<p>No. of partners: 1, 2 Condom use: 1, 2 Contraception use: NR Coercion: NR</p> <p>STI (self-report): NR STI: NR HIV: NR Pregnancies: NR</p> <p>Other: Alcohol use: 1,2</p>	
<p>33 - (Smith et al. 2008)</p> <p>-Location: Cape Town, South Africa (Urban) -Setting: Secondary schools -SES: Low</p>	<p>-SE content: anxiety, anger, free time, relationships, sex behavior, condom, substance use -Aim: healthy practices -Methods: participatory -Supportive elements: No</p>	<p>Knowledge: NR Risk awareness: NR</p> <p>Attitudes (sex): NR Attitudes (condom): 3 Attitudes (contraception): NR Attitudes (PLHIV): NR</p> <p>Intention (abstinence): NR</p>	

<p>Quasiexperimental, matched cohorts, cluster (school) assigned, 2383 participants, self-administered questionnaire, baseline and 4 follow ups (data from 2 year follow up presented), control against "life orientation" curriculum</p>	<p>-Programme development: Piloted, adapted with teacher and student inputs, contemporary human development theories Intervention type: Comprehensive</p> <hr/> <p>-Integration: in other subjects -Instructor: Teachers -Training, h: NO -Monitoring& support: Curriculum and manual distributed -Duration: 2 years -No. of sessions: 18 x 40min -Total hours: 12h -Group size: NR -Group composition: mixed -Age at start: 14</p>	<p>Intention (condoms, cont): NR</p> <p>Partner communication: NR Self-efficacy: 3 (m) Other skills: NR</p> <p>Delay sex: 0 (p<0.1 m) No. of partners: NR Sex frequency (1 month recall): 0 Condom use: 0 Contraception use: NR Coercion: NR</p> <p>STI (self-report): NR STI: NR HIV: NR Pregnancies: NR</p> <p>Other: Alcohol in last month: 3 Smoking: 3 (f) Marihuana use: 0 (p<0.1 f)</p>	
<p>34 - (Stanton et al. 1998, Fitzgerald et al. 1999) -Location: Caprivi and Omusati, Namibia</p>	<p>-SE content: informative, preventive, communication skills, violence, alcohol use, decision making skills</p>	<p>Knowledge: 1,2,3 Risk awareness: 0, 0, 0</p> <p>Attitudes (abstinence): 1, 0, 0 Attitudes (condom): 1,2,3</p>	<p>*baseline virgins</p> <p>Weak impact on condom use justified with limited access to</p>

<p>(rural) -Setting: secondary school -SES: low</p> <p>-Study design, matching, randomization, participants, instrument, follow up: RCT, parallel (individual) randomization, 515 participants, self-administered questionnaire, baseline/post intervention (2months) / 6 months / 12 months, control to delayed intervention</p>	<p>-Aim: abstinence and condom use -Methods: innovative and participatory, games, stories, discussions - Supportive elements: No -Programme development: Western based intervention (protective motivational theory), adapted to local culture following expert consultation and FG discussions with youth. The programme was piloted. Social learning and TRA Intervention type: Comprehensive</p> <hr/> <p>-Integration: Extracurricular (voluntary) -Instructor: Teachers and peers -Training, h: Yes, 40h -Monitoring& support: Yes</p>	<p>Attitudes (contraception): NR Attitudes (PLHIV): NR</p> <p>Intention (abstinence): 0, 0, 0 Intention (condoms, cont): 1 (↑f), 0, 0</p> <p>Partner communication: 1,2, 0 Self-efficacy: 0, 2,3 Other skills: NR</p> <p>Delay sex: 0, 0, 3 (↑f) No. of partners: 0, 0, 0 Condom use: 1 (↑m)*, 0, 0 Contraception use: NR Coercion: 0</p> <p>STI (self-report): NR STI: NR HIV: NR Pregnancies: NR</p> <p>Other: Alcohol use: 1,2,3</p>	<p>condoms</p> <p>Included communication skills with older partners, awareness about violence and coercion</p>
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	<ul style="list-style-type: none"> -Duration: 7 weeks -No. of sessions: 14x2h -Total hours: 28 -Group size: 15-20 -Group composition: mixed -Age at start: 17 		
<p>35- (Thato, Jenkins & Dusitsin 2008)</p> <ul style="list-style-type: none"> -Location: Bangkok, Thailand (Urban) -Setting: Secondary schools -SES: Low and middle (mixed) <hr/> <p>Quasiexperimental, matched cohorts, cluster (school) assigned, self-administered questionnaire, 552 participants, baseline / 3 months / 6 months; controlled against no intervention</p>	<ul style="list-style-type: none"> -SE content: STIs/pregnancy facts, prevention, refusal and negotiation, condom, contraceptives, life/career goals -Aim: delay initiation, reduce negative effects of sex -Methods: Discussions, videos, role plays, demonstration, skills building, stories -Supportive elements: No -Programme development: Developed by experts, social learning theory and best practices, culturally adapted (value to maintenance of virginity till marriage), efforts for 	<p>Knowledge: 1, 2 Risk awareness: NR</p> <p>Attitudes (sex): NR Attitudes (condom): NR Attitudes (contraception): NR Attitudes (PLHIV): NR</p> <p>Intention (abstinence): 1,2 Intention (condoms, cont): 1, 2</p> <p>Partner communication: NR Self-efficacy: NR Other skills:</p> <p>Delay sex: 1, 2 Frequency of sex: 1, 2 (sex in last 3 months) Condom use: 0, 0 Contraception use: NR Coercion: NR</p> <p>STI (self-report): NR STI: NR</p>	

	<p>age appropriate messages, feedback from FG (3 students), no pilot</p> <p>-Intervention type: Comprehensive</p> <hr/> <p>-Integration: NA</p> <p>-Instructor: External (research team)</p> <p>-Training, h: NA</p> <p>-Monitoring& support: NA</p> <p>-Duration: 2 weeks</p> <p>-No. of sessions: 2 x 3 h</p> <p>-Total hours: 6h</p> <p>-Group size: 25-35</p> <p>-Group composition: mixed</p> <p>-Age at start: 16 (13-18)</p>	<p>HIV:NR</p> <p>Pregnancies: NR</p> <p>Other: NR</p>	
<p>36 - (Walker et al. 2006)</p> <p>-Location: Morelos, Mexico (mixed)</p> <p>-Setting: Secondary schools</p> <p>-SES: mixed</p> <hr/> <p>RCT factorial design,</p>	<p>-SE content: consequences of unprotected sex and how to avoid it, social pressures, communication, negotiation, and refusal skills.</p> <p>-Aim: Increase condom use/contraceptives</p>	<p>Knowledge: 3 (CC)</p> <p>Risk awareness: NR</p> <p>Attitudes (sex): NR</p> <p>Attitudes (condom): 0</p> <p>Attitudes (contraception): NR</p> <p>Attitudes (PLHIV): NR</p> <p>Intention (abstinence): NR</p> <p>Intention (condoms, cont): 3</p>	<p>C- HIV and condom</p> <p>CC- HIV, condom and emergency contraception</p>

<p>cluster (school) randomized, 10954 participants, self-administered questionnaire, baseline /Post intervention (4 months)-NR / 16 months, controlled against biology based sexed</p>	<p>-Methods: NR -Supportive elements: NR -Programme development: UNAIDS guidance -Intervention type: Comprehensive</p> <hr/> <p>-Integration: Yes (Biology) -Instructor: Teachers -Training, h: Yes, 40h/1 week -Monitoring& support: NR -Duration: 15 weeks -No. of sessions: NR -Total hours: 30h -Group size: NR -Group composition: mixed -Age at start: 16,7</p>	<p>Partner communication: NR Self-efficacy: 3 Other skills:</p> <p>Delay sex: 0 No. of partners: NR Condom use: 3 (m-CC) Sex with casual partner or transactional: 0 Contraception use: 3 (f-CC) Coercion: NR</p> <p>STI (self-report): NR STI: NR HIV: NR Pregnancies: NR</p> <p>Other: Older sex partner: -3 (f-CC)</p>	
<p>37- (Wang et al. 2005)</p> <p>-Location: Shanghai, China (suburban) -Setting: Community, high schools -SES: mixed</p>	<p>-SE content: abstinence, sexuality, contraception, HIV/STI prevention, dating, relationships, gender norms, values -Aim: abstinence (for virgins), use of condoms/contraceptives</p>	<p>Knowledge: NR Risk awareness: NR</p> <p>Attitudes (sex): NR Attitudes (condom): NR Attitudes (contraception): NR Attitudes (PLHIV):</p>	<p>Dose-response differences</p>

<p>Quasiexperimental, matched cohorts, cluster (community) assigned, 2227 participants, self-administered questionnaire, baseline / post-intervention (20 months), controlled against no intervention</p>	<p>(for sexually active) - Methods: videos, lectures, peer group discussions, IEC - Supportive elements: SRH and FP services, condoms distributed, public screening of videos) - Programme development: Developed by experts based on characteristics and needs at the setting - Intervention type: Transformative</p> <hr/> <p>- Integration: Unstructured curriculum (delivered on weekends) - Instructor: External (NGO) and PE - Training, h: NR - Monitoring & support: NR - Duration: 20 months - No. of sessions: apr.40 - Total hours: Not to all participants - Group size: 15-800 (video projections)</p>	<p>Intention (abstinence): NR Intention (condoms, cont): NR</p> <p>Partner communication: 2 Self-efficacy: 2 Other skills:</p> <p>Delay sex: 0 No. of partners: NR Condom use: 2 Contraception use: 2 Coercion: 2 (↑m)</p> <p>STI (self-report): NR STI: HIV: Pregnancies: 2</p> <p>Other:</p>	
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	-Group composition: mixed -Age at start: 18,5 (15-24)		
38- (Wilson, Mparadzi & Lavelle 1992) -Location: Zimbabwe (urban) -Setting: University -SES: NR	-SE content: HIV, condom demonstration and practice, self-management, assertiveness -Aim: condom use -Methods: role play for negotiation skills, psychodrama (consequences), video, discussion, condom practice -Supportive elements: No -Programme development: Health belief model (risk awareness, confidence in prevention, self-efficacy, normative support, barriers) -Intervention type: Informative	Knowledge: 2 Risk awareness: 0 Efficacy of preventive steps: 0 Attitudes (sex): NR Attitudes (condom): 2 (perceived barriers) Attitudes (contraception): NR Attitudes (PLHIV): NR Intention (abstinence): NR Intention (condoms, cont): NR Partner communication: NR Self-efficacy: 2 Other skills: NR Delay sex: NR No. of partners: 2 Condom use: 2 Contraception use: NR Coercion: NR STI (self-report): NR STI: NR HIV: NR Pregnancies: NR	Used participatory methods, but it was only one session.
RCT, individual randomization, 184 participants, self-administered questionnaire, baseline / 4 months, controlled against HIV informative session	-Integration: NA -Instructor: Psychologists		

	<ul style="list-style-type: none">-Training, h: NR-Monitoring& support: NR-Duration: single-No. of sessions: 1-Total hours: 1,5h-Group size: NR-Group composition: mixed-Age at start: 22	<p>Other: Perceived normative support: 0</p>	
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