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Evidence
Gap Map
Report 5

**Adolescent sexual and reproductive
health**
An evidence gap map
December 2016

Health



International
Initiative for
Impact Evaluation

About 3ie

The International Initiative for Impact Evaluation (3ie) is an international grant-making NGO promoting evidence-informed development policies and programmes. We are the global leader in funding and producing high-quality evidence of what works, how, why and at what cost. We believe that better and policy-relevant evidence will make development more effective and improve people's lives.

3ie evidence gap map reports

3ie evidence gap maps are thematic collections of information about impact evaluations or systematic reviews that measure the effects of international development policies and programmes. The maps present a visual overview of existing and ongoing studies in a sector or sub-sector in terms of the types of programmes (or interventions) evaluated and the outcomes measured. The evidence gap map reports provide all the supporting documentation for the maps themselves, including the background information for the theme of the map, the methods and results, including the protocols, and the analysis of the results.

About this evidence gap map report

This report provides the supporting documentation for the [3ie evidence gap map](#) on adolescent sexual and reproductive health, which was developed as part of a project funded by the William and Flora Hewlett Foundation. All of the content is the sole responsibility of the authors and does not represent the opinions of 3ie, its donors or its Board of Commissioners. Any errors and omissions are also the sole responsibility of the authors. Any comments or queries should be directed to the corresponding author, Kristen Rankin, at krarkin@3ieimpact.org.

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Summary

Adolescence (ages 10–19) is a critical time period in life during which people undergo extensive biological, psychological and social changes. Sexual and reproductive health (SRH) plays an integral role during adolescence and can affect many aspects of a person's life during and after this time. Adolescents face a multitude of risks and challenges related to SRH, including those related to early pregnancy and sexually transmitted infections (STIs) (Fatusi and Hindin 2010; Dick and Ferguson 2015). Programming that addresses this health area has the potential to greatly improve not only adolescents' SRH, but also their overall health and their ability to reach their full potential. This programming can range from clinical interventions such as STI treatment, to health systems strengthening, to community engagement approaches aimed at changing norms around gender, marriage and sexual health.

To best invest finite resources in programming aimed at improving adolescent sexual and reproductive health (ASRH), decision-makers need to know what works and what does not, particularly within a low- and middle-income country (L&MIC) context. Impact evaluations – studies using experimental or quasi-experimental methods to measure effectiveness – help answer these questions, as do high-quality systematic reviews.

To catalogue the existing evidence base, analyse its characteristics and identify the gaps in primary and synthesis evidence, we created an evidence gap map (EGM) as part of a project funded by the William and Flora Hewlett Foundation. 3ie EGMs are visual representations of how much impact evaluation and systematic review evidence exists for a given sector or policy issue according to the types of programmes evaluated and outcomes measured.

Findings

The ASRH EGM contains 131 completed impact evaluations, 21 ongoing impact evaluations, 13 systematic reviews and one systematic review protocol. Most evidence is on sexual health education and other instruction within and outside of the classroom. Many of these courses come from a human immunodeficiency virus (HIV) prevention perspective and measure outcomes related to knowledge, attitudes, condom use and sexual activity. Intervention categories for which there is little evidence include health services and counselling in school, sanitation improvements in school, community health workers and health visits and changes to laws and policies.

The most common outcomes measured are those related to knowledge, awareness, attitudes and self-efficacy. Very few studies measured effects at the provider level, including studies evaluating adolescent-friendly approaches. There were very few studies measuring effects on menstrual hygiene behaviours, abortion or sexual and intimate partner violence. While there is an emerging cluster of evidence around approaches targeting the family and community, these studies generally do not measure changes in norms, beliefs or behaviours at the family and community level.

Within the full evidence base, only eight studies measure normative change related to gender, marriage and sexual activity.

There are clusters of unsynthesised evidence on the effectiveness of family engagement and on cash transfer programmes directly targeting and improving ASRH. Among other synthesis gaps, we see opportunities for systematic reviews to focus on peer-to-peer approaches and sex education for adolescents aged 10–14.

Conclusions

We sought to identify the key gaps in the evidence of the impact of ASRH programming in developing country settings. We aimed not only to map out the evidence base of the broad topic of ASRH, but also to highlight nuances in the evidence base and specific gaps that may not be obvious from quick snapshots of the literature.

Overall, we find that while there is a considerable amount of impact evaluation evidence, it only addresses some questions within this broad topic. Often with a narrow scope of outcomes, many studies do not address the diversity of adolescents or the effect of social norms. Furthermore, we note a wide range of quality in reporting, and that studies often include inadequate descriptions around the context of the evaluation, the interventions and associated theories of change. The question of cost-effectiveness is notable in its absence from the research questions.

We note that in certain areas a large amount of evidence exists, but specific to certain contexts or topics, particularly HIV prevention. Policymakers and other decision-makers currently do not have much evidence on the impact of programming on adolescent pregnancy. In particular, we know little on programming involving long-acting reversible contraception (LARCs). Furthermore, there is a lack of geographic diversity in the evidence base. More than half of the evidence comes from seven countries in Sub-Saharan Africa. For implementers designing programmes for specific adolescent populations such as boys, adolescents aged 10–14 and unmarried adolescents, there is some evidence specific to these populations but by and large the evidence base does not yet explore effectiveness for adolescent sub-populations.

High-quality synthesis that focuses on specific intervention types for adolescents in L&MICs is largely missing. There are opportunities for researchers to take the next step from reviewing the evidence on a broad topic, such as HIV prevention, to seeking answers around specific approaches, outcomes and adolescent sub-populations.

While we do have evidence around what works for some types of interventions in ASRH programming in L&MICs, there is still important research to be done. We need better-quality evaluations and systematic reviews that provide evidence on what works, for whom and at what cost for a wider range of interventions and outcomes and taking into account the wide array of contexts, populations and needs ASRH covers.

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Abbreviations and acronyms

3ie	International Initiative for Impact Evaluation
ASRH	adolescent sexual and reproductive health
CBO	community-based organisation
DID	difference-in-difference
EGM	evidence gap map
FGM	female gender mutilation
HIV	human immunodeficiency virus
ICT	information and communication technology
IE	impact evaluation
LARCs	long-acting reversible contraception
LGBTQ	lesbian, gay, bisexual, transgender and questioning
L&MICs	low- and middle-income countries
mHealth	mobile health
NGO	non-governmental organisation
OVC	orphans and vulnerable children
PSM	propensity score matching
RCT	randomised controlled trial
RDD	regression discontinuity design
SRH	sexual and reproductive health
STI	sexually transmitted infection
VYA	very young adolescent

1. Introduction

1.1 Adolescent sexual and reproductive health programming

Adolescence, the time period between 10 and 19 years of age, is a critical time period in life during which people undergo extensive biological, psychological and social changes (Dick and Ferguson 2015). Sexual and reproductive health (SRH) during adolescence affects not only a wide range of health factors, but also a person's employment prospects, their future economic wellbeing, status in the community and overall ability to reach their full potential (UNFPA 2014; Viner *et al.* 2012).

With more adolescents in the world than ever before, this is an important part of the population that will have a direct impact on the wider community and economy.

SRH issues pose serious concerns for adolescents. Second only to young people aged 20–24, adolescents 15–19 years old have the highest rates of contracting sexually transmitted infections (STIs), including HIV (Dehne and Riedner 2005).

Pregnancy-related complications are the second leading cause of death among girls aged 15–19 (WHO 2014); in Sub-Saharan Africa, they are the highest (Fatusi and Hindin 2010). Furthermore, adolescents have less access to information and services. Twenty-two per cent of females 15–24 years old worldwide have access to contraceptives, compared to 60 per cent of women older than 30 (UNFPA 2014).

These health concerns are particularly true for adolescents in low- and middle-income countries (L&MICs), who constitute approximately 70 per cent of all adolescents in the world (Hindin and Fatusi 2009).

In L&MICs, 90 per cent of births to adolescents occur within marriage (Rosen 2010). The adolescent fertility rate in the least developed countries is nearly five times the rate in more developed countries (Rosen 2010). Unmet need for contraception among adolescents is highest in Sub-Saharan Africa (Fatusi and Hindin 2010).

SRH programming, encompassing interventions addressing sexual health education, family planning, HIV and STI prevention, safe abortion, menstruation, voluntary medical male circumcision and other related topics, has the potential to affect a wide range of outcomes in an adolescent's life.

There has been increased recognition of the importance of adolescent sexual and reproductive health (ASRH) within a life course. Guidelines and policies are increasingly focused on adolescents as a specific population (WHO 2013, 2015) and the global community is calling for further research in this area (Chandra-Mouli *et al.* 2013; Kuruvilla *et al.* 2016; UNFPA 2014). The challenge is to make evidence-informed investments so that interventions can achieve the greatest possible positive impacts and to build capacity and commitment for the evaluation of these interventions going forward, to maximise the effectiveness of future programmes.

1.2 Study objectives

With support from the William and Flora Hewlett Foundation, the International Initiative for Impact Evaluation (3ie) has conducted scoping work to comprehensively assess the supply of and demand for evidence on the effectiveness of ASRH programming. This is intended to be the first step in filling evidence gaps in ASRH effectiveness through new impact evaluation investment.

The primary input of this scoping work is the evidence gap map (EGM) detailed in this report. In a companion piece, we combine the takeaways of this EGM with other inputs, including an assessment of priority evidence needs, to more broadly discuss the state of evidence (Rankin *et al.* 2016).

The aim of this EGM however is to identify, map and describe existing empirical evidence and gaps in evidence on the effects SRH programming on adolescents in L&MICs. Our broader goal is to identify priorities for new impact evaluation and systematic review research.

We recognise that many other reviews exist in this space, including work published only this year (see Darroch *et al.* 2016; Hindin *et al.* 2016; Kalamar *et al.* 2016; Patton *et al.* 2016). Our work does not duplicate these efforts however but instead provides a new perspective and tool to better understand and use the evidence base.

Our work focuses on key aspects of the evidence base: a) impact evaluations that use a counterfactual to directly attribute effects to interventions and quality systematic reviews for which we have confidence in their findings; b) research that focuses explicitly on adolescents 10–19 years old; and c) research conducted in the settings of 70 per cent of the world's adolescents, in L&MICs.

1.3 Evidence gap map methodology

3ie EGMs are thematic collections of evidence on the effects of policies and programmes (Snilstveit *et al.* 2014). They provide an innovative approach for rapid knowledge transfer and capture, combining methods from other review and mapping approaches with data visualisation, using an interactive platform. A key feature of an EGM is the use of a framework of interventions and outcomes, based on a review of the policy literature and consultation with stakeholders.

The rows of this framework represent a list of the key interventions in the sector or thematic area of focus, while the columns cover the most relevant outcomes – from intermediate to final – structured along the causal chain. The framework is designed to capture the universe of all important interventions and outcomes in the sector or sub-sector covered by the map.

This EGM is based on systematic and comprehensive methods to identify impact evaluations and systematic reviews corresponding to the concepts included in the framework. Appendix A describes the methods used in this study in detail. Impact evaluations use counterfactual analysis to measure the net impact of an intervention (3ie 2012). Systematic reviews of effects use transparent and systematic methods to

identify, appraise and synthesise findings from studies addressing a specific issue (Waddington *et al.* 2012). When using the term ‘evidence’ in this report, we are speaking of these types of primary studies and syntheses of effects.

1.4 Report structure

In section 2 of this report, we discuss the scope of the ASRH EGM. In section 3 we present the findings, which include the search and screening results and an analysis of the characteristics of the evidence base. Section 4 discusses limitations, and section 5 concludes. Appendix A includes the detailed methodological information, and Appendix B includes a full bibliography of impact evaluations and systematic reviews.

2. Scope of the evidence gap map

2.1 Inclusion criteria

We included studies that evaluated the effectiveness of ASRH programming in L&MICs using the impact evaluation methodologies defined in section 2.4, as well as systematic reviews that primarily included impact evaluations in L&MICs addressing an ASRH research question. The below table outlines our inclusion criteria.

Table 1: Detailed inclusion criteria

Population	Adolescents, defined as people aged 10–19. More than half of those sampled for a study must be aged 10–19. Either more than 50 per cent of the initial sample size must fall into this age range (when sample size distribution by age is given), or more than half of the expressed age range (e.g. 16–21 years old) must fall within it.
Geography	Countries labelled as L&MICs by the World Bank at the time of study publication.
Topics of interest	<p>Family planning</p> <p>Healthy timing and spacing of pregnancy</p> <p>Abortion</p> <p>HIV and AIDS and other STIs</p> <p>Intimate partner violence and sexual violence</p> <p>Menstruation and feminine hygiene</p> <p>Voluntary medical male circumcision</p> <p>Female genital mutilation</p> <p>Rights, norms and empowerment associated with the above topics</p> <p>Factors that can affect SRH, such as education, economic development, livelihoods, empowerment, drug and alcohol use or child marriage. (<i>These topics were included only if the authors clearly report SRH outcomes as primary or secondary outcomes of interest and provide effect sizes for those outcomes</i>).</p>
Topics not of interest	<ul style="list-style-type: none"> • Approaches during and after pregnancy with the primary objectives of maternal, newborn or child health outcomes (i.e. post-partum haemorrhaging, deworming, nutritional supplementation or smoking cessation during pregnancy) • Other adolescent health topics such as mental health, smoking cessation, nutrition and exercise • Factors associated with SRH such as education, economic development, livelihoods, empowerment, drug and alcohol use or child marriage if they do not measure effects of SRH outcomes (including sexual and reproductive behaviours and final health outcomes falling under ‘adolescent health’ outcomes).
Study type	Experimental studies, quasi-experimental studies and systematic reviews as determined by standardised 3ie criteria and detailed in section 4.2.2.
Timeframe	Studies published from 1990 onwards.
Language	Search conducted in English only. We screened and accepted studies in English, French, Spanish and German if they met all inclusion criteria.

2.2 Interventions

Table 2 presents the intervention categories for each group, the corresponding code in the evidence gap map and a brief description. The broader grouping (denoted in blue) of categories is a means to organise the map; these groupings are not interventions themselves. We designed the framework to differentiate interventions by mechanism rather than by topic or goal.

Table 2: Intervention categories

		Health systems (HS)
HS1	Provider training and youth-friendly service adjustments	Interventions that introduce youth- or adolescent-friendly services or otherwise train providers to respond better to adolescent needs in terms of SRH. Efforts to increase youth-friendliness can also include introducing younger providers or outreach services.
HS2	Commodity distribution and supply chain improvements	Interventions that focus on commodity distribution (for example, condoms) and supply chain improvements (for example, increasing availability of contraceptives).
HS3	Community health workers and home visits	Interventions that use community health workers and home visits by healthcare professionals for service delivery (for example, HIV testing or providing contraception).
		Financial access and security (FS)
FS1	Vouchers and subsidies	Interventions that provide vouchers or subsidies to adolescents or their families. Vouchers may cover healthcare costs or school attendance costs (for example, school uniforms). Subsidies could aim to reduce the cost of specific supplies (for example, sanitary pads).
FS2	Income generation and savings programmes	Microfinance, employability training, vocational training and savings programmes that aim to affect ASRH outcomes.
FS3	Cash transfer programmes	Unconditional or conditional cash transfer programmes that aim to affect ASRH outcomes.
		School- and community-based education (SC)
SC1	Sexual health education and other instruction at school	Interventions that offer instruction, training and courses at school as part of – or added to – the school curriculum, or other activities initiated by school staff (for example, open days) or by adolescents (for example, awareness programmes) during school hours. This includes comprehensive sexuality education, abstinence-only programming and all other specific curricula.
SC2	Courses and other instruction outside school	Interventions that offer courses and instruction other than livelihoods training outside school hours. This includes comprehensive sexuality education, abstinence-only programming and all other specific curricula.

Education systems (ES)		
ES1	Health services and counselling in school	Providing health and/or counselling services specific to SRH in a school setting.
ES2	Hygiene and sanitation improvements in school	Improvements to toilets and other physical structures at school.
ES3	Teacher training	Training teachers how to teach SRH and support students' SRH needs. Does not include standard teacher training that accompanies a specific course or curriculum.
Community and interpersonal (CI)		
CI1	Social groups and clubs	Groups and clubs that typically aim to offer safe spaces where adolescents can meet friends, engage in discussions, access informational materials, seek help, or participate in training and sports. The primary focus of these groups is to provide social support or an access point for information and care related to SRH.
CI2	Drama and music	Approaches using drama or music to communicate SRH messages.
CI3	Peer education and mentorship	Interventions using peers (adolescents in the same age group or slightly older) as intervention facilitators. Peers can have different and multiple roles: providing training or instruction, disseminating information materials, mentoring, or referring and accompanying adolescents to health centres.
CI4	Family mobilisation and dialogue	Interventions working with the families of adolescents to change parents' or caregivers' knowledge, attitudes and behaviours or to encourage dialogue on ASRH topics within a family. Typically, interventions in this category aim to improve the frequency and quality of parent-child communication about sensitive topics. Other aspects targeted by interventions in this category include caregiver decision-making and building general awareness and knowledge on issues relevant to adolescent health.
CI5	Community mobilisation and dialogue	Interventions that directly engage the broader community in ASRH. Activities in this intervention category include meetings with community leaders or community members to address beliefs, fears or general awareness of ASRH issues. This category also includes adult groups that discuss topics related to raising adolescents and providing them with support.

Societal and institutional (SI)		
SI1	Policy advocacy	Interventions that advocate for specific policy or legal changes to improve healthcare, services, legal access to services, information provision or other topics relevant to ASRH.
SI2	Policies and laws	Changes in policies and laws that could affect ASRH, such as laws around access to contraception or abortion services, or introducing mandatory education requirements.
SI3	Mass media	Interventions employing mass media (for example, radio and television) to deliver ASRH-focused messages.
SI4	mHealth and other ICT	Interventions employing mHealth services or ICT approaches. Examples include using particular websites such as Facebook or SMS messages to provide health information. In some cases, the intervention itself is delivered on the internet.

2.3 Outcomes

Table 3 lists the outcome categories that form the columns of the EGM, along with their corresponding code and a brief description. The broader grouping (denoted in blue) of categories is a means to organise the map; these groupings are not outcomes themselves.

Table 3: Outcome categories

Adolescent knowledge, attitudes and empowerment (KB)		
KB1	Knowledge and awareness	Knowledge or awareness around SRH, and associated rights, laws, health services, commodities, etc.
KB2	Attitudes, self-efficacy and normative change	Measures of normative change among adolescents, attitudes, beliefs and perceptions around SRH and related topics, self-efficacy and empowerment.
Adolescent behaviours (AB)		
AB1	Sexual behaviour	Measures of adolescents' initiation or frequency of, or abstinence from, sexual intercourse. This category includes the age of sexual debut, number of sexual partners, experiences of transactional sex and indices of risky sexual behaviours.
AB2	Contraception and other prevention	Adolescents' use of any technology or method to prevent pregnancy and/or STIs.
AB3	Menstrual hygiene	Indicators related to adolescent menstrual hygiene such as sanitary pad use and washing habits.
AB4	Communication and support seeking	Measures of adolescents' communication with parents, caregivers or sexual partners and interpersonal support between adolescents.

Adolescent health (AH)		
AH1	Pregnancy and births	Measures of adolescent fertility, pregnancy, unwanted pregnancy, first birth and similar indicators.
AH2	Abortion	Any measure of induced termination of pregnancy among adolescents.
AH3	HIV/STI testing and incidence	Outcomes directly related to HIV and other STIs among adolescents, including testing, incidence and prevalence.
AH4	Sexual and intimate partner violence	Measures of sexual and intimate partner violence incidence among adolescents.
AH5	Other health outcomes	Other adolescent health outcomes not captured by any of the other categories in this grouping, for example, other violence, mental health and mortality.
Health services (HS)		
HS1	Accessing and utilising services	Outcomes measuring adolescents' access and take-up of services, for example, antenatal check-ups or STI treatment at a clinic.
HS2	Providers and service quality	Outcomes related to changes in provision of healthcare and overall service quality. Outcomes in this category can be measured at the provider level (measuring skills or approaches) or at the adolescent level (such as satisfaction with health services).
Enabling environment (EE)		
EE1	Education	Measures include adolescent school enrolment, dropout or the percentage of participants with a primary school certificate.
EE2	Livelihoods	Outcomes concerning adolescent work (for example, number of work hours), earnings and livelihoods training.
EE3	Marital status	Age at marriage or adolescent marital status.
EE4	Parents and family	All measures at the level of parents or other family members related to ASRH. This includes measures of normative change, parent-child communication (asked at parent level) and types of parenting (negative or positive).
EE5	Community and CBOs	ASRH outcomes at the community level include measures of normative change, community support and the capacity of relevant community-based organisations (CBOs).
EE6	Laws and policy	Outcomes measuring changes in policies and laws related to ASRH as a result of the intervention (for example, adolescent-friendly policies or policies around contraceptive access).

2.4 Study types

We included both impact evaluations and systematic reviews of effects. Impact evaluations are those that measure the causal change that occurs because of a programme or an intervention. They use experimental or quasi-experimental study designs to conduct a counterfactual analysis, which allows for the attribution of changes in an outcome to a specific intervention, or compare the effects of different types of programmes (3ie 2012). Specifically, we included the following types of studies:

- Randomised controlled trial (RCT);
- Regression discontinuity design (RDD);
- Controlled before and after study using appropriate methods to control for selection bias and confounding (propensity score matching [PSM] or other matching methods, instrumental variables [IV] estimation, or other methods using IV such as the Heckman two-step approach, difference-in-difference [DID] or a fixed- or random-effects model with an interaction term between time and intervention for baseline and follow-up observations);
- Cross-sectional or panel studies with an intervention and comparison group using methods to control for selection bias and confounding as described above;
- Studies explicitly described as systematic reviews and reviews that describe methods used for search, data collection and synthesis as per the protocol for the 3ie database of systematic reviews (Snistveit *et al.* 2014). Systematic reviews also need to have been given an assessment of medium or high confidence in their methods, per 3ie's systematic review assessment tool.

2.5 Cross-cutting themes

We also coded information for certain cross-cutting themes to understand a range of characteristics in the included studies. For this EGM, we extracted information on whether the study addressed cost or cost-effectiveness, or provided effects for a range of adolescent sub-populations.

It is critical for stakeholders to have evidence on how interventions affect different groups of adolescents, (Rankin *et al.* 2016). It also helps us understand how the study considers equity and inclusion.

Sustainable Development Goal 10 calls for the empowerment and promotion of “the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status” (United Nations 2016). To achieve this goal, research needs to include considerations of these groups (Masset and Snistveit 2016).

We include these columns so that readers can easily understand which studies, in relation to the evaluated intervention types, provide information related to these areas.

On 3ie's online platform, the user can use a population filter to filter the map by sub-population.

Table 4: Cross-cutting themes

Cost analysis	Coded if included studies provide data or analysis on cost or cost-effectiveness.
Effects by sex	Coded if study either disaggregates results by sex or focuses only on either adolescent boys or girls.
Effects by marriage status	Coded if study presents results separately or only for married or unmarried adolescents. The authors needed to note specifically that the adolescents were unmarried; we did not make assumptions based on the age range or otherwise.
Effects for very young adolescents	Coded if study provides data on the effects for very young adolescents, aged 10–14 years. This included either studies that include only participants in that age range or studies that disaggregated results by age and provided specific effect sizes for very young adolescents.
Effects by rural or urban area	Coded if study either disaggregates results by adolescents living in rural and urban areas or reports that the evaluation was conducted in either a rural or urban area.
Effects for other sub-populations	Coded if study provides disaggregated results or separate effect sizes for other sub-populations or vulnerable groups. These include adolescents identifying as lesbian, gay, bisexual, transgender and questioning (LGBTQ), out-of-school adolescents, commercial sex workers, first-time parents, adolescents with disabilities, adolescents disaggregated by socio-economic status, same sex relations among adolescent boys, refugees, migrant adolescents, etc.

3. Findings

Figure 1 presents the search results. The search and screening resulted in the following number of studies:

- 131 completed impact evaluations
- 21 ongoing impact evaluations
- 13 completed systematic reviews given a medium or high confidence rating
- 14 completed systematic reviews given a low confidence rating (not included in map but listed in Appendix C)
- One ongoing systematic review.

Appendix A discusses the methods in detail and presents the table of resources searched, the detailed search strategy and the screening protocol (shown in Figure A1). Appendix B section includes a full bibliography of studies. While we identified 27 systematic reviews that fit our inclusion criteria, we only included reviews that we gave a medium or high confidence rating, as detailed further in Appendix A. The primary reasons for a low confidence rating were the exclusion of grey literature and the lack of addressing risk of bias. Studies given a low confidence rating were excluded and are listed in the references. The remaining 13 included reviews were all given a medium confidence rating for their findings and included in the analysis.

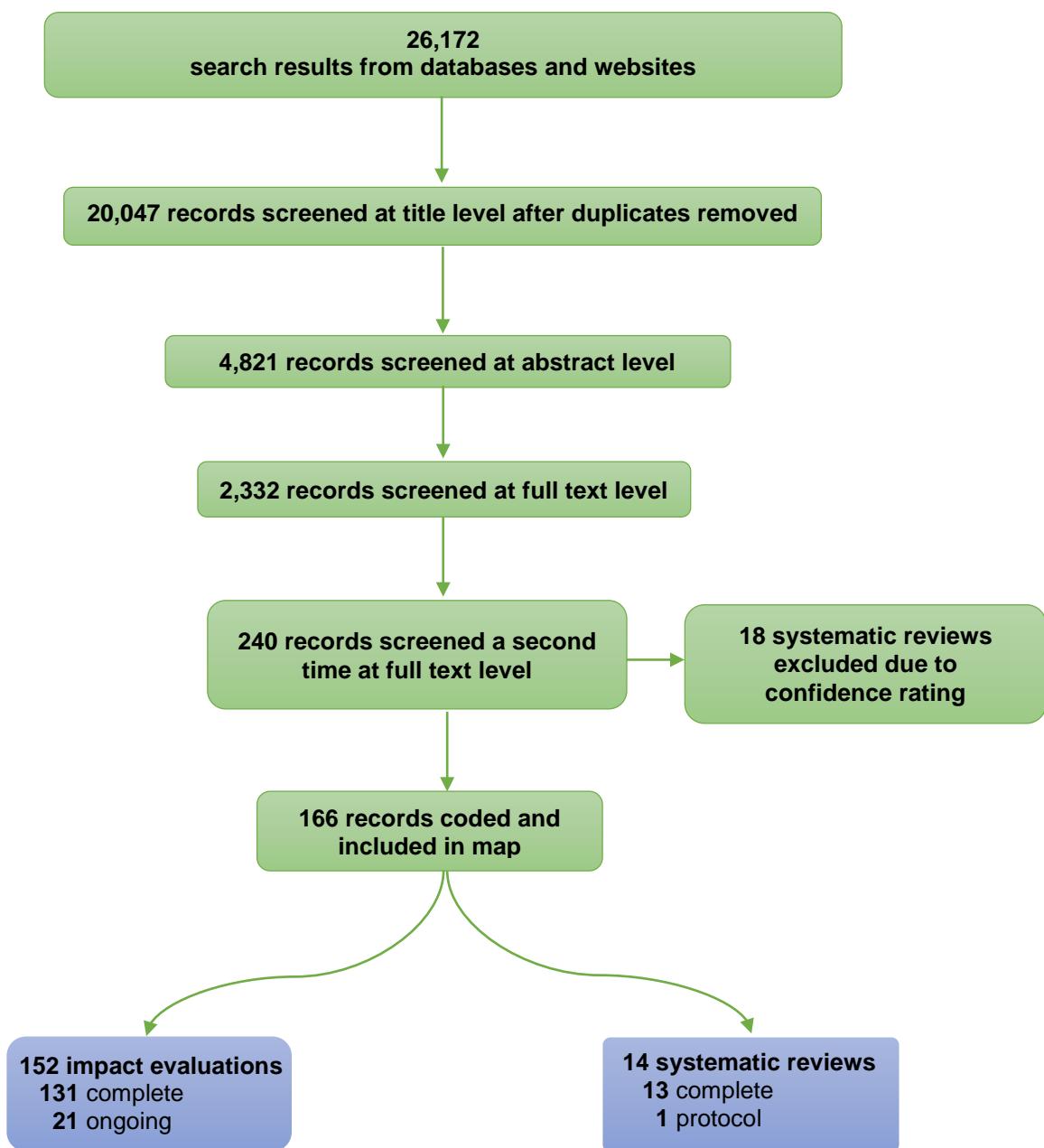
We present a picture of the EGM in Excel format for completed impact evaluations, ongoing impact evaluations and systematic reviews in Figures A2–A4, respectively. The darker cells represent those with more evidence. The cross-hatched cells represent areas that do not represent gaps in evidence for that particular intersection of intervention and outcome.¹

When all the studies are populated together in the map, they produce 1,524 occurrences of evidence. An occurrence is each cell in which a study appears. For example, if a study looks at a programme that includes a cash transfer programme and a sexual health course at school, and estimates programme effects of both (separately or together) on outcomes measured with indicators belonging to three different categories, then there are six occurrences of the study and it therefore appears in six different cells of the evidence gap map. We can think of this as meaning that it reports six different types of evidence. There should be at least one distinct outcome indicator for each outcome category listed. But if a programme has multiple components that cannot be isolated for the evaluation, then one piece of evidence (the effect of the programme on a particular indicator) will appear for each of the intervention types that make up the intervention.

The large number of occurrences relative to the number of included studies reflects both that many programmes comprise different types of interventions and that many impact evaluations measure the impact of the programme on multiple types of outcomes. For example, a study by Baird *et al.* (2015) evaluating the impact of a cash transfer programme in Malawi measured effects falling into 10 different outcome categories of the map.

¹ We wanted to ensure that the gaps visible in the evidence gap map represent intersections for which there are clear theories of change. If the causal change is too indirect, the effects of an intervention cannot confidently be attributed to an outcome. For example, it is conceivable but unlikely that researchers would measure the effects of the installation of toilets in a school (falling into the hygiene and sanitation improvements in school category) on HIV testing and incidence. Therefore, we inserted cross-hatching into the cells for which the connection between the intervention and outcome categories is weak or very indirect. We base these choices on background research and feedback from the roundtable event. This does not mean that there could not be a theory of change between the two, but simply that the lack of evidence does not reflect an important gap in research.

Figure 1: Search results

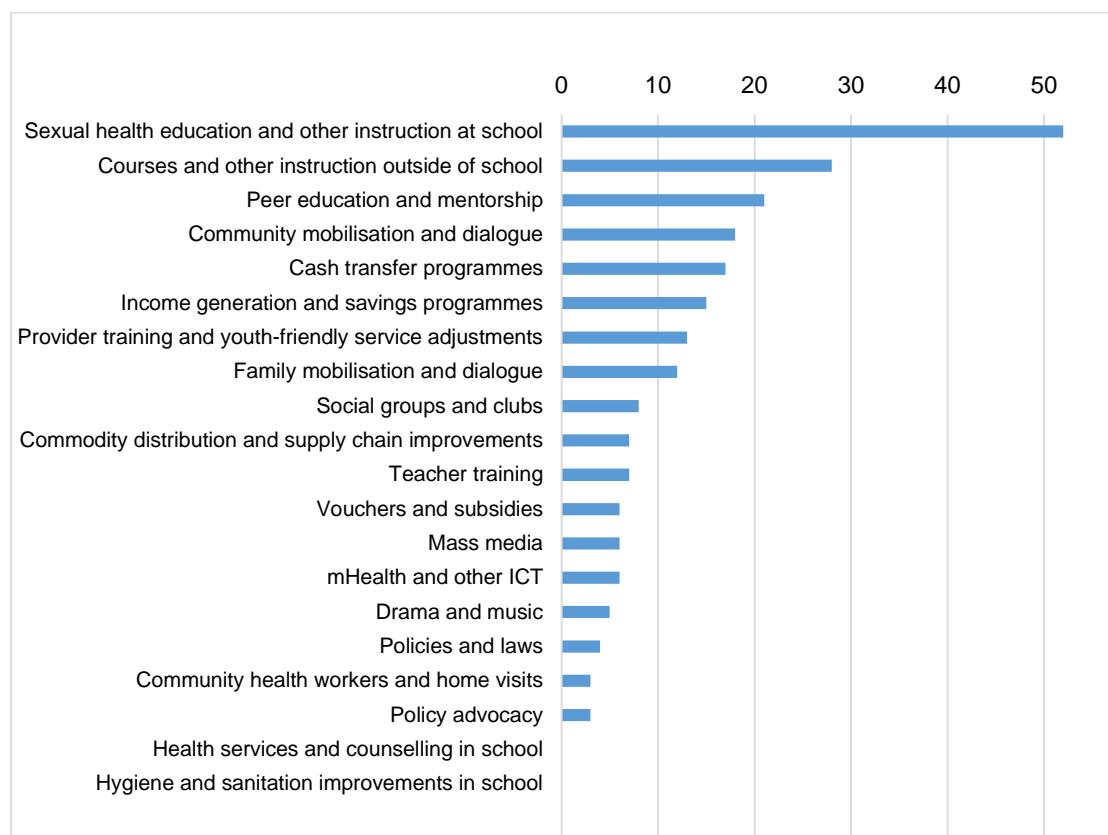


3.1 Features of the impact evaluation evidence base

Figure 2 displays the volume of the evidence base of completed impact evaluations by intervention category.² The category with the most evidence is sexual health education and other instruction at school. This category encompasses all instructional approaches occurring within the classroom or elsewhere in the school. A wide variety of approaches fall into this category but the primary theory of change is generally that direct instruction or facilitation as part of the school day leads to improved knowledge and attitudes, which then affect behaviour and ultimately health outcomes. Many have a topical focus on HIV prevention (e.g. Atwood *et al.* 2012).

The sexual health education falling into this category is in some cases not well described. Examples of specific approaches detailed include “responsible sexuality education” and “abstinence-oriented sex education” (Martiniuk *et al.* 2003; Thato *et al.* 2008). We did not find any impact evaluations measuring the effects of comprehensive sexuality education as defined by the International Planned Parenthood Federation (Braeken and Cardinal 2008).

Figure 2: Number of completed impact evaluations by intervention



The second largest category also takes an instructional approach but outside of the classroom. Similar to the courses within the classroom, the common mechanism within these studies is that of structured instruction and/or facilitation that aims to change knowledge, attitudes and ultimately behaviours of adolescents. Adolescents in these types of programmes met after school and on weekends in places like the homes of group leaders (see Acharya *et al.* 2009; Kaljee *et al.* 2005).

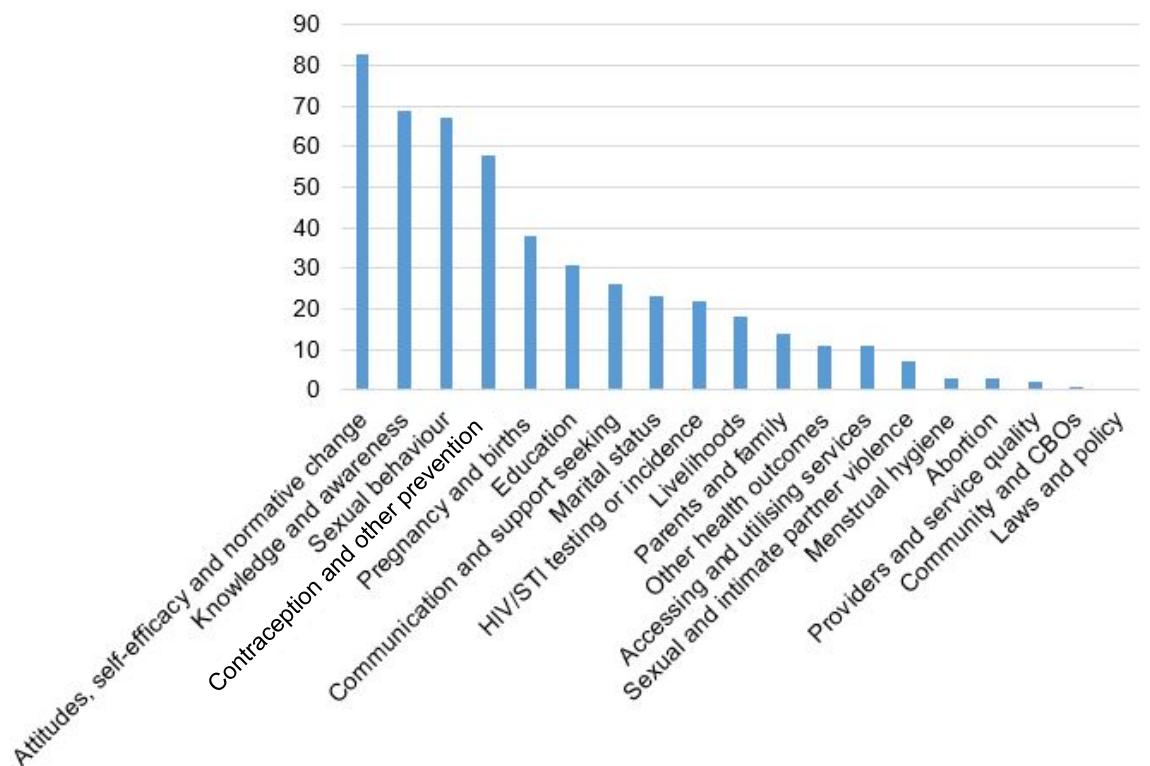
² For a discussion of the ongoing impact evaluations, see the accompanying scoping paper by Rankin *et al.* (2016).

Following these two categories is peer education and mentorship. This peer-to-peer category was evenly split in terms of the primary activity: in nine evaluated programmes the peer served primarily to educate, while in nine others the peer acted to mentor the adolescent around choices and behaviours connected to SRH and other topics. No study was coded as only peer education and mentorship; the evaluated programmes always included at least one other intervention, often instruction at or outside of school.

There are two intervention categories in the framework for which we did not find any impact evaluations: health services and counselling in school and hygiene and sanitation improvements in school. The first includes only those specifically for SRH-related issues within school. The category for sanitation was intended to represent infrastructural improvements only, such as installation of new toilets. Feminine hygiene interventions that focused on education and commodity distribution were coded elsewhere.

Figure 3 shows the volume of evidence by outcome category. The outcome category with the most evidence is attitudes, self-efficacy and normative change (KB2). Indicators falling into this category include opinions and beliefs on condom usage, attitudes towards sexual conduct and gender empowerment indices. This category also includes skills such as leadership and decision-making and proxy measures of future behaviour change. For example, Hallfors *et al.* (2012) looked at adolescents' expectations towards college graduation and educational achievement. Gallegos *et al.* (2008) examined adolescents' intentions to have sexual intercourse and to use condoms. We coded all intentions in attitudes, understanding that most were intended as a proxy for behaviour change. Of the 82 studies falling into this KB2 category, eight studies measured normative change. The social norms in question were primarily around sex, condom usage and gender (see for example Austrian and Muthengi 2014; Mathews *et al.* 2012; Pulerwitz *et al.* 2015).

Figure 3: Number of impact evaluations by outcome



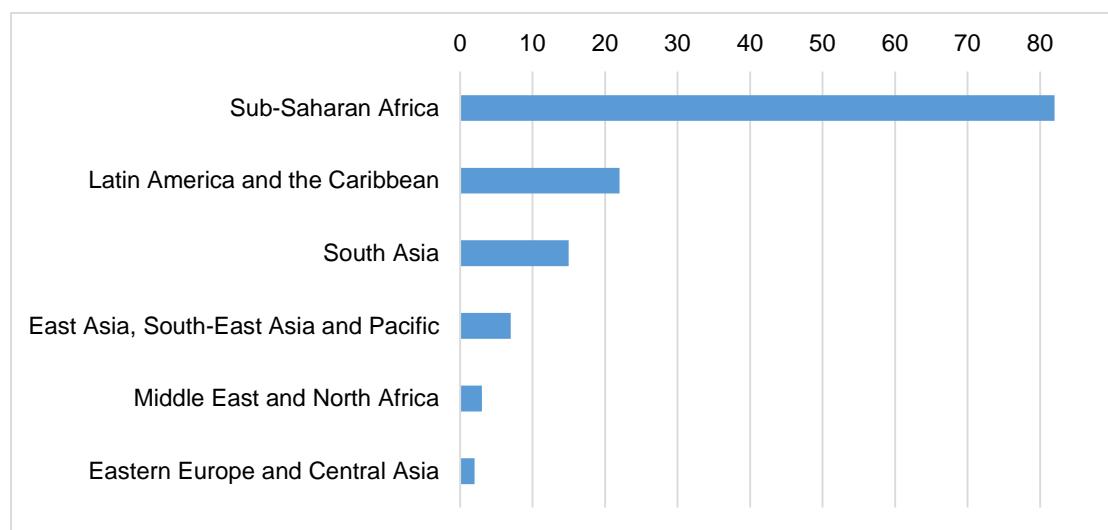
Following KB2 are knowledge and awareness (KB1) and sexual behaviour (AB1). Knowledge and awareness indicators include knowledge of contraception methods, HIV transmission and prevention and the proximity of healthcare centres and providers. This category also includes knowledge and awareness of rights, such as the legal age of marriage. Four studies measured outcomes framed around rights, one regarding knowledge of the minimum age of marriage, two measuring attitudes around partner rights and the right to refuse sex, and one measuring parental and sibling attitudes around girls' access to sports and secondary school (Cowan *et al.* 2010; Kapadia-Kundu *et al.* 2014; Sieverding and Elbadawy 2016; Stanton *et al.* 1998). Sexual behaviour includes sexual debut and activity, sexual partners (indicators on both number of partners and the age of partner), and transactional sex (e.g. if the respondent had ever had sex for money, items or favours).

Outcomes falling into other health outcomes include mortality, mental health and female gender mutilation (FGM) prevalence. No studies measured outcomes falling into the laws and policy category.

3.1.1 Evidence by region and country

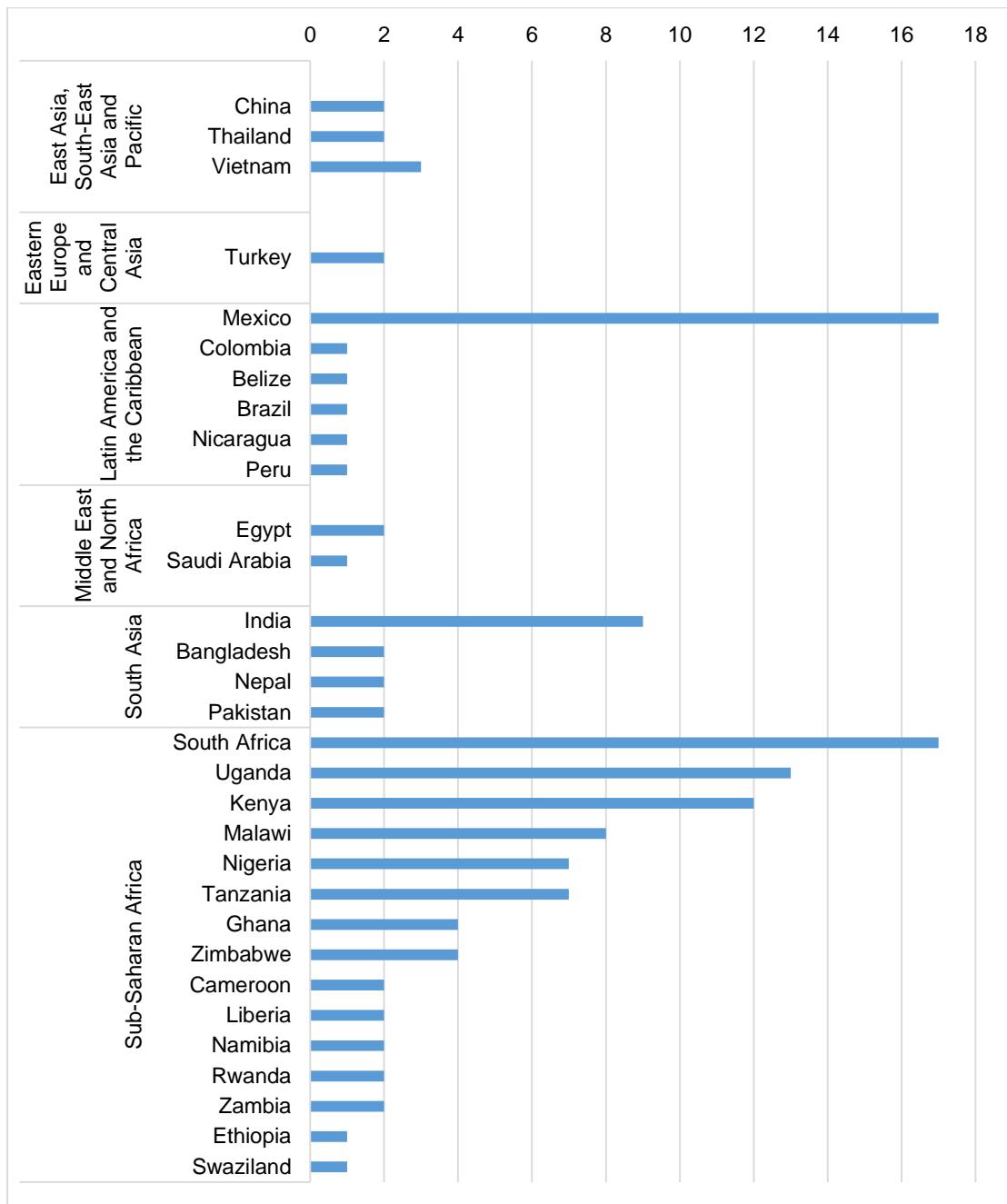
Figure 4 shows that the majority of evidence (82 studies) comes from Sub-Saharan Africa. The primary reason for this is the preponderance of HIV-focused studies. Twenty-two studies are based in Latin America and the Caribbean, while only three are from the Middle East and North Africa and two from Eastern Europe and Central Asia.

Figure 4: Number of impact evaluations by region



As seen in Figure 5, the evidence base from Sub-Saharan Africa is concentrated in a small group of countries, with South Africa, Kenya and Uganda at the top of the list. Very little of the evidence base comes from West Africa (eight total studies from Ghana, Liberia and Cameroon). Overall, the two countries with the greatest amount of evidence (17 studies each) are South Africa and Mexico.

Figure 5: Evidence by region and country



We found multiple studies evaluating the same programme or policy. Five studies, for example, were conducted with data from the *Oportunidades* cash transfer programme in Mexico. In total, the 131 completed impact evaluations evaluate 102 unique programmes. It should be noted that there are no duplications of evidence presented within the map. When multiple studies measure effects from the same programme, we coded only unique occurrences of evidence. If a second study is found to measure three of the four outcomes that another study did (for the same population, in the same location and timeframe), we would only code the fourth outcome for that particular study.

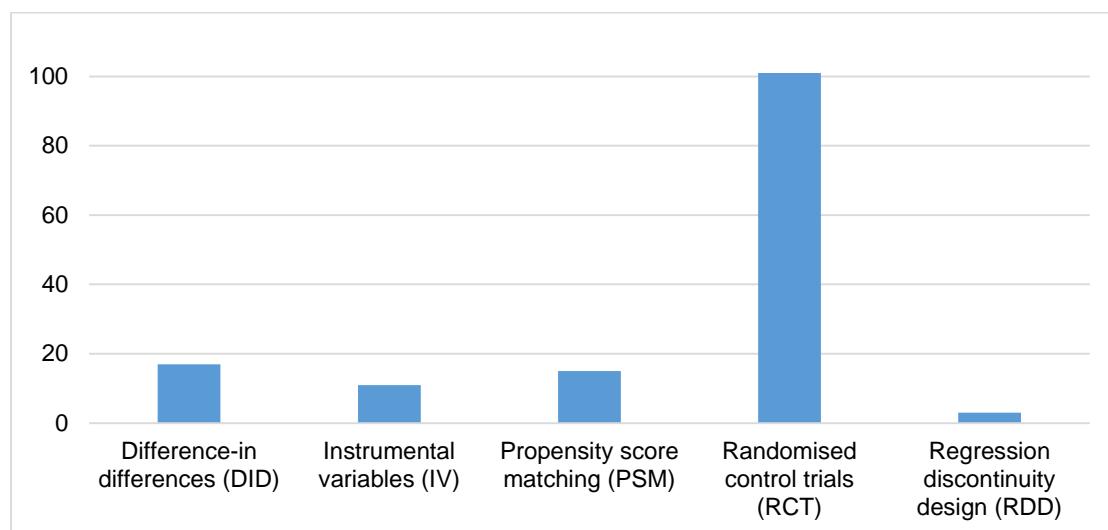
If two studies presented effects for the same interventions and outcomes but for different populations or timeframes, we coded these as different occurrences of evidence. For example, two studies (Jemmott *et al.* 2010 and Jemmott III *et al.* 2014) measure the same

outcomes for a school-based HIV risk-reduction intervention in South Africa but at different time periods (one at 12 months post-intervention and the other at 54 months post-intervention).

3.1.2 Study types

In terms of methodology, the vast majority of studies (101) conducted an RCT, a common impact evaluation methodology in the health sector. Figure 6 shows the prevalence of experimental (RCTs) and quasi-experimental methodologies used. Fifteen studies used two or more methods (for example, designing the study as an RCT and also using PSM during analysis).

Figure 6: Evidence by methodology



3.1.3 Cross-cutting themes and considerations of equity

Figure 7 presents the results of the six right-most columns of the evidence gap map, those that provide information for the cross-cutting themes. The first category records studies that attempted to assess or analyse the cost or cost-effectiveness of the intervention. While cost-effectiveness analysis provides an understanding of the cost of a programme in relation to the impact of the interventions, we also identified studies that provided basic costing of the interventions, anticipating a dearth in cost-effectiveness evidence. Out of 131 studies, only 13 look at the intervention cost and fewer still compare this to the estimated effect estimated. An example of a study that does provide this cost-effectiveness is Chong *et al.* (2013), which estimates the reduction of STIs per US\$1,000 spent on an online sexual education course in Colombia. While this gap in important evidence is not unique to development programming, it is an unfortunate and important gap in evidence. Furthermore, it limits the ability of policymakers to design and invest in cost-effective programmes.

Figure 7: Number of studies by cross-cutting theme

		Cross-cutting themes					
		CC1	CC2	CC3	CC4	CC5	CC6
		Cost analysis	Effects by sex	Effects by marriage status	Effects for very young adolescents	Effects by rural or urban area	Effects for other sub-populations
Health systems	HS1	Provider training and youth-friendly service adjustments	2	10	4		5
	HS2	Commodity distribution and supply chain improvements	1	6	1		4
	HS3	Community health workers and home visits	1	2	1	1	1
Financial incentives and livelihoods	FS1	Vouchers and subsidies	1	4	1	3	4
	FS2	Income generation and savings programmes	2	11	4		12
	FS3	Cash transfer programmes	3	16	6	1	7
School- and community-based education	SC1	Sexual health education and other instruction at school	3	28	2	9	17
	SC2	Courses and other instruction outside of school	3	19	8	1	14
Education systems	ES1	Health services and counselling in school					
	ES2	Hygiene and sanitation improvements in school					
	ES3	Teacher training	2	4	1	4	3
Community and interpersonal	C11	Social groups and clubs	2	8	1	1	5
	C12	Drama and music		3	1		1
	C13	Peer education and mentorship	2	12	3	3	10
	C14	Family mobilisation and dialogue	1	4	1	5	6
	C15	Community mobilisation and dialogue	2	14	4	3	11
Societal and institutional	SI1	Policy advocacy		3	1		
	SI2	Policies and laws		4			
	SI3	Mass media		4	1		
	SI4	mHealth and ICT	3	4			1

We also aimed to identify how and to what extent the included studies incorporate equity in their assessment of the intervention. That is, does the paper assess the extent to which the intervention affects populations or specific groups in different ways?³ Cross-cutting themes two through six visualise the amount of evidence provided that either undertakes subgroup analysis or assesses impact specifically on a subgroup or disadvantaged group.

The second cross-cutting theme indicates studies that provided effects by sex for each intervention category. The majority of these (45 studies) simply disaggregated their results by gender, providing separate effect sizes but often providing little discussion around the differences in effects. Thirty-four studies focused specifically on girls. While some studies provide a detailed introduction as to why and how a programme was specifically tailored for girls, many provided only a cursory explanation. Only three studies focused exclusively on adolescent boys. Pulerwitz *et al.* (2015), for example, examined a multi-component

³ We looked for the following two approaches in the included papers (adapted from Masset and Snistveit 2016): (1) assessment of the effect of an intervention targeting specific groups (for example a study on the impact of payments for environmental services on women); and (2) assessment of population-level effects of an intervention with subgroup analysis (for example a study on the impact of payment for environmental services that looks at impact of the intervention on female-headed and male-headed families separately).

intervention that targeted only boys and young men aged 15–24 years and aimed to change norms surrounding gender and intimate partner violence.

The third category catalogues 17 studies that provided effects for only unmarried or only married adolescents. Most of these disaggregated their results by marital status. Five explicitly targeted only unmarried adolescents; for example, Baird *et al.* (2012) evaluated an intervention for never married girls, providing a conditional (tied to school attendance) and unconditional cash transfer aiming to increase school enrolment and affect other outcomes such as HIV prevalence. No study included only married adolescents.

Next, we coded studies that provided results specifically for very young adolescents (VYAs) (aged 10–14). Sixteen studies focused exclusively on VYAs. For example, Pick *et al.* (2007) evaluated a life skills and HIV prevention programme for Mexican elementary school students. To motivate their study, authors cite evidence which suggests that safe behaviours and protective factors in adolescent lives should be introduced at an early age. Three studies disaggregated results by age and thus provided results for VYAs as a subset of a broader adolescent population.

Thirty-three impact evaluations and six ongoing studies stated the evaluation was based in rural areas, while 12 completed evaluations and two ongoing studies reported they were conducted in urban areas. Most of these studies simply indicated the location of the intervention and did not provide a discussion as to why the needs and SRH challenges for adolescents would be different in rural versus urban areas. Seven studies provided disaggregated effects for adolescents from rural and urban areas. For example, Mbizvo *et al.* (1997) measured changes in reproductive health behaviour, breaking down results by age, sex and an urban versus rural location.

We also looked for evidence for all other sub-populations and vulnerable groups. In order to maintain a manageable frame for the EGM, we condensed our remaining findings in the Excel version into “other sub-populations”. Falling into this category are studies providing effects for out-of-school adolescents, orphans and vulnerable children (OVC), HIV-positive adolescents, ethnic minorities and conflict-affected adolescents. No study provided effects for LGBTQ adolescents, other adolescents who engage in same sex relationships, commercial sex workers, migrant adolescents or other sub-populations. In the online version, one can filter the full map by effects for each population for which evidence exists.

3.2 Characteristics of systematic reviews

We included systematic reviews that met our EGM inclusion criteria and that 3ie has given a medium or high rating of confidence.⁴ We only included studies that primarily searched for impact evaluations and other evidence of similar rigour. We found 13 systematic reviews that met these requirements.⁵ These are mapped into the EGM framework in Figure A4. The primary reasons for studies being given a rating of low confidence are the exclusion of grey literature and the lack of addressing risk of bias.

⁴ See the systematic review assessment tool at <http://www.3ieimpact.org/evidence-hub/systematic-review-repository/>. All 13 completed systematic reviews were given a medium rating of confidence in their findings.

⁵ Two protocols also met our inclusion criteria. Given the dates on the protocols (2011 and 2012), however, we reached out to the authors to confirm that the reviews were still ongoing. As of publication, one author confirmed that the review will be published and the other did not respond. We have chosen to not report on the latter review.

No included systematic review was published prior to 2003, the first being Speizer *et al.* (2003). Only two of the studies perform meta-analysis, potentially indicating a high degree of heterogeneity in the evidence base; both of these studies are focused on HIV prevention (Michielsen *et al.* 2010; Scott-Sheldon *et al.* 2013). The others often summarise individual findings of studies, organised by intervention or outcome type. Several conduct vote counting to try to summarise overall results. Some reviews indicated why meta-analysis was not possible while others did not.

Seven systematic reviews focused on HIV prevention. Harrison *et al.* (2010), for example, reviewed eight evaluations of HIV prevention programmes for South African youth, focusing on school- or group-based interventions. The authors provide broader takeaways such as the importance of addressing social risk factors and social norms. Michielsen *et al.* (2010) assessed behavioural interventions aimed at reducing sexual risk taking in the context of HIV prevention in Sub-Saharan Africa, and conducted a meta-analysis for the 31 included studies. In terms of condom use, the authors found high degrees of heterogeneity of results among females but an overall increase in condom use among males (Michielsen *et al.* 2010). Looking at a similar evidence base in South Africa, however, with only one of the same studies included (Jewkes *et al.* 2008), Scott-Sheldon *et al.* (2013) conducted a meta-analysis of 10 studies and found significant improvements in risky sexual behaviour, such as a delay in sexual debut and increased condom use among sexually active youth, due to behavioural interventions. However, they only found one study that assessed sexually transmitted disease outcomes, and it reported a preventive effect for herpes simplex virus-2, but not for HIV.

Two systematic reviews focus on adolescent contraceptive use and delaying pregnancy. Gottschalk and Ortayli (2014) focused on access to contraceptives, looking for all intervention types except those only evaluating sexual education in school. The authors found 15 studies and discussed common approaches such as community engagement, youth-friendly services and peer education. Among other findings, the review concluded that effective programmes typically had multiple approaches and targeted both user and service provision issues. McQueston *et al.* (2013) found a mix of null and positive results for a range of interventions on adolescent fertility measures from 19 studies. The authors note a correlation between education and pregnancy reduction that needs to be explored further and that the effects of conditional cash transfers, while clear on other outcomes, are uncertain for adolescent fertility.

Other included reviews focus on topics such as health service utilisation by young people, interventions addressing risky behaviours among teens and demand-side interventions that target community support for ASRH services (Dick *et al.* 2006; Kesterton and Cabral de Mello 2010; Sharp and Dellis 2010). Five reviews disaggregate by sex, though none focus only on the effects on one sex. One systematic review discussed the evidence base for married and unmarried adolescent girls. None of the systematic reviews synthesise effects for any other adolescent sub-population.

3.3 Gaps in evidence

In this section we investigate unsynthesised clusters of evidence and the gaps in impact evaluation evidence and explore whether new systematic reviews and/or impact evaluations would be able to answer different questions or capture additional evidence.

3.3.1 Synthesis gaps

We can see multiple clusters of evidence within the impact evaluation EGM – that is, areas where there are several studies assessing the same type of intervention or same outcomes. When we compare this to the existing systematic reviews that are included, we identify multiple opportunities for synthesis that might be useful to fill.

There is also some overlap, especially in instruction in school, and also out of school, as well as peer education and community mobilisation. However, we note that much of this coding reflects cursory discussions of these intervention types and not deep analysis or synthesis. Peer mentorship and education, for example, has a cluster of evidence that, while often mentioned, has not been adequately synthesised. Current reviews that fulfil our inclusion criteria only briefly discuss this evidence type and none perform meta-analysis on this intervention type.

The intervention category with the most evidence is sexual health education and other instruction at school. Within this body of evidence there are many examples of relatively short-term curricula, ranging from one-off sessions to those lasting up to 14 sessions of several hours in the classroom, with differences in who provided the sessions (teacher, older peers), methods of instruction (participatory or not) and topics covered. While all 13 systematic reviews included in this EGM look for interventions falling into this category, the vast majority of these reviews were interested in a range of interventions, courses at school being one of them. For example, Dick *et al.* (2006) reviewed six types of interventions that aim to increase young people's use of health services, use of other sectors (mainly schools) being one of them.

We see a cluster of evidence within this age group however, with nine impact evaluations that fall into the courses at school category and provide effects for VYA. With a few additional studies, a new systematic review could look at the effects of this type of programming on 10–14 year olds specifically.

Twelve studies fall into the family mobilisation and dialogue category, for which we find no systematic review. There is a particular cluster of evidence forming around the effects of these types of interventions directly on parents and family. Eight studies measure effects here, focusing on parent-child relationships and communication. All eight of these studies included parent training either as a stand-alone programme or in tandem with training for adolescents as well. Gottschalk and Ortayli (2014) discuss this approach briefly as one used to affect contraceptive behaviour among adolescents. The authors categorised interventions working with parents as those working with adults, also including interventions targeting communication and connection with teachers. Further exploration of this topic, however, could address other questions around this approach in greater detail.

Overall, these studies aimed to strengthen parent-child relationships through enhancing the knowledge (e.g. sexual and reproductive health knowledge) and skills (e.g. communication skills or condom self-efficacy) of parents and to raise their awareness about issues important to adolescents and the everyday realities they face regarding typical sexual experiences, risk behaviours or risk prevalence. The theory of change associated with these interventions assumes that good family relationships and communication have a protective effect for the child, especially considering external (i.e. outside of familial sphere) forces, such as peers, for which the family is considered an important counter-force.

We recommend that researchers review these studies in detail and assess this cluster of evidence for the possibility of a meta-analysis or other type of synthesis, to understand better the effects of family-focused interventions related to ASRH. Additionally, four of these studies are focused on VYA only, providing additional possibilities for meta-analysis or synthesis, especially if a few new studies are added.

We note a cluster of evidence around the impact of cash transfer programmes on sexual and reproductive attitudes, behaviours and health outcomes for adolescents. While there are 17 studies included in the map, no existing systematic review looks directly at this full evidence base in terms of the effects of cash transfer programmes on ASRH. Two of our 13 systematic reviews include cash transfer programmes as an intervention of interest but each only identify, within the context of their inclusion criteria, two of the 17 studies we coded to this intervention category (Gibbs *et al.* 2012; McQueston *et al.* 2013). McQueston *et al.* (2013) focused on a broad range of interventions to promote fertility reduction among young people (aged 10–25), targeting fertility, marriage and contraception, including cash transfers, but did not assess other outcomes. Gibbs *et al.* (2012) restricted their synthesis to studies that had both a gender transformative component and a livelihood component, and again, included other “livelihood strengthening” interventions than cash transfers. Therefore, we see an opportunity for new syntheses to explore the theory of change behind cash transfer programmes leading to improved SRH outcomes and analyse the effects of such interventions on these outcomes.

A similar cluster of studies exists for income generation and savings programmes. Fifteen studies are included in this category and only Gibbs *et al.* (2012) partially synthesises evidence in this area. Twelve studies report on effects on attitudes, self-efficacy and empowerment, while seven report on contraception or condom use. As above, we see an opportunity for new syntheses, in this case related to the theory of change that suggests increased income can lead to improved empowerment which can then lead to better choices and better SRH outcomes.

3.3.2 Gaps in impact evaluation

While we identified 131 evaluations assessing the impact of ASRH interventions, there are still many important gaps in the primary evidence of what works for ASRH programming. In this section we discuss these gaps in impact evaluation.

In particular, there is little evidence on the effects of mass media, mHealth and other ICT on a variety of outcomes, in particular health outcomes, health service outcomes and enabling environment outcomes. One study did measure the effect of Facebook and text messaging, along with a radio campaign and other interventions, on adolescents’ utilisation of health services (Decat 2015). Overall, however, this is a large gap in the evidence.

Many theories of change regarding ASRH include some influence of the surrounding environment – parents, peers, community and schools. However, we did not find many studies that also or solely assessed outcomes in some of these areas. Specifically, few studies looked at effects on parents or communities, such as changing attitudes towards adolescents’ access to SRH services and contraception. There was high interest in new evidence on normative change at our roundtable event, and survey respondents largely felt there is insufficient evidence on family and community mobilisation and dialogue interventions. This also appears to be a priority area for future research.

We can also see from the map that there is no evidence at all on the effectiveness of health services and counselling in school and of hygiene and sanitation improvements in school. Furthermore, we note a dearth in evidence around the use of community health workers and home visits. Only three studies evaluated this type of intervention. One study specifically targeted adolescent orphans aged 12–14 and aimed to keep them in school and reduce risk factors associated with HIV infection by providing school support (Cho *et al.* 2011). This dearth in evidence could in part be attributed to the generally larger age range for this particular type of intervention, as it often targets multiple household members.

In terms of outcomes, there is very little evidence on how programming can affect abortion rates. One study asked participants retrospectively if they had ever had an abortion but did not provide any discussion or analysis of this outcome (Cowan *et al.* 2010). This is, perhaps, not surprising given funding restrictions, laws and social norms around abortion in many countries, particularly so within an adolescent population.

Few impact evaluations specifically evaluate what works for preventing and delaying pregnancy for adolescents. Of the 62 impact evaluations that focus on HIV and AIDS, some address the prevention of pregnancy but through the lens of HIV prevention, highlighting the beneficial multiple purposes of condoms. It is difficult to single out the intention of a measurement of condom use, as this indicator is often used in studies of programming that target both STI and pregnancy prevention.

When we filter this evidence by thematic area, we see that of 58 studies that measure contraceptive and condom use, 30 are focused on HIV and AIDS and other STIs, 11 are categorised under general SRH and only six have a primary thematic focus of family planning. Of these 58, very few assess the effectiveness of programming for long-acting reversible contraception (LARCs) use in adolescents. Some studies mention “modern contraceptive use” but do not define what this means. One study measured contraceptive use broadly but listed injectables as one of the methods. No impact evaluation measured the use of intrauterine devices. Overall, there is a paucity of evidence.

Interestingly, we note very little evidence in our map around providers and service quality. Only two studies report on this (Aninanya *et al.* 2015; Cowan *et al.* 2010). While this could be due to the way provider service quality is measured, such as by asking adolescents their opinion on the services, or whether they had used services as proxies to directly measuring provider behaviour or service quality, which would then be coded into attitudes, self-efficacy and empowerment, very few of the studies even do this. One study that does (Ross *et al.* 2007) evaluated a programme that trained providers on youth-friendly SRH services, with health facility usage being one of the outcomes.

Finally, very few studies measure effects at the community level. While 18 studies evaluated an intervention focused on community mobilisation and dialogue, most of these studies measured effects only at the adolescent level. Only three studies with this intervention measured effects at the parent level. Only one study surveyed the community, measuring attitudes and knowledge among adult community members on early marriage, reproductive health and livelihoods and empowerment for girls (Kanesathasan 2008). We find the lack of effects in these outcome areas to be a gap in evidence.

4. Limitations

Due to time constraints, we conducted our search in English only and in primarily English-based databases and websites (excluding, for example, databases such as LILACS and SciElo). While some studies in other languages were captured by the search and screened (in Spanish, French or German), we have invariably missed studies in other languages. In particular, not conducting the search in French and Spanish might have contributed to the general dearth of evidence from West Africa and South America.

Our screening process was systematic with several layers of quality control. Nevertheless, this system is better at preventing false positives than false negatives. It is possible we excluded some relevant studies in error at the title or abstract level and thus never screened them at the full text level. Although we performed random quality checks on screening decisions at each screening level, conducted snowball checking of references and asked relevant experts for suggestions, it is possible that we still missed relevant and qualified studies.

Given time constraints, each study was only coded by one person, thus allowing the possibility of coding error. Each study's coding was nevertheless reviewed by a second person. However, this reviewer worked from notes on a study and did not necessarily read the full text when reviewing coding decisions.

Although we used a consultative process that included three consultative events and a roundtable event, experts did not fully agree on every category, intervention or outcome of the framework. For example, some felt strongly that FGM should be included as its own field, while others did not. Others wanted to expand further on the causal chain in either direction, for example including all child marriage studies or all those around adolescent pregnancy. We worked with the input we had but, ultimately, made judgement calls on some aspects.

5. Conclusion and implications

Adolescence is a critical time period in life during which SRH affects not only a wide range of health factors, but also a person's employment prospects, economic wellbeing and overall ability to reach their full potential (UNFPA 2014; Viner *et al.* 2012). To best invest finite resources in programming aimed at improving ASRH, decision-makers need to know what works and what does not, particularly within an L&MIC context. Impact evaluations – studies using experimental or quasi-experimental methods to measure effectiveness – help answer these questions, as do high-quality systematic reviews.

We sought to identify whether there are key gaps in the evidence base for the impact of ASRH programming in developing country settings. Given the high volume of research in this area broadly, we wanted to specifically understand the evidence base for adolescents, as opposed to youth aged 15–24, and for those adolescents in L&MICs. This paper also sought to highlight nuances in the evidence base and specific gaps that may not be obvious from quick snapshots of the literature.

A companion paper situates the findings of this paper within the context of current programming and stakeholder feedback on evidence priorities, and looks at further policy, programming and research implications (Rankin *et al.* 2016).

Overall, we find that while there is a considerable amount of impact evaluation evidence within the broad field of ASRH, much of it is concentrated in a few topics and comes from programmes in a few countries, answering only some important research questions.

Studies often address only a narrow scope of outcomes, and do not adequately address the diversity of adolescents or the effect of social norms. Furthermore, there is a wide range of quality in reporting, and studies often include inadequate descriptions around the context of the evaluation, the interventions and associated theories of change. Even for areas where there is considerable evidence, such as sex education at school, there are opportunities for researchers to contribute new high-quality research, evaluating, for instance, the latest curricula.

Additionally, for areas where there is already a sizeable evidence base, we note that the evidence is specific to certain contexts or topics. For example, while 58 studies measure condom and other contraception usage, only six of these do so from the explicit perspective of family planning. This concentration on HIV prevention extends to the broader evidence base. While on the surface it may appear that policymakers, funders and implementers have a considerable amount of evidence on the impact of programming on early pregnancy, they in fact do not. Moreover, only a few studies include LARCs in their outcomes and none focus specifically on these technologies.

Broadly missing from this evidence base is cost-effectiveness analysis. This is a critical area of research that would allow policymakers and funders to better make decisions on where to invest in programming with limited resources. Furthermore, there is a lack of geographic diversity in the evidence base: more than half of the evidence comes from seven countries in Sub-Saharan Africa. Regions of the world that may have very different contexts in which programming is implemented, including South-East Asia, Latin America and the Caribbean and West Africa, are not well represented.

Additionally, what works for a broader adolescent population may not work or may work differently for adolescents of a specific age, of varying sexualities, those who are married or unmarried and those in different contexts, such as humanitarian settings. When we look at the evidence base from this perspective, we see gaps in evidence on what works for populations such as unmarried adolescents, adolescent boys, LGBTQ adolescents and other specific populations. Policymakers and implementers should keep in mind who the study targeted and in what context when extracting information from this evidence base.

High-quality synthesis that focuses on specific intervention types for adolescents in L&MICs is largely missing. There are opportunities for researchers to take the next step from reviewing the evidence on a broad topic, such as HIV prevention, to seeking answers around specific approaches, outcomes and adolescent sub-populations. We see opportunities for synthesis around the effect of cash transfer programmes on ASRH, on family mobilisation and dialogue, on sex education in schools and on instructional approaches specifically for VYA aged 10–14. These interventions have multiple impact evaluations assessing similar outcomes, and we see no or little synthesis of their evidence.

While we do have evidence around what works for some types of intervention in ASRH programming in L&MICs, there is still important research to be done. Ultimately, we need better-quality evaluations and systematic reviews that provide evidence on what works, for whom and at what cost for a wider range of interventions and outcomes. These also need to take into account the wide array of contexts, populations and needs that ASRH covers.

Appendix A: Detailed methods

The process for developing an EGM begins with determining the scope of the map. This includes general inclusion criteria and the intervention and outcome categories that make up the framework of the EGM. We developed the framework – the matrix of interventions and outcomes – based on background research and three consultative workshops attended by a wide array of experts working on ASRH. We then grouped the interventions by both mechanism and setting. We shared several iterations of the framework with our advisory group and received valuable feedback. We revised the framework slightly again in response to feedback from the 3ie roundtable. We deleted an extraneous outcome category and improved labelling and ordering of the interventions and outcomes.

The next step for developing an EGM is to develop and test a search strategy, which is detailed in Tables A1 and A2. We searched 16 indices and databases, 24 websites and three research registries, all of which are listed in table A2. We searched for general terms connected to SRH, such as sex education, family planning or STIs and adolescent, young adult or youth. In each database we searched the indexed terms and used thesauri when available to capture other articles related to our search terms. The search was conducted over March and April 2016.

After screening, all studies were coded for a wide array of information and populated into the map. The coded information includes bibliographic details for the study, the interventions from the framework that the study evaluates, the outcomes from the framework that the study measures and other relevant aspects, such as whether it includes cost-effectiveness analyses. Coding of each study was verified by a second researcher.⁶

For included systematic reviews for which no quality rating has been made, we used an adapted version of the Specialist Unit for Review Evidence (SURE) checklist⁷ to assign their findings a rating of low, medium or high confidence. For this particular EGM, we only included systematic reviews for which we had medium or high confidence in the findings.⁸

We also conducted backwards and forwards snowball searches in July and August 2016. The backwards snowball search involved screening the references of all included studies. The forwards snowball search involved checking the online curricula vitae and websites of authors of included studies.

⁶ When multiple studies measure effects from the same programme, we coded only unique occurrences of evidence. If a second study is found to measure, say, three of the four outcomes that another study did (for the same population, in the same location and timeframe), we would only code the fourth outcome for that particular study. If two studies presented effects for the same interventions and outcomes but for different populations or timeframes, we coded these as different occurrences of evidence. For example, two studies (Jemmott *et al.* 2010 and Jemmott *et al.* 2014) measure the same outcomes for a school-based HIV risk reduction intervention in South Africa but at different time periods (one at 12 months post-intervention and the other 54 months post-intervention).

⁷ See 3ie's systematic review assessment tool at <http://www.3ieimpact.org/evidence-hub/systematic-review-repository/>

⁸ For reference, the systematic reviews given a low confidence rating are included in the bibliography at the end of this paper.

Table A1: Search strategy

#	Search syntax
Topical keywords	
<hr/>	
1	(sexual* OR reproduct* OR SRH OR "sex* behavi?r" OR intercourse* OR "sex* education").ti,ab,kw.
2	(HIV adj3 (education OR prevent* OR infect*)) OR (AIDS adj3 (prevent* OR infect*))
3	(STD* OR "family planning" OR contracept* OR pregnan* OR condom* OR LARCs OR IUD OR "intrauterine device" OR abortion* OR menstrua* OR "feminine hygiene" OR m?health OR "mobile health" OR "multipurpose prevention technolog*" OR circumcis*).ti,ab,kw.
4	("female genital mutilation" OR FGM OR "intimate partner" OR "romantic partner*" OR "romantic relationship*" OR ((spous* OR partner OR dating OR sex*) adj2 (violence OR assault OR aggress* OR abuse)) OR rape OR raped OR "transactional sex" OR prostitut*).ti,ab,kw.
5	exp Sexually transmitted diseases/ OR Reproductive Health/ OR sex education/ OR adolescent health/ OR sexual behavior/ OR Family Planning Services/ OR exp contraception/ OR HIV infections/ OR adolescent health services/ OR reproductive health services/ OR condoms/ OR menstruation/ OR Circumcision, Male/ OR exp Reproductive Behavior/ OR unsafe sex/ OR coitus/ OR exp intimate partner violence/ OR feminine hygiene products/ OR Circumcision, Female/
6	1 OR 2 OR 3 OR 4 OR 5
<hr/>	
Adolescent terms	
<hr/>	
7	("adolescen*" OR juvenile OR minors OR youth OR "young adult" OR "young women" OR "young men" OR girl* OR boy* OR (school adj6 student*) OR teen* OR schoolgirl* OR schoolboy*).ti,ab,kw.
8	Adolescent/ OR adolescent health/ OR minors/
9	7 OR 8
<hr/>	
Impact evaluation keywords	
<hr/>	
10	(match* adj3 (propensity OR coarsened OR covariate)) OR "propensity score".ti,ab,kw.
11	("difference in difference*" OR "difference-in-difference*" OR "differences in difference*" OR "differences-in-difference*" OR "double difference*").ti,ab,kw.
12	("quasi-experimental" OR "quasi experimental" OR "quasi-experiment" OR "quasi experiment").ti,ab,kw.
13	((estimator OR counterfactual) AND evaluation*).ti,ab,kw.
14	("instrumental variable*" OR (IV adj2 (estimation OR approach))).ti,ab,kw.
15	("regression discontinuity").ti,ab,kw.
16	10 OR 11 OR 12 OR 13 OR 14 OR 15

- 17 ((experiment OR experimental) adj2 (design OR study OR research OR evaluation OR evidence)).ti,ab,kw.
- 18 (random* adj4 (trial OR assignment OR treatment OR control OR intervention* OR allocat*)).ti,ab,kw.
- 19 17 OR 18
- 20 Randomized Controlled Trial/ OR random allocation/ OR Propensity Score/ OR Models, Econometric/ OR Quasi-Experimental Studies/

21 16 OR 19 OR 20

Study type

- 22 program evaluation/ OR Evaluation Studies/
- 23 ((impact adj2 (evaluat* OR assess* OR analy* OR estimat* OR measure)) OR (effectiveness adj2 (evaluat* OR assess* OR analy* OR estimat* OR measure))).ti,ab,kw.
- 24 ("program* evaluation" OR "project evaluation" OR "evaluation research" OR "natural experiment*").ti,ab,kw.

25 22 or 23 or 24

Systematic review keywords

- 26 meta analysis/
- 27 ((systematic* adj2 review*) or "meta-analy*" or "meta analy*").ti,ab,kw.

28 26 OR 27

Combined total

29 21 OR 25 OR 28

30 6 AND 9 AND 29

Developing country free text

- 31 (Africa OR "Sub-Saharan Africa" OR "North Africa" OR "West Africa" OR "East Africa" OR Algeria OR Angola OR Benin OR Botswana OR Burkina Faso OR Burundi OR Cameroon OR "Cape Verde" OR "Central African Republic" OR Chad OR "Democratic Republic of the Congo" OR "Republic of the Congo" OR Congo OR "Cote d'Ivoire" OR "Ivory Coast" OR Djibouti OR Egypt OR "Equatorial Guinea" OR Eritrea OR Ethiopia OR Gabon OR Gambia OR Ghana OR Guinea OR Guinea-Bissau OR Kenya OR Lesotho OR Liberia OR Libya OR Madagascar OR Malawi OR Mali OR Mauritania OR Morocco OR Mozambique OR Namibia OR Niger OR Nigeria OR Rwanda OR "Sao Tome" OR Principe OR Senegal OR "Sierra Leone" OR Somalia OR Somaliland OR "South Africa" OR "South Sudan" OR Sudan OR Swaziland OR Tanzania OR Togo OR Tunisia OR Uganda OR Zambia OR Zimbabwe).mp.
- 32 ("South America" OR "Latin America" OR "Central America" OR Mexico OR Argentina OR Bolivia OR Brazil OR Chile OR Colombia OR Ecuador OR Guyana OR Paraguay OR Peru OR Suriname OR Uruguay OR Venezuela OR Belize OR "Costa Rica" OR "El Salvador" OR Guatemala OR Honduras OR Nicaragua OR Panama).mp.

- 33 (Caribbean OR "Antigua and Barbuda" OR Aruba OR Barbados OR Cuba OR Dominica OR "Dominican Republic" OR Grenada OR Haiti OR Jamaica OR "Puerto Rico" OR "St. Kitts and Nevis" OR "Saint Kitts and Nevis" OR "St. Lucia" OR "Saint Lucia" OR "St. Vincent and the Grenadines" OR "Saint Vincent and the Grenadines" OR "St. Vincent" OR "Saint Vincent" OR "Trinidad and Tobago").mp.
- 34 ("Eastern Europe" OR Balkans OR Albania OR Armenia OR Belarus OR Bosnia OR Herzegovina OR Bulgaria OR Croatia OR Cyprus OR "Czech Republic" OR Estonia OR Greece OR Hungary OR "Isle of Man" OR Kosovo OR Latvia OR Lithuania OR Macedonia OR Malta OR Moldova OR Montenegro OR Poland OR Portugal OR Romania OR Serbia OR "Slovak Republic" OR Slovakia OR Slovenia OR Ukraine).mp.
- 35 ("Middle East" OR "South-East Asia" OR "Indian Ocean Island*" OR "South Asia" OR "Central Asia" OR Caucasus OR Afghanistan OR Azerbaijan OR Bangladesh OR Bhutan OR Burma OR Cambodia OR China OR Georgia OR India OR Iran OR Iraq OR Jordan OR Kazakhstan OR Korea OR "Kyrgyz Republic" OR Kyrgyzstan OR Lao OR Laos OR Lebanon OR Macao OR Mongolia OR Myanmar OR Nepal OR Oman OR Pakistan OR Russia OR "Russian Federation" OR "Saudi Arabia" OR Bahrain OR Indonesia OR Malaysia OR Philippines OR Sri Lanka OR Syria OR "Syrian Arab Republic" OR Tajikistan OR Thailand OR Timor-Leste OR Timor OR Turkey OR Turkmenistan OR Uzbekistan OR Vietnam OR "West Bank" OR Gaza OR Yemen OR Comoros OR Maldives OR Mauritius OR Seychelles).mp.
- 36 ("Pacific Islands" OR "American Samoa" OR Fiji OR Guam OR Kiribati OR "Marshall Islands" OR Micronesia OR New Caledonia OR "Northern Mariana Islands" OR Palau OR "Papua New Guinea" OR Samoa OR "Solomon Islands" OR Tonga OR Tuvalu OR Vanuatu).mp.
- 37 (developing OR less-developed OR less* developed OR "under developed" OR underdeveloped OR under-developed OR middle-income OR "middle income" OR "low income" OR low-income OR underserved OR "underserved" OR deprived or poor*) adj3 (countr* OR nation OR population OR world OR state OR economy OR economies).mp.
- 38 ("third world" OR LMIC OR L&MIC OR LAMIC OR LDC OR LIC OR lami countr* OR transitional countr*).mp.

39 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38

49 30 AND 39

Table A2: List of databases searched

Indexes	Provider
<i>From database providers</i>	
CINAHL PLUS	EBSCO Host
Global Health	
Embase	
PsycINFO	Ovid SP
MEDLINE	
ERIC	
International Bibliography of Social Sciences (IBSS)	ProQuest
Applied Social Sciences Index and Abstracts (ASSIA)	
<i>Other academic databases</i>	
IDEAS RePEc	IDEAS
The National Bureau of Economic Research (NBER)	NBER
Social Science Research Network (SSRN)	SSRN
<i>Online research libraries</i>	
POPLINE	POPLINE
EPPI Centre Evaluation Database of Education Research	Eppi Centre
<i>Websites</i>	
3ie Impact Evaluation Repository	www
Abdul Latif Jameel Poverty Action Lab (J-PAL)	www
University of California Center for Effective Global Action (CEGA): Research Projects	www
Interagency Youth Working Group: Resources	www
Urban Youth Evidence Synthesis	www
Innovations for Poverty Action (IPA) Database	www
Health Systems Evidence	www
Health Evidence (McMaster University)	www
Very Young Adolescent (VYA) Sexual and Reproductive Health Resource Library	www
Center for Health Market Innovations	www
Oxfam Library	www
Child and Youth Finance International	www
<i>Banks</i>	
Development Impact Evaluation Initiative (DIME)	
enGEN IMPACT EVALUATIONS	World Bank
Independent Evaluation Group (IEG)	
Inter-American Development Bank (IDB)	www
<i>International Organisations</i>	
DFID (including Research for Development (R4D))	www
UNFPA Evaluation Database	www
WHO Global Indicus Medicus	www

The WHO Reproductive Health Library	www
<hr/>	
Registries	
American Economic Association RCT Registry (AEA)	www
Registry of International Development Impact Evaluations (RIDIE)	www
Clinicaltrials.gov	www
<hr/>	
<i>Systematic review databases</i>	
<hr/>	
Cochrane	Wiley
Campbell	www
3ie Systematic Review Database	3ie
<hr/>	
<i>Dissertations and theses</i>	
<hr/>	
Dissertations & Theses Database	ProQuest
Bielefeld Academic Search Engine	National Digital Library of Theses and Dissertations
British Library Electronic Theses Online Service	EThOS

Figure A1: Adolescent sexual and reproductive health gap map screening protocol

Instructions

Proceed through the questions in order. Note that an “unclear” answer never excludes a study. The questions are designed to be as objective as possible. The questions are meant to start with those easier to ascertain and progress to those that will be harder to answer based on a quick read. The screener should feel confident of any “yes” or “no” answer used to exclude a study.

Screening questions	No	Yes	Unclear
Title			
1. Was the study conducted in the year 1990 or after?			
IF NO, THEN EXCLUDE			
2. Is the study focused in a country or countries classified as low- or middle-income by the World Bank?			
IF NO, THEN EXCLUDE			
3. Are data being analysed using quantitative methods?			
IF NO, THEN EXCLUDE			
4. Does the study concern a policy, programme or intervention?			
IF NO, THEN EXCLUDE			
5. Is this a biomedical trial of a product, medication or procedure?			
IF YES, THEN EXCLUDE			
6. Is the study clearly focused ONLY on people under the age of 10 or over the age of 19? <i>(i.e. if the study title indicates target population is “adult women” or infants)</i>			
IF YES, THEN EXCLUDE			
7. Does the study clearly NOT have any SRH elements? <i>(See SRH definition below. i.e. if the study only examines diabetes, TB, etc.)</i>			
IF YES, THEN EXCLUDE			

<p>8. If the intervention appears to be conducted <i>during</i> pregnancy, are terms which clearly indicate adolescence in the title, for example teenagers, young women, youth, and adolescents?</p> <p><i>(Explanation: most maternal health studies are outside of our scope, as SRH interventions primarily aim to prevent pregnancy. To ensure we do not exclude those few studies we do want though, retain pregnancy-focused studies that are clearly specific to adolescents)</i></p>			
IF NO, THEN EXCLUDE			
Title and abstract			
Repeat questions 1–8.			
<p>9. Does the study include adolescents (aged 10–19)? <i>At this level, if the given age range is 18–24, for example, include.</i></p>			
IF NO, THEN EXCLUDE			
<p>10. Does the study evaluate a policy, programme or intervention that is concerned with the sexual and reproductive health (SRH) of adolescents or other important factors related to SRH?</p> <p>For the purposes of this protocol, SRH encompasses:</p> <ul style="list-style-type: none"> • A healthy reproductive system • A person's ability to have a responsible, satisfying and safe sex life free of coercion, discrimination and violence • A person's capability to reproduce and the freedom to decide if, when and how often to do so • Laws and policies affecting the above • A person's knowledge of, attitudes towards, and behaviours around the above. <p>Examples of topics include: family planning, healthy timing and spacing of pregnancies, abortion, HIV/AIDS, other STIs such as HPV, cervical cancer, feminine hygiene, intimate partner violence and sexual violence, menstruation, voluntary medical male circumcision (VMMC), female genital mutilation (FGM),</p>			
IF NO, THEN EXCLUDE			

<p>11. Does the study measure outcomes for many observations of a relevant unit of analysis (e.g. individuals, households, communities, firms, etc.)?</p> <p><i>[This question is essentially whether the study is a “large n” study – case studies, for example, should almost always be cut. When in doubt, include.]</i></p>			
IF NO, THEN EXCLUDE			
<p>12. Are the methods clearly identified and clearly NOT among the methodologies for impact evaluations we consider?</p> <p><i>See accompanying descriptions; methodologies we accept include randomised controlled trials (including stratified), difference-in-differences, instrumental variables approaches, propensity score matching (and other matching techniques), regression discontinuity design and synthetic controls. At this level, include all systematic reviews that meet other inclusion criteria.</i></p>			

Full text			
Repeat questions 1–12.			
13. Are the evaluated interventions focused on SRH?			
IF YES (the topics or objectives of the interventions are concerned with family planning, contraception, HIV and STIs, menstruation or other topics mentioned in #10)			
<ul style="list-style-type: none"> • THEN: Proceed to #15 			
IF NO BUT the interventions are focused on child marriage, girls' education, girls' livelihoods or girls' empowerment			
<ul style="list-style-type: none"> • THEN: Proceed to #14 			
IF NO (the interventions and overall study are not concerned with SRH or SRH outcomes)			
<ul style="list-style-type: none"> • THEN: Exclude 			
14. Does the study measure effect sizes for SRH outcomes?			
SRH outcomes are those that measure SRH behaviours or fall into the “adolescent health” grouping in the framework (pregnancy, births and abortions; HIV/STI testing and incidence; sexual and intimate partner violence; mortality; other health outcomes)			

IF NO, THEN EXCLUDE			
<p>15. Do more than half of those sampled for the study fall between the ages of 10–19?</p> <p>EITHER:</p> <ul style="list-style-type: none"> More than 50% of the overall initial sample size falls into this age range (where sample size distribution by age is given) <p>OR</p> <ul style="list-style-type: none"> Average age reported without age range is between 11 and 16 (inclusive) regardless of standard deviation (<i>average ages of 17 and 18 with small SDs may also be considered on a case by case basis</i>) <p>OR</p> <ul style="list-style-type: none"> More than half of the expressed age range falls within adolescent ages (i.e. the 18–21 age range means only half falls within our adolescent age range and therefore would be excluded). 			
IF NO, THEN EXCLUDE			
<p><i>Note: all studies that are rejected at question 15 and focus on youth (aged 18–24) should be placed into a “youth SRH” folder</i></p>			
<p>16. Does the study use one of the following impact evaluation methodologies:</p> <ol style="list-style-type: none"> Randomised controlled trial (RCT). Regression discontinuity design (RDD). Propensity score matching (PSM) or other matching methods (as well as synthetic controls). Instrumental variables (IV) estimation (or other methods using an IV such as the Heckman two-step approach). Difference-in-difference, or a fixed- or random-effects model with an interaction term between time and intervention for baseline and follow-up observations. <p>Note: the study may also use methods in addition to those listed here (such as regression with controls), or may use a primary evaluation methodology not listed (such as in a natural experiment), but must do so in addition to one of the above methods (a–e).</p>			

IF NO AND NOT A REVIEW, EXCLUDE IF STUDY IS A REVIEW, SKIP TO #18			
17. Does the study have a sample size of at least 40 observations for RCTs and at least 80 observations for quasi-experimental methods at baseline?			
IF NO, EXCLUDE			
18. Is the study described as a systematic review, synthetic review and/or meta-analysis? If yes, does the review: a) Have a research question or focus on ASRH (a study that examines SRH broadly and happens to have some ASRH studies is not sufficient and should be excluded) b) Include effectiveness studies ⁹ undertaken in L&MIC countries c) Describe methods used for search, screening, data collection and synthesis d) Concern questions other than those related to treatment efficacy (trials undertaken in closed clinical or laboratory settings)			
IF NO, EXCLUDE			

Coding sheet for included studies

Note: any study for which an intervention or outcome category cannot be identified from the list should be set aside for re-screening.

Basic Study Information	
Data to be extracted	Additional instructions to coder
Study authors	
Study title	
Year of publication/date on document	
Country(ies) where intervention implemented	

⁸ Typically, efficacy studies examine treatment outcomes under highly controlled conditions. Effectiveness studies go beyond laboratory trials and examine interventions in real-world settings.

Region(s) where intervention implemented	
Author email address	Email address by corresponding author; if not indicated use first author.
URL (Impact Evaluation Repository URL if available)	Look up if not indicated in report.
Study publication status	
Programme Information	
Data to be extracted	Additional instructions to coder
Programme name (if applicable)	
Methods used (from screening protocol)	If multiple methods were used, please separate with semicolon and space. Remember to consistently use British spelling.
Is this study a pilot?	The programme stopped and started with the study – it did not exist before or continue after the study.
Does the programme employ "youth-friendly" or "adolescent-friendly" services?	
Is the programme community-oriented? (yes/no)	Working through and with the community is a key element in the programme's theory of change. The community is active in the programme in some way.
Thematic area	
Data to be extracted	Additional instructions to coder
Primary thematic area	This should reflect the main focus of the study – in most cases there should be only one thematic area. When the intervention/outcomes span multiple themes, record what the authors emphasise most.
Secondary thematic area (if applicable)	
Interventions	
Data to be extracted	Additional instructions to coder

Category code(s) of intervention from intervention list	
Name of intervention	
Description of intervention	
Outcomes	
Category code(s) for outcome from outcome list	
Name and description of outcome	
Observational level of measurement	

Figure A2: Adolescent sexual and reproductive health evidence gap map of completed impact evaluations (without cross-cutting themes columns)

Intervention categories		Outcome categories		Adolescent knowledge, attitudes and empowerment		Adolescent behaviours			Adolescent health			Health services		Enabling environment								
				KB1 Knowledge and awareness	KB2 Attitudes, self-efficacy and normative change	AB1 Sexual behaviour	AB2 Contraception and other prevention	AB3 Menstrual hygiene	AB4 Communication and support seeking	AH1 Pregnancy and births	AH2 Abortion	AH3 HIV/STI testing and incidence	AH4 Sexual and intimate partner violence	AH5 Other health outcomes	HS1 Accessing and utilising services	HS2 Providers and service quality	EE1 Education	EE2 Livelihoods	EE3 Marital status	EE4 Parents and family	EE5 Community and CBOs	EE6 Laws and policy
Health systems	HS1 Provider training and youth-friendly service adjustments			3	3	4	5			2		3			4					1		
	HS2 Commodity distribution and supply chain improvements			1		1	1			1		1			1							
	HS3 Community health workers and home visits			1		1	1			1		1			1							
Financial incentives and livelihoods	FS1 Vouchers and subsidies			1	1	1	2			1	2	1	1		1		1	2	1			
	FS2 Income generation and savings programmes			1	1	1	1			1	1	1	1				1	1				
	FS3 Cash transfer programmes			1	1	1	2			1	2	1	1				1	2				
School- and community-based education	SC1 Sexual health education and other instruction at school			9	9	10	13			2	5	9	1		5		1	2	1	1		
	SC2 Courses and other instruction outside of school			5	5	5	7				1		5			3					1	
Education systems	ES1 Health services and counselling in school						1				1					1			1	1		
	ES2 Hygiene and sanitation improvements in school																					
	ES3 Teacher training					1	1	1				1	1									
Community and interpersonal	C11 Social groups and clubs			1	1	1	1									2					1	
	C12 Drama and music			1	1	1	2				1		1			1					1	
	C13 Peer education and mentorship			4	4	6	8				3		6			5			1	1		
	C14 Family mobilisation and dialogue						1															
	C15 Community mobilisation and dialogue			3	3	4	6				3		3			4			1	1		
Societal and institutional	SI1 Policy advocacy																					
	SI2 Policies and laws																					
	SI3 Mass media			2	2	3	5			3		2			3				1	1		
	SI4 mHealth and other ICT																					

Figure A3: Adolescent sexual and reproductive health map of ongoing impact evaluations

Intervention categories		Adolescent knowledge, attitudes and empowerment				Adolescent behaviours				Adolescent health					Health services		Enabling environment					
		Outcome categories		KB1 Knowledge and awareness	KB2 Attitudes, self-efficacy and normative change	AB1 Sexual behaviour	AB2 Contraception and other prevention	AB3 Menstrual hygiene	AB4 Communication and support seeking	AH1 Pregnancy and births	AH2 Abortion	AH3 HIV/STI testing and incidence	AH4 Sexual and intimate partner violence	AH5 Other health outcomes	HS1 Accessing and utilising services	HS2 Providers and service quality	EE1 Education	EE2 Livelihoods	EE3 Marital status	EE4 Parents and family	EE5 Community and CBOs	EE6 Laws and policy
Health systems	HS1	Provider training and youth-friendly service adjustments		3	3	4	5			2		3			4						1	
	HS2	Commodity distribution and supply chain improvements		1		1	1			1		1			1							
	HS3	Community health workers and home visits		1		1	1			1		1			1							
Financial incentives and livelihoods	FS1	Vouchers and subsidies		1	1	1	2			1	2		1	1	1		1		2		1	
	FS2	Income generation and savings programmes		1	1	1	1			1	1		1	1			1		1			
	FS3	Cash transfer programmes		1	1	1	2			1	2		1	1			1		2			
School- and community-based education	SC1	Sexual health education and other instruction at school		9	9	10	13			2	5		9	1	5		1		2	1	1	
	SC2	Courses and other instruction outside of school		5	5	5	7			1		5			3						1	
Education systems	ES1	Health services and counselling in school				1					1				1				1	1	1	
	ES2	Hygiene and sanitation improvements in school																				
	ES3	Teacher training				1	1	1				1		1								
Community and interpersonal	CI1	Social groups and clubs		1	1	1	1								2						1	
	CI2	Drama and music		1	1	1	2				1		1			1					1	
	CI3	Peer education and mentorship		4	4	6	8				3		6		5					1	1	
	CI4	Family mobilisation and dialogue				1																
	CI5	Community mobilisation and dialogue		3	3	4	6				3		3		4				1	1		
Societal and institutional	SI1	Policy advocacy																				
	SI2	Policies and laws																				
	SI3	Mass media		2	2	3	5			3		2		3					1	1		
	SI4	mHealth and other ICT																				

Figure A4: Adolescent sexual and reproductive health map of systematic reviews (completed and protocols)

			Adolescent knowledge, attitudes and empowerment		Adolescent behaviours				Adolescent health					Health services		Enabling environment						
			KB1 Knowledge and awareness	KB2 Attitudes, self-efficacy and normative change	AB1 Sexual behaviour	AB2 Contraception and other prevention	AB3 Menstrual hygiene	AB4 Communication and support seeking	AH1 Pregnancy and births	AH2 Abortion	AH3 HIV/STI testing and incidence	AH4 Sexual and intimate partner violence	AH5 Other health outcomes	HS1 Accessing and utilising services	HS2 Providers and service quality	EE1 Education	EE2 Livelihoods	EE3 Marital status	EE4 Parents and family	EE5 Community and CBOs	EE6 Laws and policy	
Outcome categories																						
Health systems	HS1	Provider training and youth-friendly service adjustments	3	3	4	5			2		3			4						1		
	HS2	Commodity distribution and supply chain improvements	1		1	1			1		1			1								
	HS3	Community health workers and home visits	1		1	1			1		1			1								
Financial incentives and livelihoods	FS1	Vouchers and subsidies	1	1	1	2			1	2		1	1	1		1		2		1		
	FS2	Income generation and savings programmes	1	1	1	1			1	1		1	1			1		1				
	FS3	Cash transfer programmes	1	1	1	2			1	2		1	1			1		2				
School- and community-based education	SC1	Sexual health education and other instruction at school	9	9	10	13			2	5		9	1	5		1		2	1	1		
	SC2	Courses and other instruction outside of school	5	5	5	7			1		5			3							1	
Education systems	ES1	Health services and counselling in school				1			1					1				1		1		
	ES2	Hygiene and sanitation improvements in school																				
	ES3	Teacher training			1	1	1			1		1										
Community and interpersonal	C11	Social groups and clubs	1	1	1	1								2							1	
	C12	Drama and music	1	1	1	2				1		1			1						1	
	C13	Peer education and mentorship	4	4	6	8				3		6		5						1	1	
	C14	Family mobilisation and dialogue				1																
	C15	Community mobilisation and dialogue	3	3	4	6				3		3		4					1	1		
Societal and institutional	SI1	Policy advocacy																				
	SI2	Policies and laws																				
	SI3	Mass media	2	2	3	5			3		2			3				1		1		
	SI4	mHealth and other ICT																				

Appendix B: Bibliography of the studies included in the EGM

Completed impact evaluations in EGM

- Abolfotouh, MA, 1995. The impact of a lecture on AIDS on knowledge, attitudes and beliefs of male school-age adolescents in the Asir Region of southwestern Saudi Arabia. *Journal of Community Health*, 20(3), pp.271–81.
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This report presents the findings of an evidence gap map that assesses the evidence available on the effects of adolescent sexual and reproductive health (ASRH) programming in low- and middle-income countries. It documents the methods used to create the map and examines evidence clusters and gaps identified in it.

While there is considerable amount of impact evaluation evidence, it addresses only some of the priority questions within this broad topic. The greatest prevalence of evidence is on sexual health education and other instruction within and outside of the classroom. Many of these courses come from an HIV prevention perspective and measure outcomes related to attitudes, knowledge, condom use and sexual activity. There was little available evidence for mHealth and other ICT, health services and counselling in school, and community health workers, among other intervention types.

The map also reveals multiple possibilities for synthesis, including on peer-to-peer approaches, effectiveness of family engagement and on cash transfer programmes directly targeting adolescents and improving ASRH.

Evidence Gap Map Report Series

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