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Adolescent sexual and reproductive health

Scoping the impact of programming in low- and middle-income countries

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Scoping
Paper 5

Health



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Initiative for
Impact Evaluation

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About this paper

3ie conducted scoping work on adolescent sexual and reproductive health to assess evidence on the effectiveness of related programmes in low- and middle-income countries, and to identify priorities for funding new 3ie impact evaluations and systematic reviews in this area. An evidence gap map is reported in this paper, and is also available in the 3ie Evidence Gap Map Report series, *Adolescent sexual and reproductive health: an evidence gap map*. An interactive version of the map is available on the 3ie website. The William and Flora Hewlett Foundation provided funding for this scoping project.

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Adolescent sexual and reproductive health: the state of evidence on the impact of programming in low- and middle-income countries

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Summary

Adolescence (10–19 years old) is a critical period in life, during which people undergo extensive biological, psychological and social changes. During this time, sexual and reproductive health can pose serious challenges for adolescents (WHO, 2015b).

Adolescent girls are particularly vulnerable to complications from pregnancy and childbirth. These are the second leading cause of death among young women aged 15–19 (UNFPA, 2014). Adolescent sexual and reproductive health (ASRH) also affects physical and mental health, future employment, economic wellbeing and a person's ability to reach his or her full potential (WHO, 2012, Chandra-Mouli *et al.* 2013b, Patel *et al.* 2007).

As a result, aid agencies, national governments and non-governmental organisations are increasingly focusing funds, efforts and services on ASRH (WHO, 2015b; UNFPA, 2014; WHO, 2015a). At the same time, many questions remain about how best to reach adolescents, what services are most needed and how to provide those services in ways that benefit adolescents most effectively.

The William and Flora Hewlett Foundation commissioned 3ie to explore the state of the evidence on the effectiveness of ASRH interventions in low- and middle-income countries (L&MICs). The purpose of this exercise is to understand what is known and what is not known about ASRH, which is the first step in filling in important gaps in evidence.

The core of this paper is an evidence gap map (EGM), which systematically catalogues relevant impact evaluations and systematic reviews. We place studies on the map according to the intervention and outcome categories for which the papers provide impact measurements.

An impact evaluation is a study that measures a net outcome attributable to an intervention, using experimental or quasi-experimental designs to establish a counterfactual.

This paper then analyses the evidence base of both completed and ongoing impact evaluations and systematic reviews, focusing on evidence characteristics rather than the results of the studies. We seek to understand what, as a whole, the evidence base answers and what it does not. We also aim to understand the contexts in which studies are conducted, including which adolescent populations they cover.

To understand the state of evidence fully, this paper also explores the evidence needs for ASRH programming. We do this by taking stock of selected current programmes and evaluating the results of a stakeholder survey to assess both the perception of the current evidence base and the demand for new or better evidence. Consultative events and a roundtable discussion of the EGM and stakeholder survey results also informed this paper.

Findings

Respondents to the stakeholder survey (implementers, researchers, funders and policymakers involved in L&MIC ASRH programming) feel there is insufficient evidence on whether ASRH interventions work in a number of areas. These include family mobilisation and dialogue, school-based health services and counselling, mobile health (mHealth), and other information and communication technology (ICT) and social media. For peer-to-peer approaches, responses were mixed. In addition, many respondents identified a need for further evidence for specific adolescent populations particularly very young adolescents (VYAs) aged 10–14 years.

From more than 26,000 initial search results for the EGM, we identified 131 completed impact evaluations of ASRH interventions in L&MICs and 21 ongoing impact evaluations. We identified 13 completed systematic reviews on ASRH programming effects (in which 3ie has medium or high confidence in the findings) as well as one protocol of an ongoing systematic review.

We identified 131 completed impact evaluations of interventions for ASRH in L&MICs and 13 systematic reviews for which we have confidence in their findings.

We can see several visible gaps within the EGM. There is little evidence on the effects of interventions using mass media or mHealth and other ICT approaches, and around the effectiveness of programmes to change the norms, attitudes and behaviours of families and communities. Of the many studies that evaluate instructional approaches, none evaluate the effects of comprehensive sexuality education in L&MICs.

In addition, few studies assessing contraception use do so from the perspective of pregnancy prevention or family planning. Rather, most focus on preventing sexually transmitted infections (STIs). Few studies assess technologies or methods other than condoms. Very few studies measure effects at the provider level, and even studies evaluating adolescent-friendly approaches fail to assess provider behaviour or adolescent behaviour as a proxy. There were very few studies looking at menstrual hygiene behaviours, abortion or sexual and intimate partner violence.

While large gaps in the map are visible, many important gaps are less evident. What works for a broad adolescent population may not work, or may work differently, for adolescent sub-populations, such as different age ranges or poor, marginalised or vulnerable adolescents. While we find 16 studies focused on VYAs (10–14 years old), important questions remain. These include what works for this population in L&MICs related to provider training, mHealth and other ICT approaches, and for outcomes related to contraception access and use, pregnancy and birth.

Very few studies focus on adolescent boys, few focus on married adolescents, and few look at contraception access and use for unmarried adolescents. No studies provide effects for lesbian, gay, bisexual, transgender and questioning (LGBTQ) adolescents, or look at SRH needs for youths questioning their sexuality. Other gaps

in the evidence base in terms of other sub-populations include migrant adolescents, adolescents living with human immunodeficiency virus (HIV) and adolescents with disabilities.

We found little high-quality synthesis with research questions focused specifically on adolescents in L&MICs. There are opportunities for new syntheses of programming effectiveness for VYAs, on family- and community-based approaches and financial approaches to ASRH. In terms of ongoing research, we find that new studies are analysing many questions for which there is already evidence. Overall, researchers are not yet filling the evidence gaps identified by this or similar review work.

Conclusions

We need a wide range of qualitative and quantitative evidence to understand the complexities that determine the effects of ASRH programming. Rigorous, well-designed and well-reported impact evaluations in this field cannot be overvalued. Evaluations that use a counterfactual, mixed methods and a well-developed programme theory of change allow us to attribute change to programmes. They also help us to identify and understand factors that are influencing and changing ASRH knowledge, perceptions, norms, behaviours and health outcomes.

While there are many impact evaluations of ASRH programmes in L&MICs, we need more evaluations of programming other than HIV prevention. While a number of studies included here are well reported, too many do not adequately explain the context, content, methods or results of their programming and evaluation. Further, most of the impact evaluations are not sufficiently gender-responsive in design or reporting, and do not reflect the high degree of diversity within adolescent populations.

Stakeholders are looking for more nuanced evidence that focuses on which interventions are most effective, for whom and at what cost, as well as whether a programme works. While there is a sizeable evidence base that assesses the effectiveness of ASRH programming in L&MICs, there are still important evidence gaps. There is a need for more evidence around mHealth and other ICT approaches, and on interventions for family and community mobilisation and dialogue, particularly in terms of normative change.

These types of studies – and those that evaluate adolescent-friendly services – need to measure effects not only at the individual adolescent level, but also at provider, family and community levels. We also need more evidence on gender transformative and rights-based approaches specifically for adolescents.

Additionally, we see a need for more studies assessing contraception for pregnancy prevention and family planning as opposed to disease prevention. While there is a large base of evidence assessing sex education, we need evidence on comprehensive sexuality education in L&MICs. Furthermore, we need more studies assessing the impact of programming on specific sub-populations, including boys, married adolescents, HIV-positive adolescents and LGBTQ adolescents, among others. Studies need to disaggregate these sub-populations by sex and apply gender

analysis. We also need studies that capture cost-effectiveness rather than simple cost analysis within impact evaluations.

Finally, there is a need for more high-quality synthesis in this area. We found only 13 systematic reviews of evidence from L&MICs for which we have medium or high confidence in their findings. These reviews address important research questions but more synthesis is possible and needed. Only two of these provide meta-analysis of results and many impact evaluations included in our EGM are not represented in these reviews. Our mapping identified topic areas where sufficient impact evaluations exist to support useful synthesis. These include peer-to-peer approaches, community- and family-based approaches, courses for VYAs and cash transfer programmes.

Contents

Acknowledgements	i
Summary	ii
List of tables and figures	vii
Abbreviations and acronyms	viii
1. Introduction	1
2. Background	3
2.1 Adolescence	3
2.2 Sexual and reproductive health for adolescents.....	5
2.3 Current programming and theories of change.....	6
2.4 Recent reviews of evidence	10
3. Stakeholder survey on evidence needs	10
3.1 Survey methods.....	11
3.2 Results	11
4. Adolescent sexual and reproductive health evidence gap map	21
4.1 3ie evidence gap maps	21
4.2 EGM methodology	21
4.3 Results	30
5. Features of the impact evaluation evidence base	34
5.1 Impact evaluations in the evidence base.....	34
5.2 Evidence for specific adolescent populations.....	41
5.3 Features of programmes in the evidence base	44
5.4 Anticipated new evidence	45
6. Features of the systematic review evidence base	48
6.1 Overall characteristics of included systematic reviews	48
6.2 Key systematic review topics	48
7. Evidence clusters and possibilities for synthesis	53
8. Gaps in evidence	55
8.1 Gaps in evidence by intervention and outcome.....	55
8.2 Other evidence gaps.....	57
9. Limitations of this scoping paper	62
10. Conclusion and final recommendations	63
Appendix A: Participants in EGM consultation events	66
Appendix B: Bibliography	70
References	86

List of figures and tables

Figure 1: Conceptual framework of adolescence.....	4
Figure 2: Types of evidence used in respondents' current work (select no more than two)	12
Figure 3: State of evidence for ASRH thematic programming areas.....	13
Figure 4: The state of evidence for adolescent sub-populations	14
Figure 5: Intervention effectiveness for achieving desired ASRH outcomes	15
Figure 6: Evidence availability for intervention types to inform ASRH programming and policy	17
Figure 7: Three priority intervention types for new impact evaluation funding.....	18
Figure 8: Respondents' selection of three intervention types that will be used less often for future ASRH programming	19
Figure 9: Respondents' selection of three intervention types that will be used more often for future ASRH programming	20
Figure 10: Search results and screening process.....	30
Figure 11: ASRH outcomes EGM (not including cross-cutting columns or sub-populations).....	32
Figure 12: EGM cross-cutting themes	33
Figure 13: Number of studies by intervention category.....	35
Figure 14: Number of impact evaluations by outcome category	37
Figure 15: Number of impact evaluations by region.....	38
Figure 16: Impact evaluation evidence heat map	38
Figure 17: Number of impact evaluations by publication year.....	39
Figure 18: Number of impact evaluations, by intervention grouping and publication year.....	40
Figure 19: Number of impact evaluations providing effects for sub-populations.....	41
Figure 20: Number of impact evaluations by thematic area	44
Figure 21: EGM of ongoing impact evaluations on ASRH programming.....	47
Figure 22: EGM of systematic reviews on the effectiveness of ASRH programming	50
Figure 23: Systematic reviews by intervention category	51
Figure 24: Systematic reviews by outcome category	52
Table 1: Detailed inclusion criteria.....	23
Table 2: Intervention categories	25
Table 3: Outcome categories	27

Abbreviations and acronyms

3ie	International Initiative for Impact Evaluation
ASRH	adolescent sexual and reproductive health
CBO	community-based organisations
DID	difference-in-difference
EGM	Evidence gap map
HIV	Human immunodeficiency virus
HPV	Human papilloma virus
ICT	Information and communication technology
IV	Instrumental variables
IPPF	International Planned Parenthood Federation
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
OVCs	Orphans and vulnerable children
PSM	Propensity match scoring
SRH	Sexual and reproductive health
STD	Sexually transmitted disease
STI	Sexually transmitted infection
RCT	Randomised controlled trial
RAISE	Reproductive Health Access Information and Services in Emergencies
UNFPA	United Nations Population Fund
USAID	United States Agency for International Development
VYA	Very young adolescent (10–14 years old)
WHO	World Health Organization

1. Introduction

There are more adolescents in the world than ever before (1.3 billion as of 2012) (WHO, 2015b, UNICEF, 2012b). These adolescents are at a critical stage in life, during which people undergo extensive biological, psychological and social changes (Fatusi and Hindin, 2010). A person's sexual and reproductive health (SRH) plays an integral role during this transition and can pose serious challenges for adolescents.

Complications during pregnancy and childbirth is the second leading cause of death in girls aged 15–19 worldwide, second only to suicide, while an estimated 3 million girls aged 15–19 undergo unsafe abortions every year (WHO, 2015b, WHO, 2014a). Human papilloma virus (HPV), which can lead to cervical cancer, is primarily acquired during adolescence. Over two million adolescents worldwide were living with human immunodeficiency virus (HIV) in 2012 (Smith *et al.* 2008, Idele *et al.* 2014).

Adolescent sexual and reproductive health (ASRH) can affect mental health and other health factors, have long-term implications on educational attainment, employment potential, economic wellbeing and a person's overall ability to reach their full potential (WHO, 2012, Conde-Agudelo *et al.* 2005, Chandra-Mouli *et al.* 2013c, Patel *et al.* 2007).

Addressing ASRH can bring societal benefits as well as individual health benefits. As today's adolescents reach working age, there is an opportunity to achieve a demographic dividend if we can reduce fertility rates and create economic conditions to absorb the larger workforce. These factors are usually accomplished by investing in youth education and other key areas, including SRH and overall health (Bloom and Canning, 2000). Investing in adolescents can create a triple dividend, bringing benefits during adolescence, throughout their life course and into the next generation (Patton *et al.* 2016).

The 1994 International Conference on Population and Development marked a paradigm shift from a main focus on population control to explicitly acknowledging the need to address SRH and rights, including those of adolescents (UN Department of Economic and Social Affairs, 2013). Since then, there has been an increasing interest in and focus on addressing ASRH.

In 2013, WHO launched new recommendations on HIV services and care specifically for adolescents, recognising that this group had previously fallen through gaps in standard programming (WHO, 2013). More recently, WHO added adolescents to its 2016–2030 global strategy for women and children, noting adolescents' unique health challenges and their role as drivers of change (WHO, 2015a). In recent reports, the WHO, IPPF and others have strongly called for further investment in ASRH programming (Chandra-Mouli *et al.* 2013c; Greene and Merrick, 2015, Sundaram, 2015).

What is an evidence gap map?

An evidence gap map (EGM) is a matrix that displays how much impact evaluation and/or systematic review evidence exists for a given sector, sub-sector or policy issue, according to the programmes evaluated and outcomes measured (Snilstveit *et al.* 2013).

Programme categories are listed in rows and outcome categories in columns. Thus, a cell containing a large number represents a programme type with numerous impact evaluations that estimate the effect of a programme on a specific outcome. An empty cell means there are no impact evaluations measuring that effect (evidence gaps). Some EGMs present the quantity of systematic review evidence in addition to, or instead of, impact evaluation evidence.

By showing where we have evidence and where we do not, EGMs reveal opportunities for evidence synthesis to inform policy, as well as priorities for evaluation investment.

However, there has not always been agreement or enough evidence around how to respond to these SRH needs and problems and on what works and what does not.

Chandra-Mouli *et al.* (2015) argue that the international community continues to invest in programming that does not work, such as stand-alone youth centres and peer education. On the other hand, Kalembo *et al.* (2013) suggest that differences in effectiveness of peer education may be related to methodology. They noted that in the reviewed studies adolescents selected by their peers and who receive rigorous and continuous training and supervision are more successful than self-selected volunteers with only introductory training.

A better understanding of where there is evidence and where there is not will help policy- and decision-makers decide where more information is needed, and where new programming and research investments can have greatest impact.

Impact evaluations and studies that use experimental or quasi-experimental methods to attribute change to an intervention (for example, randomised controlled trials [RCT]) provide this evidence.

Using a mixed-methods approach, such as by adding qualitative information and costing to an impact evaluation, can inform decisions by helping to identify what works, for whom, why and at what cost. Systematic reviews synthesise this high-quality evidence in a rigorous manner.

Furthermore, to respond to specific issues related to adolescents in low- and middle-income countries (L&MICs), it is important to have evidence specifically for adolescents in L&MIC contexts.

The primary focus of this paper is to describe the breadth, depth and features of the existing evidence base and then compare it to the demand for new or better evidence.

The EGM, available on 3ie's website, allows policymakers and programme managers to access information on relevant studies in the 3ie Systematic Review Database and

Impact Evaluation Repository.¹ In this paper, we examine programme themes as well as the different mechanisms tested in the included studies. We analyse the evidence base in the EGM to identify opportunities where further research can best support evidence-based policymaking.

To understand the state of this evidence base fully, we also explore evidence needs for ASRH programming. We therefore searched the literature and websites of funders and large implementing agencies to assess the types of ASRH interventions currently implemented. We discuss these programmes and the explicit and implicit theories of change for these interventions. We also surveyed implementers, researchers, funders and policymakers involved in ASRH programming in L&MICs ('stakeholders') to assess perceptions of the state of the evidence and the demand for new evidence.

Other inputs to this paper include presentations and discussions from three consultative events to help develop the EGM framework and a roundtable event to discuss preliminary results and potential future priorities for research investment. At these events, around 100 participants presented and discussed prevailing theories of change, trends in programming and evidence needs.

The rest of this paper is structured as follows. In section 2, we discuss the concepts of adolescence and SRH. We provide a snapshot of current programming and discuss prevailing theories of change and other theoretical frameworks on which current programming is based. Section 3 presents the methods and results of the stakeholder survey. Section 4 presents the EGM and the methods that underpin it.

In section 5, we describe the evidence base using the EGM. Section 6 summarises the characteristics of the systematic reviews identified in our search. Section 7 explores evidence clusters in the EGM and section 8 outlines gaps in the evidence for interventions and outcomes. In section 9, we identify less visible evidence gaps, such as for specific populations, regions or ways of analysing the evidence. Section 10 covers the limitations of this paper, and section 11 outlines our conclusions and recommendations.

2. Background

Adolescence and SRH are two complex concepts that we briefly explore below in order to fully understand the state of the evidence. We then describe current ASRH programming and discuss the supporting theories and theories of change. Finally, we briefly look at recent reviews of evidence for this programming.

2.1 Adolescence

This report and scoping work uses the WHO definition of adolescence, the period between 10 and 19 years of age. Adolescence is a unique period in life, during which people undergo extensive biological and psychological changes while simultaneously experiencing changing societal roles and expectations (WHO, 2014b).

¹ As of the date of publication, the basic records for all included studies, along with links to the source locations, are in the 3ie Impact Evaluation Repository and systematic review database. Full summaries will be completed in the following months.

Biological and psychological changes affect adolescents' health-related behaviours, as well as the diseases to which they are vulnerable (WHO, 2015b). This can in part be affected by a person's sex: female adolescents can be more susceptible to sexually transmitted infections (STIs) than males based on biological characteristics of their anatomy (Cates, 2001) as cited in (Glasier *et al.* 2006).

Regions of the brain linked to planning and emotional control are not yet fully developed and adolescents are thus more likely to explore and take risks (Casey *et al.* 2008). Chronic illnesses and health-related behaviours such as alcohol use also arise during adolescence and can, in turn, affect an individual's development.

Social roles and expectations also change during adolescence. Many adolescents in L&MICs begin to transition from going to school to working or taking care of a household. This is also a period when gender roles become more prominent and gaps in opportunities and wellbeing between boys and girls begin to widen (Viner *et al.* 2012). These more entrenched gender roles and norms, among many other consequences, put girls at higher risk of violence and STIs, including HIV (UN General Assembly, 2006; United Nations Development Group, 2010).

Figure 1 depicts the changes during adolescence horizontally and a causal chain towards health outcomes vertically.

Figure 1: Conceptual framework of adolescence

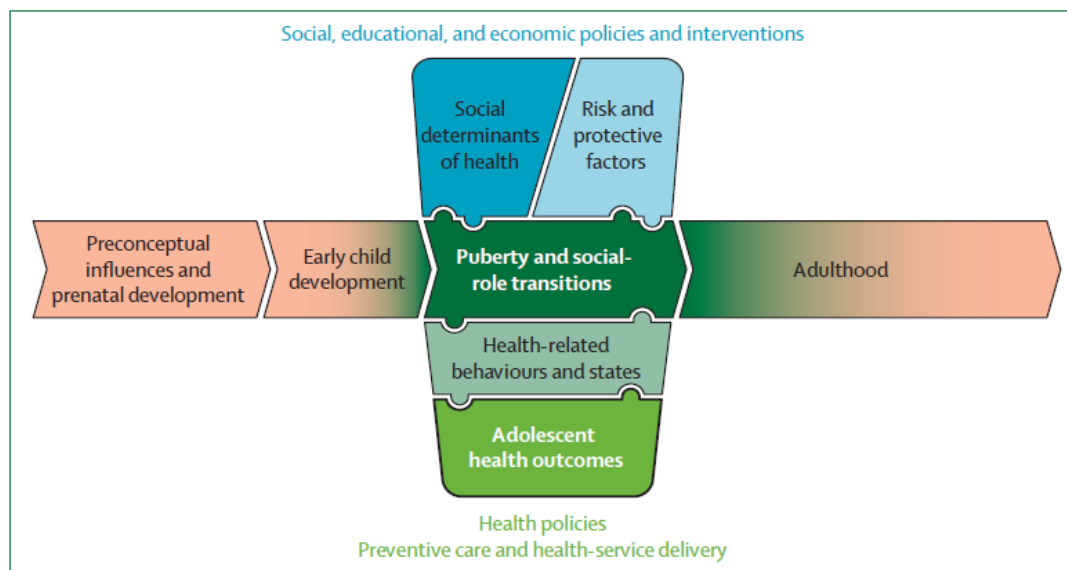


Figure from Sawyer *et al.* (2012).

Fatusi and Hindin (2010) note that approaching adulthood and accompanying expectations create a unique time period in a person's life and consequently argue that adolescence should not be treated in the same way as other periods of a person's life. Programming targeting a specific aspect of adolescent health – such as reproductive health – should be holistic and consider this period of transition and where it sits within a life course (Fatusi and Hindin, 2010, Sawyer *et al.* 2012). Research should also take these factors into account.

2.2 Sexual and reproductive health for adolescents

SRH can affect adolescents' ability to attend school, to work and their overall health. SRH covers a wide range of topics, including healthy timing and spacing of pregnancies, safe abortion, sexuality, HIV and other STIs, voluntary medical male circumcision, feminine hygiene and menstruation, sexual violence and female genital mutilation (FGM).

The literature prominently features discussions on the social determinants of adolescent health. These determinants explain the broader context in terms of what affects an individual's sexual and reproductive health and can be broken down into structural and proximal factors.

2.2.1 Structural determinants

Structural determinants include the broader economic, political and social welfare systems (Viner *et al.* 2012). Laws determining the age of sexual consent, the minimum legal age of marriage and an adolescent's access to contraception, abortion and other health services all affect their reproductive health. Structural determinants determine, in part, adolescents' exposure to health-related risks and protective factors. For example, a girl may not experience the protective factors of school attendance if cultural norms or family expectations prevent her from attending school (Viner *et al.* 2012).

Another structural determinant affecting ASRH is poverty. Poverty increases young people's exposure to early and forced marriage and sexual violence (McCleary-Sills *et al.* 2014). Teenage girls from a country's poorest households are more likely to become pregnant than those from its wealthiest households (Population Reference Bureau, 2013). Inequality is a factor as well; the higher a country's inequality, the higher the number of teenage births (Viner *et al.* 2012).

Gendered social norms, roles, power dynamics and expectations around sexual behaviour differ dramatically for boys and girls and are crucial to understanding SRH for adolescents (Fatusi and Hindin, 2010, Pradhan and Ram, 2010, Blanc, 2001). Gendered power dynamics and social norms lead to unequal decision-making in sexual partnerships, and sexual coercion and sexual violence (Varga, 2003). Double standards around sexual behaviour – such as prohibiting sex before marriage for girls but viewing it as normal for boys – has been directly linked to poor reproductive health outcomes for girls (Fatusi and Hindin, 2010).

2.2.2 Proximal determinants

Proximal, social determinants include the circumstances of daily life, such as social connections within school, friend and family contexts.

Early and forced marriage is a major risk factor for negative reproductive health outcomes for adolescent girls. Married female adolescents are often unable to negotiate safe sex and family planning, making them more vulnerable to HIV and STIs and early pregnancy (Malhotra *et al.* 2011). In developing countries, 90 per cent of births to adolescent girls occur within marriage (UN Department of Economic and

Social Affairs, 2013). Married female adolescents are less likely to receive medical care during pregnancy than women who married during adulthood (UNICEF, 2014) and more likely to experience violence (Malhotra *et al.* 2011).

On the other hand, unmarried adolescents face greater barriers to SRH information and services due primarily to social norms around sexual activity outside marriage, particularly for girls (Bankole and Malarcher, 2010). In Latin America and Sub-Saharan Africa, almost half of sexually active unmarried adolescent girls have an unmet need for contraception (40% and 45%, respectively) (Bankole and Malarcher, 2010).

Connectedness to family and school can both play roles in overall health and risky behaviour (Viner *et al.* 2012; Cunningham *et al.* 2008). Recent reviews and commentary note that ASRH programming has historically focused too much on individual factors and not enough on family and peer influences, with detrimental effects (Fatusi and Hindin 2010; Mmari and Blum 2009).

2.3 Current programming and theories of change

To understand current interventions and theories of change in ASRH programming, we searched the websites of:

- major ASRH funders (UK Department for International Development, The Bill & Melinda Gates Foundation, United States Agency for International Development [USAID], Children's Investment Fund Foundation)
- major ASRH implementers (Population Council, Pathfinder International, Save the Children)
- other relevant institutions, such as the Guttmacher Institute.

This by no means represents the full breadth of ASRH programming. We wanted an indicative sense of current programme support by major donors and SRH implementing organisations. To do this, we performed a convenience search of those already known to 3ie.

2.3.1 Demand-side interventions

Interventions are often classified in terms of supply and/or demand-side interventions. Demand-side interventions are based on the goal of behaviour change. Such interventions provide information to change attitudes, perceptions and beliefs (through interaction and information exchange with peers, families and communities), with the assumption that these changes lead to changes in behaviour.

Several prominent theories on behaviour change inform much of current ASRH programming. These theories are predominantly used to explain how and why an adolescent would choose a beneficial health behaviour (such as using a condom).

A Cochrane review looked at studies that used theory-based approaches to increase demand, knowledge, adoption and continued use of contraception (Lopez *et al.* 2013). It found that interventions based on social cognitive theory showed some effect with adolescents. But the review also noted that the theoretical base of these

interventions was often unclear or combined various models, and drew no conclusions regarding the appropriateness of different theories.

Social cognitive theory, as developed by Albert Bandura (1977), postulates that a person learns by observing others. He argues that behaviour change is an internal, goal-directed process that is self-regulated and relies on developing self-efficacy and assessing expectations around outcomes. It is not, however, determined solely by internal, psychological factors. Bandura highlights three sets of factors – behavioural, personal and environmental – that all affect behaviour via a complex causal pathway (Klepp *et al.* 2008). These characteristics make social cognitive theory a common theoretical base from which to explain and inform behaviour change approaches for adolescents (Lopez *et al.* 2013, Harrison *et al.* 2010, Klepp *et al.* 2008).

Other common theories behind ASRH programming include the health belief model and theory of reasoned action ((Hochbaum, 1956, Rosenstock, 1960, Lopez *et al.* 2013). Both of these theories seek to explain decisions around behaviour and focus on an individual's attitudes and perceptions (Klepp *et al.* 2008). The health belief model also includes the need for a 'cue to action' (Hochbaum, 1956), and the theory of reasoned action was later modified to include a perception of control over behaviour and self-efficacy (Fishbein and Ajzen, 2011).

Rational choice theory, which postulates that individuals are rational and make choices that provide them with the most benefit, has been applied more widely (outside economic theory) by Becker (1976) and used to explain the role of incentives in behaviour change.

A framework designed by the International Center for Research on Women is useful to conceptualise some types of programming. It explains the five elements needed to achieve delayed, planned and safe pregnancies for adolescents (McCleary-Sills *et al.* 2014). This framework shows that adolescent demand for family planning requires wanting to have control over pregnancy, wanting to use contraception and having the self-efficacy and access to use it, which corresponds with a need to provide quality, youth-friendly services. This suggests that health systems should work to meet adolescent needs for access to quality, youth-friendly services, including family planning. We see similar frameworks reflected in ASRH programming.

Other ASRH interventions seek to affect behaviour through nudges, social support and incentives (typically financial). Social support can take the form of peer mentors, communication with parents or social groups and clubs.

For example, 100% Jeune, a programme in western Africa, aims to reduce sexual risk-taking among youth. It uses an integrated package of services to promote behaviour change, drawing on social cognitive theory and the health belief model. These include peer education classes and teen-led discussion groups, a magazine, a radio call-in show, a radio drama and youth-friendly condom sales outlets.

In terms of financial incentives, rational choice theory suggests that individuals factor the value of an incentive when calculating the perceived benefit of adopting a new behaviour. Incentives can target the behaviour directly or indirectly. Many

programmes do not aim to incentivise SRH behaviour directly but instead incentivise school attendance for girls. This follows the theory of change that if a girl remains in school she is less likely to engage in risky sexual behaviour and thus have a reduced risk of early pregnancy, HIV and other STIs.

The Zomba Cash Transfer Programme in Malawi is a good example of this. Households with adolescent girls received unconditional or conditional cash transfers with the aim to increase girls' attendance at school, and the overall goals of delaying marriage, fertility and HIV infection (Baird *et al.* 2010, Baird *et al.* 2011).

Some demand-side interventions target an intermediary, rather than directly targeting a particular adolescent behaviour change. These interventions encompass community-oriented programmes and those that directly involve parents and other family members. By improving the enabling environment (including adolescents' educational outcomes, livelihoods, marital status and community social norms, particularly regarding gender), it becomes easier for adolescents to adopt a desired behaviour.

For instance, the Reproductive Health Access Information and Services in Emergencies (RAISE) Project in Colombia employed youth educators to provide information to their peers, but adults were resistant. The implementer therefore reached out to community leaders and schools to educate adults on the importance of family planning education for adolescents (Tanabe *et al.* 2011).

2.3.2 Supply-side interventions

We also find supply-side interventions in recent ASRH programming. These interventions could include creating or improving facilities that directly cater to adolescents. Recently, these interventions have primarily targeted service provision, focusing on training providers, pharmacy staff and others to provide more adolescent-friendly services (see United Nations Population Fund [UNFPA] (2008) EngenderHealth (2002)).

Like incentives, these interventions do not aim to change adolescent behaviour directly, but instead change the behaviour of service providers. The general theory of change is that making services more adolescent-friendly encourages health service use (by changing perceptions of the benefit and attitudes toward the behaviour). In turn, this leads to an increased likelihood of adolescents accessing the healthcare they need and thus avoiding adverse SRH outcomes.

This theory of change still relies heavily on social cognitive theory and the health beliefs model to change providers' behaviour. It then extends into the theory of planned behaviour and rational choice to explain the adolescents' behaviour change.

2.3.3 Mechanisms of intervention delivery

Many ASRH programmes studied for this paper worked through a variety of channels. Some targeted adolescents directly and others used peers or targeted the enabling environment (teachers, parents, schools or the community).

For example, the Ishraq programme in Egypt trained peer mentors, worked with parents, informed the community and provided safe spaces at youth centres (Sieverding and Elbadawy, 2016). Another programme uses community health workers to identify and support adolescents experiencing sexual or gender-based violence, while also targeting parents and promoting community discussions on the normalisation of violence and its effects (Pathfinder International 2016).

A few ASRH programmes have tried different types of incentives. One uses school supplies and uniforms to reduce barriers to schooling, and in-kind economic incentives (a chicken or a goat) for delaying marriage (Population Council, 2016).²

Technology has also played an important role in recent ASRH programming. This includes promoting new contraceptive technologies such as the Sayana Press among adolescents (see PATH website).³ Mobile health (mHealth) and other ICT approaches are often used when targeting adolescents.

For example, the mCenas! programme in Mozambique used SMS text messages with information regarding topics such as family planning, STIs and pregnancy to address knowledge gaps among adolescents (Pathfinder International, 2014). No Yawa, a programme run by DKT International in Ghana, encourages adolescents to post and send private messages on Facebook to ask questions, express opinions and raise concerns related to sex and SRH (DKT International, 2016).

2.3.4 Other approaches

Many ASRH programmes adopt integrated and multisectoral approaches. For example, the Adolescent Girls Initiative Kenya programme includes violence prevention, education, health and wealth creation interventions (Austrian *et al.* 2015).

This programme is based on the asset building theory of change, which posits that economic, education, health and social assets are needed for girls to transition into adulthood in a healthy, productive and safe manner (Austrian *et al.* 2015). This theory of change also emphasises the importance of adjusting community norms regarding girls' values to facilitate improvements in their medium- to long-term outcomes.

Multiple systematic reviews (some reviewing literature from high-income countries) find that multisectoral approaches tend to be more effective than a single intervention (Gottschalk and Ortayli, 2014, Kågesten *et al.* 2014, McCleary-Sills *et al.* 2014). This comprehensive programming can target both the demand for, and the supply of, contraceptives and other reproductive health services. Alternatively, as outlined in the Kågesten *et al.* (2014) review, comprehensive programming can address the social determinants of ASRH behaviour as well as needs. Such programmes include educational support, family involvement and building transferable skills.

² <http://www.popcouncil.org/research/building-an-evidence-base-to-delay-marriage-in-sub-saharan-africa>

³ <http://sites.path.org/rh/recent-reproductive-health-projects/sayanapress/>

2.3.5 Specific sub-populations

As part of this scoping exercise, we observed few programmes that target adolescent sub-populations. This may be in part due to the limited nature of our search, but it appears to be a broader trend in ASRH programming. Many programmes targeted girls but some were also directed at boys. None obviously targeted adolescent sub-populations affected by specific, identifiable (and usually intersecting) social and structural determinants.

2.4 Recent reviews of evidence

There are many excellent reviews of evidence on ASRH programming in L&MICs. Systematic reviews typically focus on a specific sub-topic, intervention type or set of outcomes. Those that include impact evaluation evidence and meet our other inclusion criteria are included in the EGM in this paper. Other reviews sometimes span the full scope of ASRH, often including a wide range of evidence and inputs.

In 2012, WHO published multiple guidelines on preventing adolescent pregnancy, highlighting key evidence and recommending research priorities (Chandra-Mouli *et al.* 2013a). A recent Lancet commission on adolescent health and wellbeing reviewed existing systematic reviews and provided an overview of the state of evidence in its report and appendices (Patton *et al.* 2016).

After our search and study coding were conducted, WHO published a supplement on multiple systematic reviews on ASRH (Kalamar *et al.* 2016a, Kalamar *et al.* 2016b, Hindin *et al.* 2016). Many other recent reviews provide an overview of a wide range of evidence for sub-topics and ASRH more broadly (for example, (Svanemyr *et al.* 2015, Darroch *et al.* 2016, Greene and Merrick, 2015).

This paper and the accompanying EGM report do not duplicate existing work. Instead, they specifically focus on studies that use methods to determine the attributable effects of ASRH interventions (impact evaluations and systematic reviews specifically for L&MICs). They also visually organise the evidence base to help stakeholders understand where there are evidence gaps and compare these gaps to the demand to determine where we most need more evidence.

3. Stakeholder survey on evidence needs

We designed an online survey to gather data from diverse ASRH stakeholders on perceptions of evidence availability, types of evidence used and needs for better and more evidence. There have been other efforts to gauge evidence needs and priorities on similar topics (Institute for Reproductive Health (2016) and a research priorities exercise by Hindin, Christiansen and Ferguson (2013). Our stakeholder survey is designed to help prioritise evidence gaps in the EGM, specifically to provide recommendations for investment in new impact evaluations and syntheses.

3.1 Survey methods

We uploaded the survey to SurveyMonkey and piloted it with the scoping project's advisory group (see Acknowledgements) and several ASRH experts who participated in 3ie consultative events. We incorporated their feedback and modified the survey accordingly.

We then used convenience sampling and sought to capture a broad range of expert stakeholders working on ASRH in various capacities. We disseminated the survey via several global health-related online distribution lists (such as hipnet) and 3ie social media outlets. We also asked colleagues within and outside 3ie working on ASRH to share the survey widely with their own networks. The questions were modelled around the EGM framework at the time. Small modifications were made to the framework after the survey was disseminated so some language in survey responses may differ from the language in the EGM.

3.2 Results

3.2.1 Respondent characteristics

The survey was open for two weeks and received a total of 96 responses, some with partial answers. All respondents were required to submit information about their work history and experience, including the type of organisation for which they work, their role, sector experience and geographic familiarity. We also asked respondents about their evidence uses and needs, work focus, knowledge about ASRH interventions and thoughts on future trends. We did not ask for personal information such as gender, income or educational background.

The survey asked questions to identify respondents' experience profile. An early question asked respondents for their institutional affiliation. The largest share of respondents work for a health-focused non-governmental organisation (NGO) (32 per cent) followed by a university or academic institution (25 per cent). Significantly fewer (less than 10 per cent) work at foundations, development NGOs (i.e. those not associated with a specific sector), youth-focused NGOs and consultancies or development contractors.

We also asked respondents about their specific ASRH experience and their role type within their organisations. More than 40 per cent have 10 or more than years of experience, followed by 25 per cent with 5–9 years' experience. The largest proportion of respondents hold mid-level manager positions (40 per cent). This is followed by director or senior leadership level (26 per cent), associate (14 per cent), professor, researcher or lecturer (11 per cent), and independent researcher or consultant (4 per cent).

The majority of respondents work on monitoring and evaluation (61 per cent) and/or programme design (68 per cent) and implementation (72 per cent), while a significant portion have research roles (41 per cent work on impact evaluation and 49 per cent on other research).

Figure 2: Types of evidence used in respondents' current work (select no more than two)

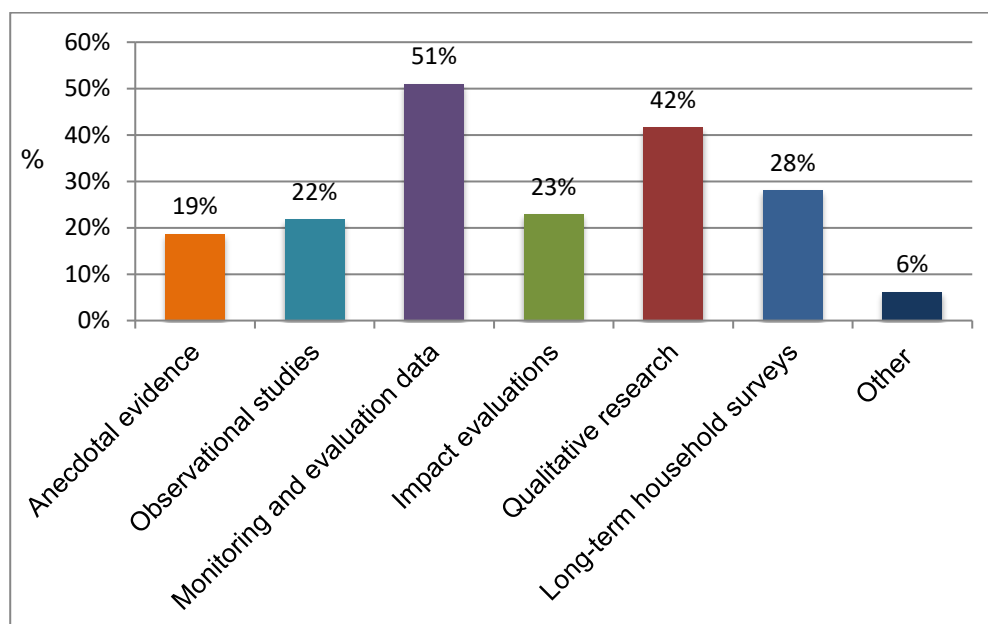


Figure 2 shows that respondents most often rely on monitoring and evaluation data in their current work, followed by qualitative research and large long-term household surveys (for example, Demographic and Health Surveys). Some respondents elaborated, saying that monitoring and evaluation data is the most frequently generated type of evidence that they use at work.

We designed the survey to capture other types of evidence that cannot be easily quantified but can still be a significant factor in informing ASRH programming, research and policy. By anecdotal evidence, we listed success stories as an example. Other examples include field visits, informal interviews and other casual observations.

We also asked questions to gauge respondents' level of awareness around the current evidence base on broad ASRH thematic areas and sub-populations of particular interest (Figures 6 and 7 below). These thematic areas, such as 'engaging men and boys' were derived from the most common areas identified in our literature search and review of current programming, and were not explicitly defined in the survey.

We defined a 'strong' state of evidence as knowing about the effectiveness of most ASRH programming in this area. 'Moderate' indicates knowing about the effectiveness of some programming, and 'weak' indicates that respondents know very little about the effectiveness of programming. In the survey, we defined 'knowing about the effectiveness of ASRH programming' as knowing what works and what doesn't.

As seen in Figure 3, the areas for which the most respondents felt the evidence base was weak were engaging men and boys (51% of respondents) and youth leadership

and participation (40%). That is, they do not think there is sufficient evidence to determine whether programming for these topics is effective. Conversely, many respondents (47% and 50%, respectively) feel there is a strong evidence base on the effectiveness of family planning or contraception, as well as HIV and AIDS and other STIs programming.

For sub-populations (Figure 4), respondents overwhelmingly feel that lesbian, gay, bisexual, transgender and questioning (LGBTQ) adolescents and very young adolescents (VYAs) are the top groups with a weak state of ASRH programming evidence (82% and 75%, respectively). Demand for evidence on VYAs is a recurring topic in the survey results, with a few respondents underscoring this in additional comments sections.

Figure 3: State of evidence for ASRH thematic programming areas

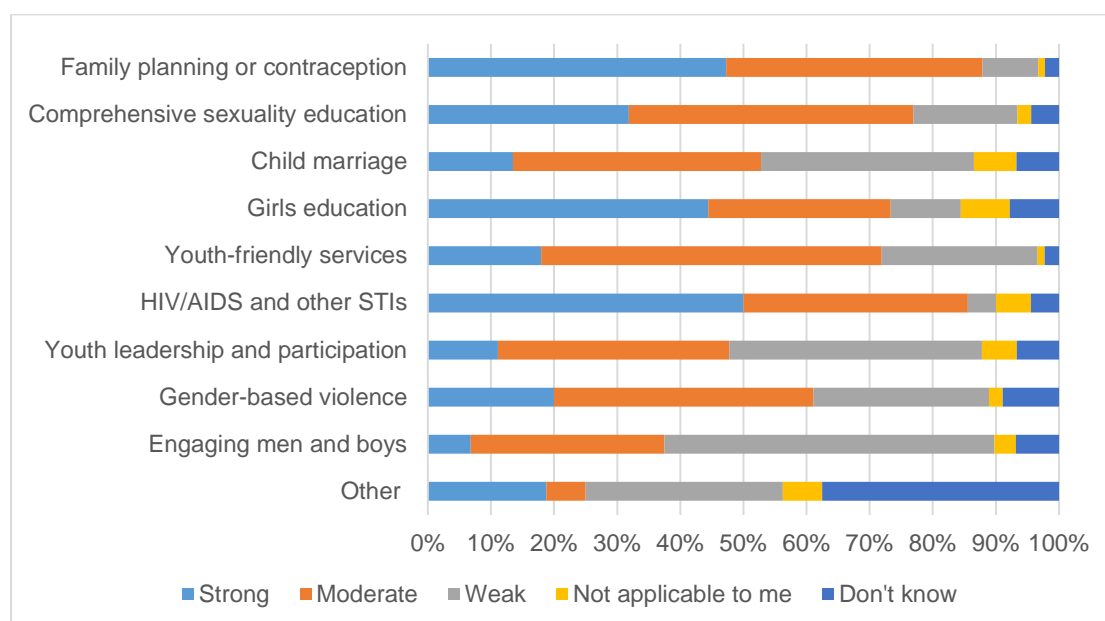
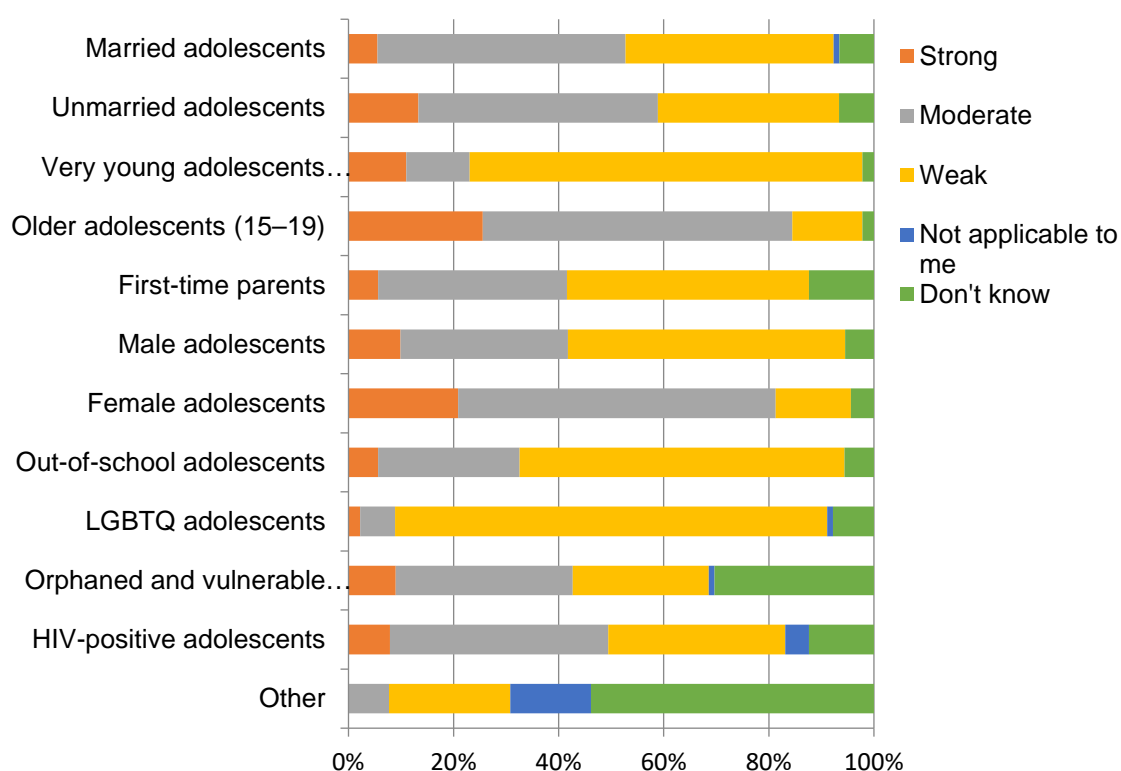


Figure 4: The state of evidence for adolescent sub-populations

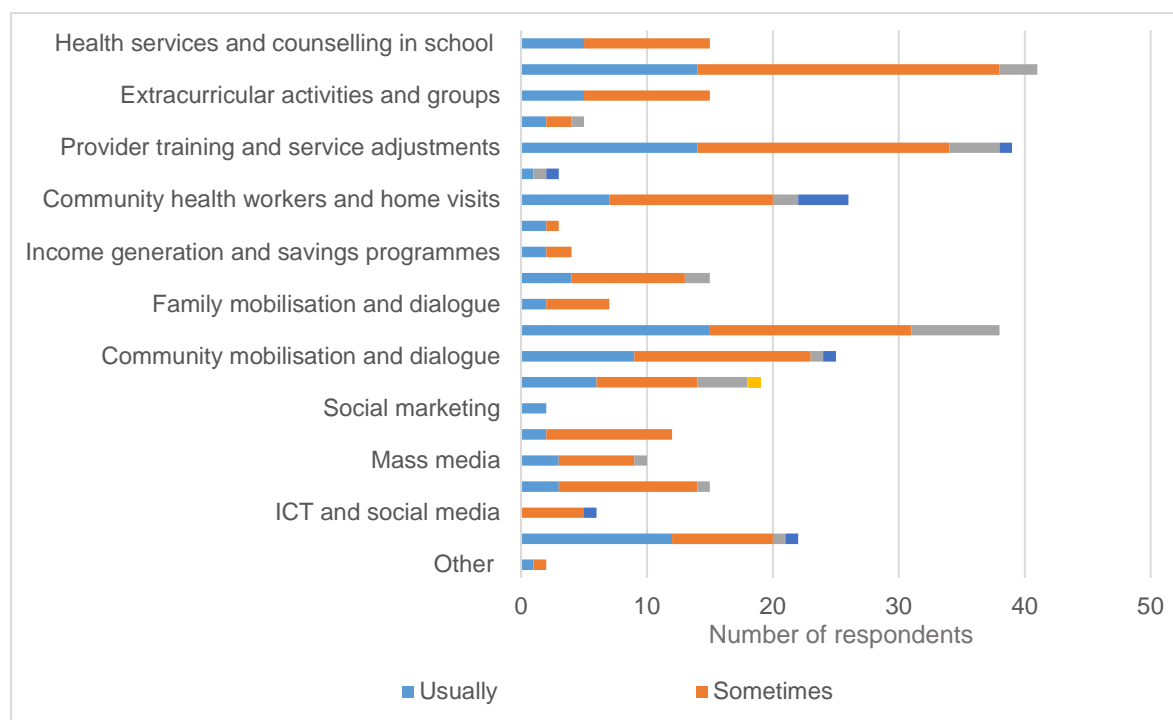


3.2.2 Intervention effectiveness and outcomes

The survey also asked a set of questions on the perception of the effectiveness of different types (or categories) of interventions. These questions were largely designed to reflect the types of ASRH interventions in a draft version of the EGM framework, which differs slightly from the final version in this report. Asking the questions in this way allows us to compare survey responses with the EGM results.

We asked respondents to select at least 1, and no more than 6, out of 16 intervention types with which they are most familiar, and then to answer a set of questions about them. Among 89 responses, most respondents say they the interventions they are most familiar with are curriculum and activities in school (47 per cent). This is followed by provider and training adjustments (45 per cent), and peer-to-peer approaches (45 per cent). The least selected categories include vouchers and subsidisation services (3 per cent) and social marketing (3 per cent).

Figure 5: Intervention effectiveness for achieving desired ASRH outcomes



The first follow-up question for these interventions asked whether they are effective for achieving desired ASRH outcomes. As Figure 5 shows, 32 respondents (about 92 per cent of those who selected this category) answer that interventions in curricula and activities in school are usually or sometimes effective.

For provider and training adjustments, 34 respondents (about 87 per cent who selected this category) say interventions in this category are usually or sometimes effective.

For peer-to-peer interventions, 31 respondents (about 81 per cent who answered for this category) also say they are usually or sometimes effective. However, peer-to-peer approaches also received the largest number of responses for which people said interventions are rarely effective (seven responses, or 18 per cent of those who answered for this category).

Some respondents add that effectiveness often depends on the scale of an intervention, the quality of its content and how it is delivered.

We asked respondents about the type of evidence respondents use to determine the effectiveness of their selected intervention types. We limited respondents to selecting the top two kinds of evidence they use.

‘Rather than looking at single interventions, an impact evaluation on a combined approach to several interventions... would be helpful. We know that any individual intervention cannot achieve [the] desired health outcomes on its own.’
Stakeholder survey respondent

Similar to the answers shown in Figure 2, the evidence respondents most often use to determine ASRH programming effectiveness is monitoring and evaluation data, in line with what respondents say they use most often in their work. As this type of data is typically available as a result of donor requirements and programme components, this response is not surprising. However, impact evaluation and qualitative data are the second and third most used forms of evidence in determining effectiveness, respectively, across all intervention categories.

3.2.3 Future evidence needs for policy and programming

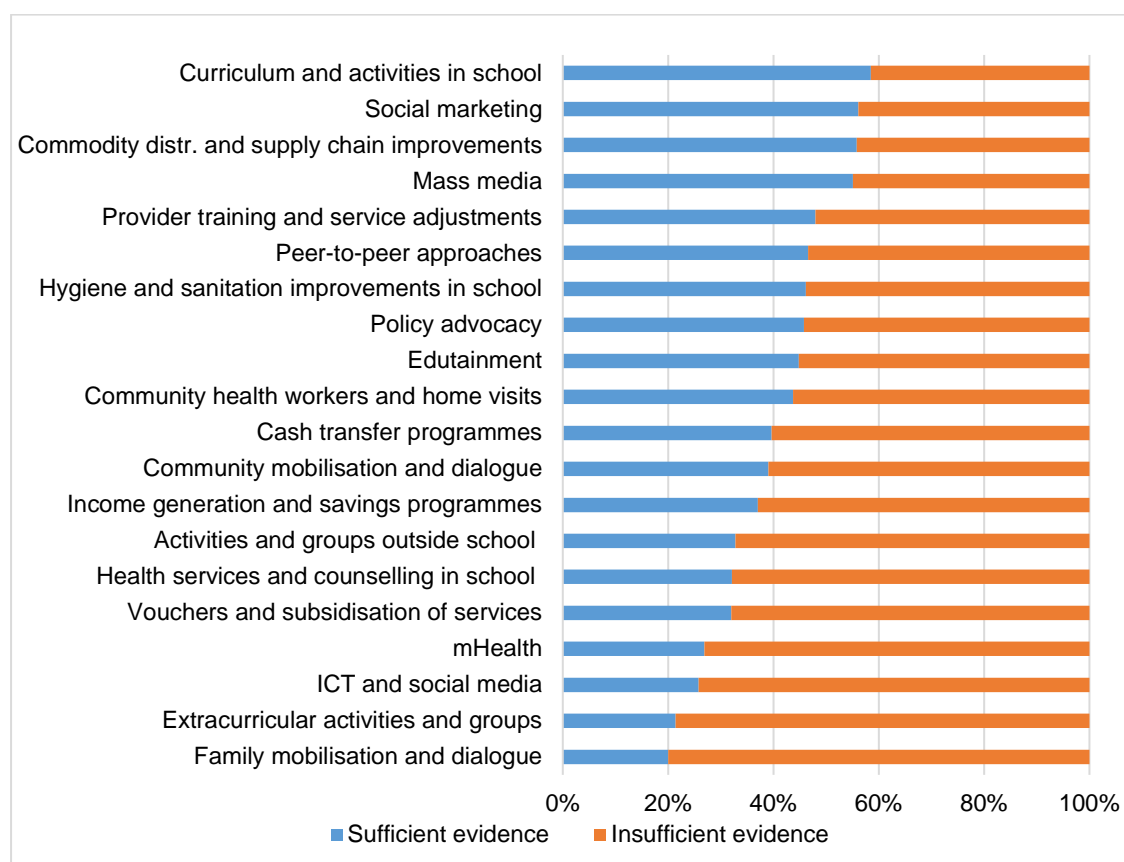
The last question pertaining to the set of interventions asked whether there is sufficient evidence to inform ASRH policy and programming (Figure 6). There were a total of 84 responses. Respondents could select 'sufficient', 'insufficient' or 'don't know' for all of the 16 categories. For the purposes of this analysis, we excluded 'don't know' responses to better compare the differences between respondents who feel confident in their knowledge of the evidence base and those who do not.

An average of 60 respondents believe there is either sufficient or insufficient evidence to inform ASRH programming. The top three areas identified as having insufficient evidence are family mobilisation and dialogue (80%), extracurricular activities and groups (79%) and other ICT and social media (74%).

The top four categories deemed by respondents to have sufficient evidence are curricula and activities in school (58%), social marketing (56%), community distribution and supply chain improvements (56%), and mass media (55%). These are the only categories with more than 50% of those providing an assessment saying the evidence is sufficient (no category received more than 60%).

A few respondents chose to expand on their selection. Some point out that while specific interventions in certain categories (such as peer-to-peer approaches) may have sufficient evidence to determine their effectiveness, other interventions in that category may not. Other respondents add that while they may select 'sufficient' evidence for some categories, there is always a need for more research in every category. This is particularly the case for specific sub-populations of adolescents – such as VYAs – for which less evidence is available.

Figure 6: Evidence availability for intervention types to inform ASRH programming and policy



3.2.4 Future trends

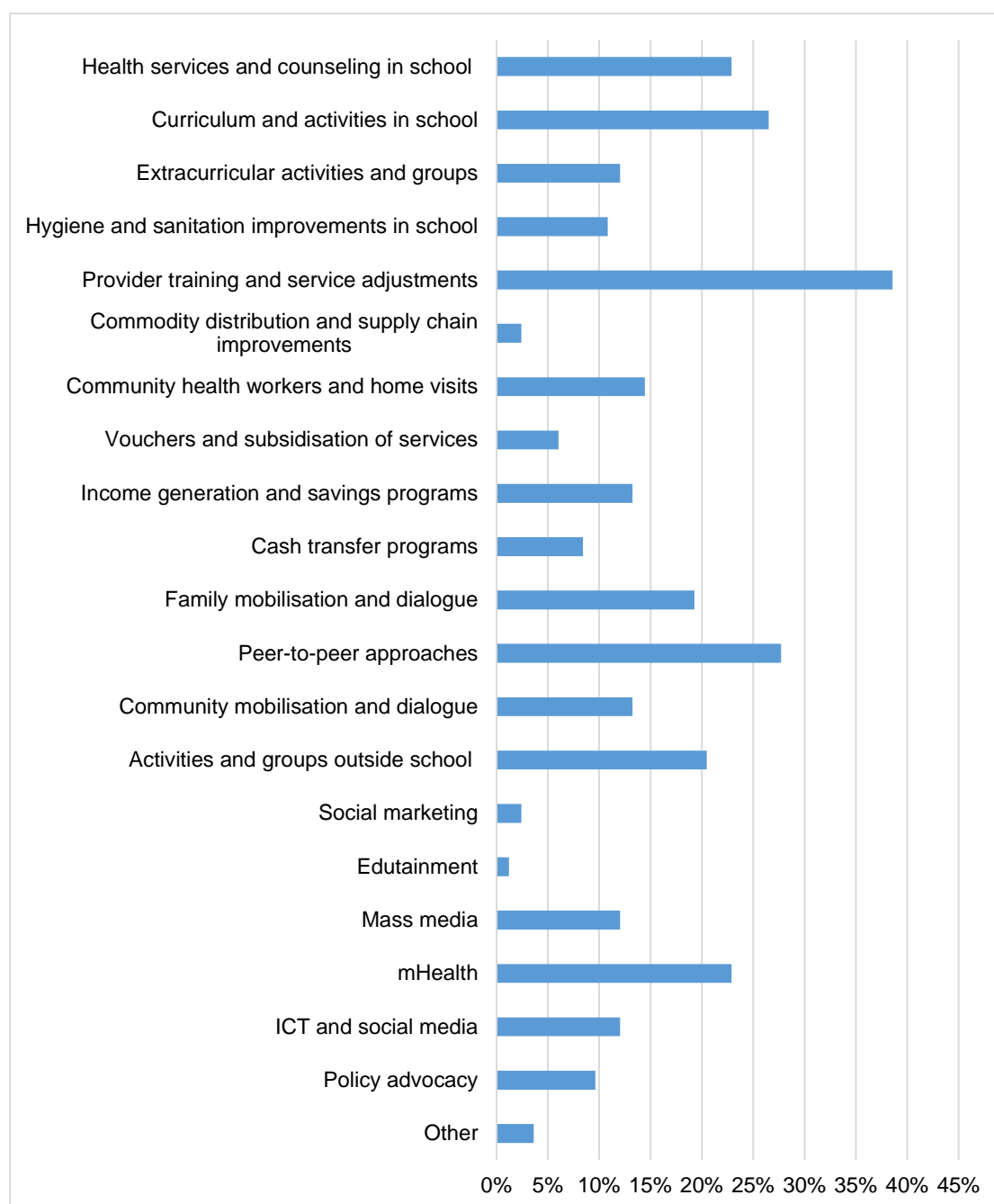
The final set of questions asked respondents to think about future trends in ASRH research and programming. These questions were designed to prompt respondents to suggest which intervention types may become more (or less) prevalent in the future (regardless of whether they agree), and where they think priorities should lie for new impact evaluations. There were 83 responses in this section.

‘By going beyond traditional programming, it’d really be beneficial to assess how new technologies (ICT and social media) are influencing adolescents’ behaviours.’
Stakeholder survey respondent

Figure 7 shows that the top three interventions that respondents would prioritise for new impact evaluations were provider training and service adjustments (39%), peer-to-peer approaches (28%), and curricula and activities in schools (27%). Evidence on health services and counselling in school and mHealth were also mentioned frequently (by 23 per cent of respondents to this question).

This interest in new evidence contrasts with the large number of respondent who feel there is already sufficient evidence on these intervention categories, especially for curricula and activities in schools, although less so for mHealth.

Figure 7: Three priority intervention types for new impact evaluation funding



Next, we asked respondents about trends in intervention types in programming to begin to assess priorities for future impact evaluation investment. Figure 8 shows that respondents anticipate seeing fewer peer-to-peer approaches (30%), followed by extracurricular activities and groups (28%), and hygiene and sanitation improvements in schools (25%). Interventions that respondents think they will see more often in programming (Figure 9) include mHealth (45%), provider training and service adjustments (32%), and curricula and school activities (31%).

Interestingly, many respondents believe mHealth is an intervention type we will mostly likely see more in future yet 73 per cent of respondents say there is insufficient evidence to determine its effectiveness in ASRH programmes (Figure 6).

Figure 8: Respondents' selection of three intervention types that will be used less often for future ASRH programming

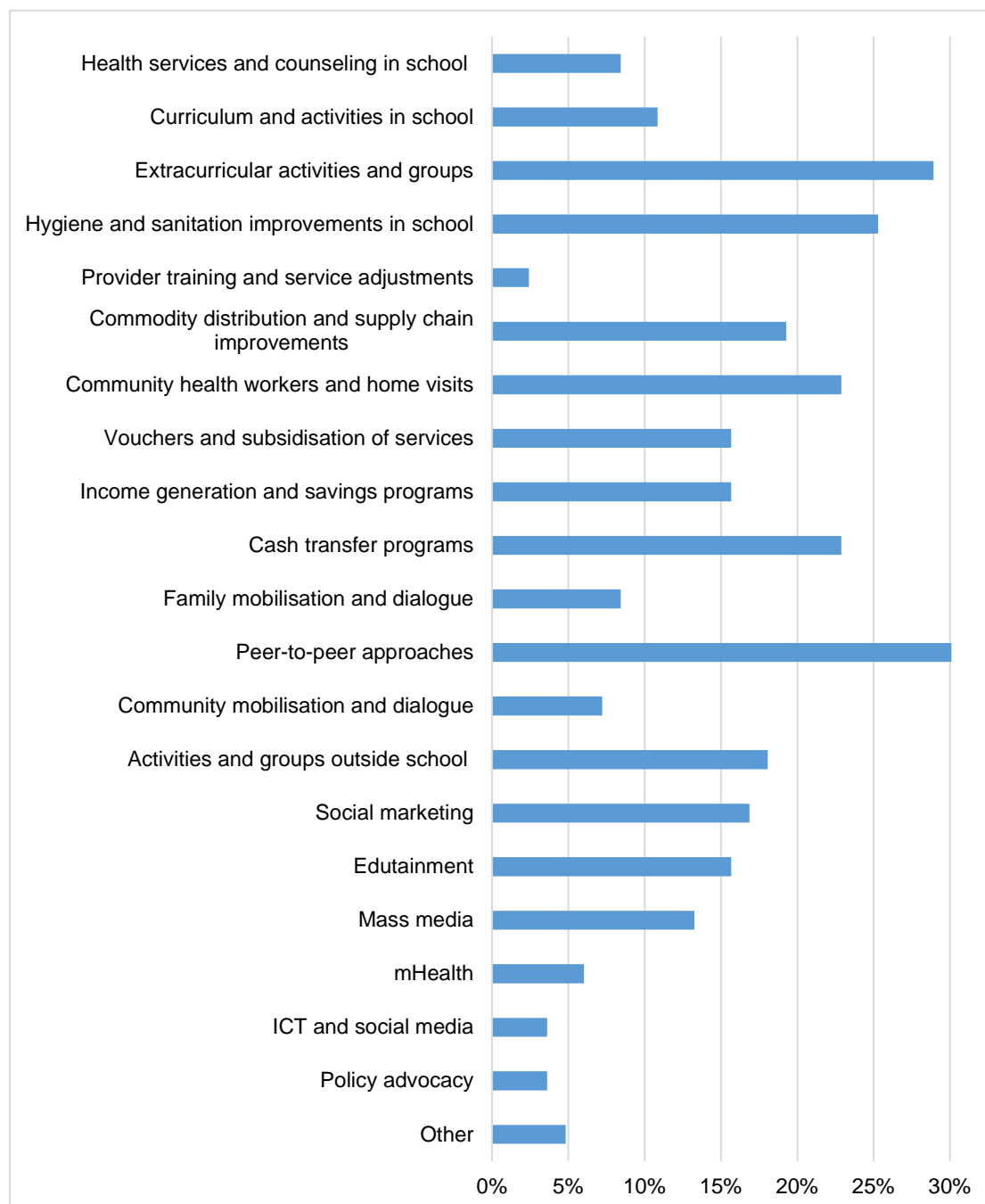
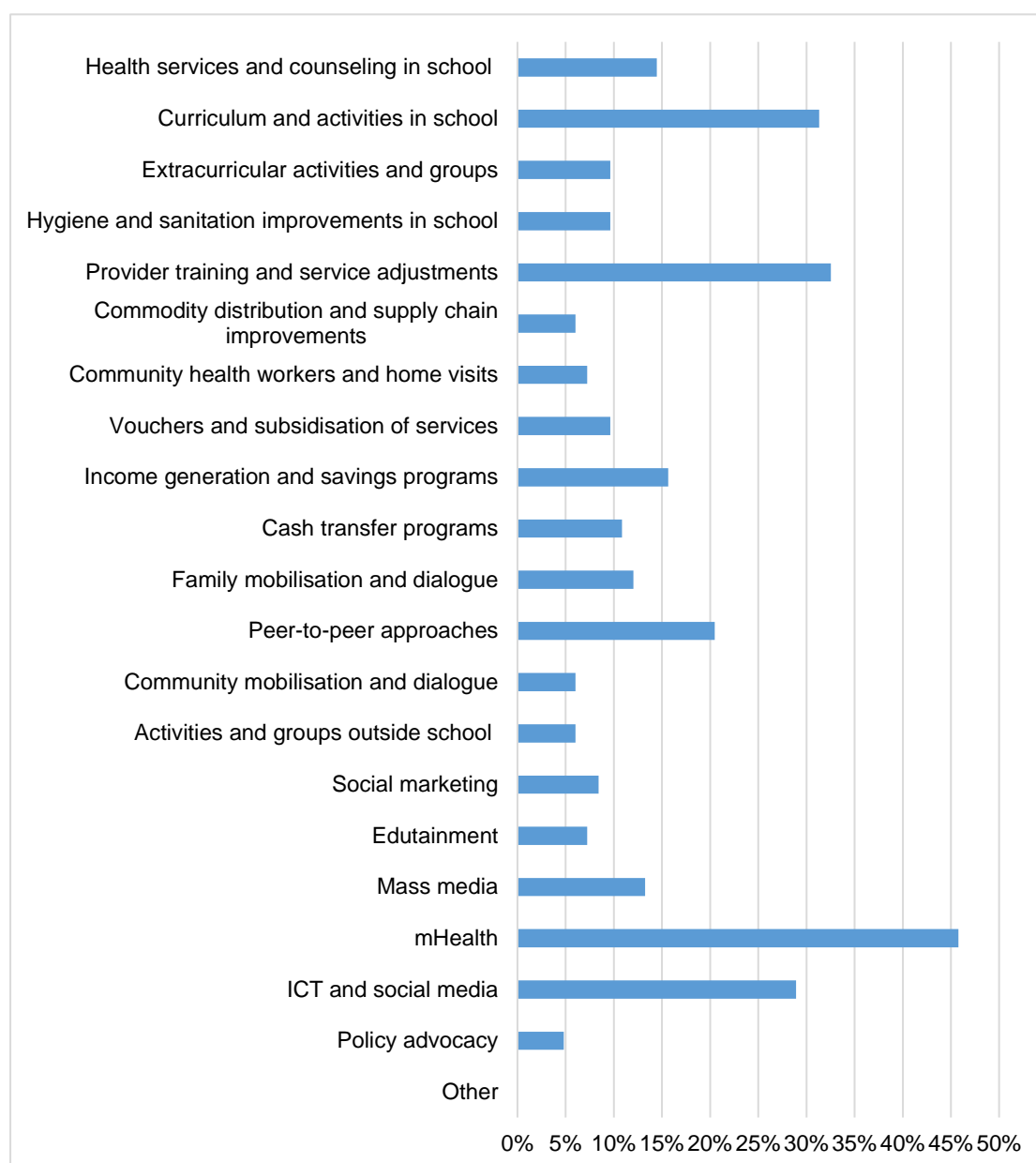


Figure 9: Respondents' selection of three intervention types that will be used more often for future ASRH programming



3.2.5 Conclusions from stakeholder survey results

While respondents are generally pessimistic about the effectiveness of peer-to-peer approaches, there is a strong demand for more evidence in this category. Respondents are divided on whether there will be more or less of this intervention type in the future. There is a significant level of interest in more evidence on mHealth, other ICT and social media (respondents believe current evidence on them is insufficient), and a strong perception that these interventions will continue to be in demand.

We discuss the supply of evidence in these categories and how they compare to the survey later in this report. Among respondents providing additional comments, one recurring theme is an interest in more evidence on VYAs, which is supported by the results presented in Figure 3. Lastly, while some respondents describe impact evaluation as the ‘best’ and ‘most scientific’ type of evidence, many believe there is a lack of funding and resources to conduct more of this kind of rigorous research.

4. Adolescent sexual and reproductive health evidence gap map

4.1 3ie evidence gap maps

3ie evidence gap maps (EGMs) are collections of information about impact evaluations and systematic reviews across a broad development sector, sub-sector or theme that measure the effects of international development policies and programmes. EGMs present a visual overview of existing and ongoing impact evaluations and systematic reviews in terms of the types of programmes (or interventions) evaluated and the outcomes measured. The maps include hyperlinks to summaries of many included studies.

3ie EGMs have several main objectives:

- To establish where we have evidence about what is known and unknown about the effects of interventions in a thematic area;
- To support evidence-informed decisions by making evidence from existing systematic reviews and impact evaluations available in a user-friendly format; and
- To be a tool for research prioritisation and strategic research commissioning, by quickly identifying existing evidence gaps and opportunities for new evidence synthesis.

The 3ie EGM approach draws on the principles and methodologies from existing evidence mapping and synthesis products (Snilstveit *et al.* 2013). A key feature is the framework of interventions and outcomes based on a review of the literature and consultation with stakeholders. The framework is designed to capture all important interventions and outcomes in a given sector or sub-sector. The rows of the framework represent the key interventions in a particular sector or theme, and the columns cover the most relevant outcomes, structured along the causal chain from intermediate outcomes to final outcomes, and cost-effectiveness.

4.2 EGM methodology

3ie’s 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 its framework. We developed the ASRH EGM framework based on background research and three consultative workshops attended by a wide array of experts working on ASRH (listed in Appendix A). 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, then further revised the framework slightly in response to feedback from the 3ie roundtable. These final changes included deleting an extraneous outcome category and improved labelling and ordering of the interventions and outcomes.

We tested a comprehensive search strategy in March and April 2016 in a wide range of academic databases, online databases and relevant websites. Using a comprehensive screening protocol, a team screened studies at the title, abstract and full text levels. A different person screened each study at each level; all studies were screened twice at the full text level.

Next, we coded all studies for a wide array of information and populated the EGM accordingly. A second researcher verified the coding of each study. No duplications of evidence are presented in the EGM. When multiple studies measured effects from the same programme, we coded only unique occurrences of evidence. If we found that a second study measured, say, three of the four outcomes of another study (for the same population, location and timeframe), we only coded 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, 2014) measure the same outcomes for a school-based HIV risk-reduction intervention in South Africa but at different time periods (12 and 54 months post-intervention, respectively).

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) checklist⁴ 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.⁵

We also conducted backwards and forwards snowballing, where we screened the references of all included studies and checked the online curricula vitae and websites of authors of included studies. For further details and documentation from our search, screening and coding process, see the EGM report that accompanies this paper (Rankin *et al.* 2016).

4.2.1 Inclusion criteria

We included studies that evaluated the effectiveness of ASRH programming in L&MICs using impact evaluation methodologies defined in section 4.2.2 and systematic reviews that primarily included impact evaluations in L&MICs addressing an ASRH research question.

⁴ See 3ie's systematic review assessment tool at <http://www.3ieimpact.org/en/evidence/systematic-reviews/>

⁵ For reference, the systematic reviews given a low-confidence rating are included in the references at the end of this paper.

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	Family planning Healthy timing and spacing of pregnancy Abortion HIV and AIDS and other STIs Intimate partner violence and sexual violence Menstruation and feminine hygiene Voluntary medical male circumcision Female genital mutilation Rights, norms and empowerment associated with the above topics 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>
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 <i>do not</i> 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.

4.2.2 Methodologies

This EGM includes impact evaluations and systematic reviews of effects. An impact evaluation is a study that measures a net outcome attributable to an intervention, using experimental or quasi-experimental designs to establish a counterfactual--what would have happened to the same group in the absence of the programme. Impact evaluations may also test different programme designs. We included as impact evaluations the study designs and analysis criteria outlined below:

- a) Randomised controlled trial (RCT)
- b) Regression discontinuity design (RDD)
- c) Controlled before and after study using appropriate methods to control for selection bias and confounding factors, such as, propensity score matching (PSM) or other matching methods; instrumental variables (IV) estimation (or other methods using an IV such as the Heckman Two Step approach); and 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.
- d) Cross-sectional or panel studies with an intervention and comparison group, using methods to control for selection bias and confounding as described above.

We excluded studies that use simulation or forecast models to estimate business as usual versus future scenarios based upon different reference levels. We also excluded non-comparative studies, observational studies with no control, theoretical studies, editorials and commentaries.

In terms of systematic reviews, we included studies that are explicitly described as systematic reviews and reviews that describe methods used for search, data collection and synthesis as per the protocol for 3ie's database of systematic reviews. We excluded literature reviews, which do not describe methods used for search, data collection and synthesis, and systematic reviews of efficacy trials (trials undertaken in clinical or laboratory settings).

4.2.3 Interventions

Table 2 presents the intervention categories, the corresponding code in the EGM and a brief description. The broader grouping of categories (denoted in blue) 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.

4.2.4 Outcomes

Table 3 lists the outcome categories that form the columns of the ASRH EGM, along with their corresponding code and a brief description. The broader grouping of categories (denoted in blue) 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).

4.2.5 Cross-cutting themes and sub-populations

It is important to understand how the evidence base on ASRH programming is answering a wide range of questions such as what works for a particular sub-group or the costs and cost-effectiveness of an intervention. Without answering these questions, we are less able to understand how best to use evidence when designing and implementing new programmes. Consequently, we also coded information for cross-cutting themes and sub-populations.

In the interests of space, the EGM is presented in two figures in this paper. Figure 11 presents the main map and Figure 12 illustrates the cross-cutting themes. We include the latter columns to help users understand the size of the evidence base related to the most commonly mentioned areas and find the relevant studies. The first column notes the studies that include data on cost or cost-effectiveness, even if they do not include a formal cost-effectiveness analysis.

The remaining cross-cutting themes represent adolescent sub-populations. We extracted data to understand the extent to which existing studies seek to understand effects for specific groups of adolescents. These sub-populations all have different needs, contexts and levels of access to services. They may also have different levels of access to programme benefits. On 3ie's online platform, users can filter the EGM by sub-population using the population filter.

We looked to see if studies provided effects of the evaluated interventions on particular sub-populations. This could mean that an entire study was focused on this sub-population or that the authors disaggregated results and provided separate effect sizes for that particular group. We looked for the following sub-populations and distinguishing factors:

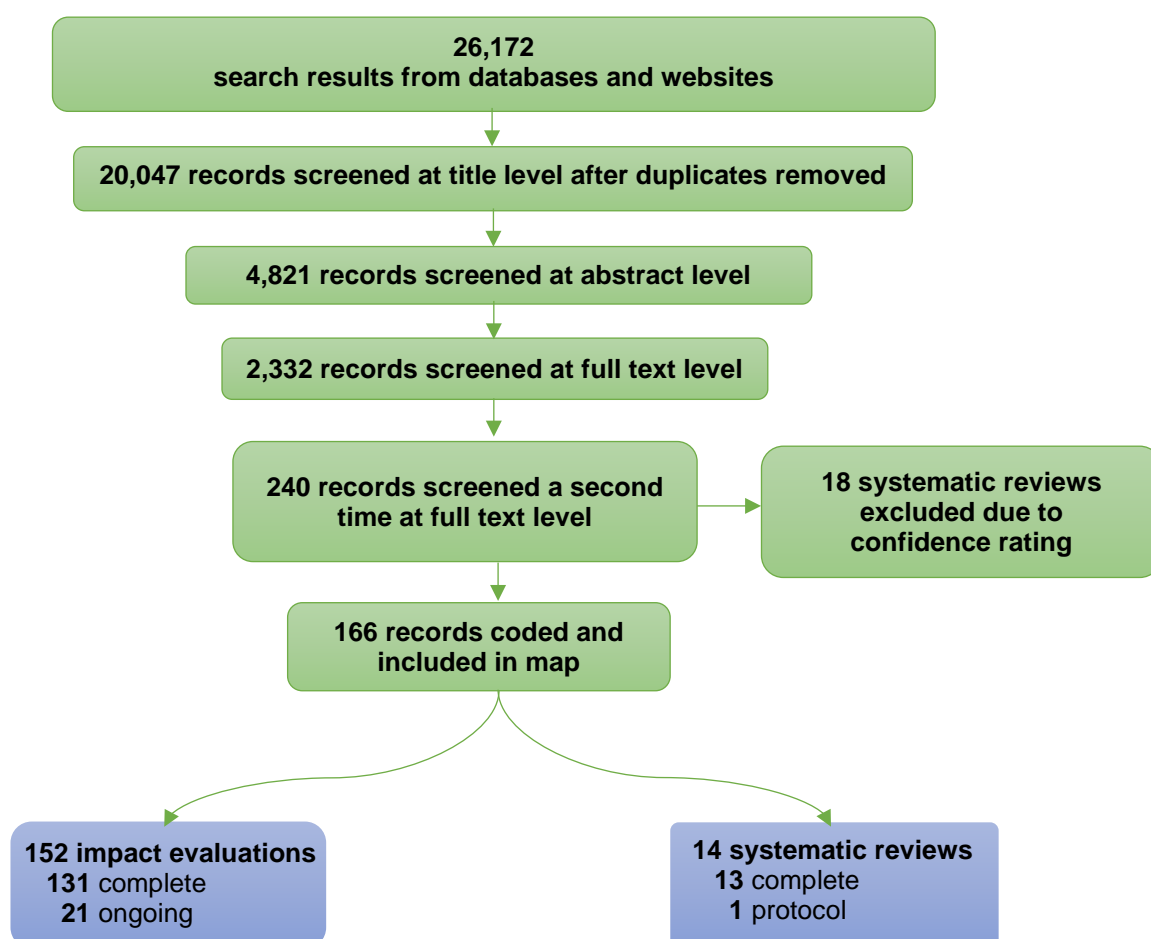
- Adolescent girls
- Adolescent boys
- Rural setting
- Urban setting
- Married adolescents
- Unmarried adolescents
- VYAs aged 10–14 years
- Adolescents identifying as LGBTQ
- Out-of-school adolescents
- Adolescent sex workers
- Adolescent first-time parents
- Adolescents with disabilities
- Disaggregation by socio-economic status
- Other marginalised adolescent populations including ethnic minorities, indigenous populations, adolescent boys who have sex with men, refugees, migrant adolescents and trafficked adolescents

4.3 Results

We accepted 48 systematic reviews at the first round of full text screening. We then screened these reviews again for inclusion and excluded 17 reviews either for not meeting the definition of a systematic review or for their topic or population of interest. Appraising the methodology used in the systematic reviews, we assigned 18 studies a low confidence in their findings, rated 13 medium confidence and none high confidence.

The primary reasons for low confidence ratings were the exclusion of grey literature and the failure to address a risk of bias. We excluded studies with a low confidence rating, which are listed in the references. We gave the remaining 13 reviews a medium confidence rating and included them in our analysis.

Figure 10: Search results and screening process



We present a picture of the impact evaluation EGM as Figure 11, showing the number of studies that provide evidence for each cell.⁶ Darker cells represent those with more evidence. The map only shows where there is evidence, not what the evidence says, so it is incorrect to interpret a dark cell as meaning that there is a lot of evidence supporting a positive impact of an intervention on an outcome. The evidence may show negative or null effects, or be inconclusive. However, a dark cell does mean that there is a deeper evidence base for the effect of that intervention on that outcome.

When all of the studies are populated into the EGM, they produce 1,524 occurrences of evidence (an occurrence is each cell in which a study appears).

For example, consider a study of a programme that includes a cash transfer element and a sexual health course at school, which estimates programme effects of both components (separately or together) on outcomes measured with indicators in three different categories. This study will appear in six different EGM cells as it reports six different types of evidence (there should be at least one distinct outcome indicator for each outcome category listed).

However, if a programme has multiple components that cannot be isolated for evaluation, one piece of evidence (the effect of the programme on a particular indicator) will appear for each intervention type.

The large number of occurrences relative to the number of included studies reflects two key points. Firstly, many programmes comprise different types of interventions, and secondly many impact evaluations measure programme impact on multiple types of outcomes. For example, a study by Baird, McIntosh and Özler (2015) evaluating the impact of a cash transfer programme in Malawi measures effects falling into 10 different EGM outcome categories.

⁶ The workbook and online presentations of the EGM show the short titles, author, year of publication and country for each study in each cell. In addition, those presentations include hyperlinks for each study to the 3ie Impact Evaluation Repository, which provides bibliographic information and a link to the original source. These resources are available at: <http://www.3ieimpact.org/en/publications/3ie-evidence-gap-map-report-series/3ie-evidence-gap-map-report-4/>

Figure 11: ASRH outcomes EGM (not including cross-cutting columns or sub-populations)

			Adolescent knowledge, attitudes and empowerment		Adolescent behaviours				Adolescent health					Health services		Enabling environment					
Outcome categories →			KB1	KB2	AB1	AB2	AB3	AB4	AH1	AH2	AH3	AH4	AH5	HS1	HS2	EE1	EE2	EE3	EE4	EE5	EE6
Intervention categories ↓			Knowledge and awareness	Attitudes, self-efficacy and normative change	Sexual behaviour	Contraception and other prevention	Menstrual hygiene	Communication and support seeking	Pregnancy and births	Abortion	HIV/STI testing and incidence	Sexual and intimate partner violence	Other health outcomes	Accessing and utilising services	Providers and service quality	Education	Livelihoods	Marital status	Parents and family	Community and CBOs	Laws and policy
Health systems	HS1	Provider training and youth-friendly service adjustments	10	9	8	9		3	4	1	5			6	2			1		1	
	HS2	Commodity distribution and supply chain improvements	4	3	5	4		3	4		3	1		4		2	1	2			1
	HS3	Community health workers and home visits		2	3	1			1		1					3		1			
Financial incentives and livelihoods	FS1	Vouchers and subsidies	1	3	3				5		2		1			6	2	4			
	FS2	Income generation and savings programmes	8	12	4	7	1	6	5		4	5	3	3		8	12	6	2	1	
	FS3	Cash transfer programmes	1	4	9	9			13		3		2	2		9	4	9	2		
Schools and community-based education	SC1	Sexual health education and other instruction at school	37	42	29	24	2	8	6		5	1	3	4	1	3		1	1		
	SC2	Courses and other instruction outside of school	18	18	15	18	1	6	8	1	9	6	3	2	1	7	9	4	3		
Education systems	ES1	Health services and counselling in school																			
	ES2	Hygiene and sanitation improvements in school																			
	ES3	Teacher training	3	5	4	4		3	2		1		1			1		1			
Community and interpersonal	C11	Social groups and clubs	6	6	1	5	1	2	3		2	2	1	3		5	5	3	2		
	C12	Drama and music	4	4	3	3		2			4	2					2				
	C13	Peer education and mentorship	15	17	12	13		3	4	1	5	1	1	6	2	2	2	1	1	1	
	C14	Family mobilisation and dialogue	6	6	5	1		7	1	1	1		1	1	1	1			9		
	C15	Community mobilisation and dialogue	13	14	10	10	1	7	6	1	4	1		6	2	3	3	3	3	3	1
Societal and institutional	SI1	Policy advocacy	2	2	3	3															
	SI2	Policies and laws							4							2		2			
	SI3	Mass media	3	3	4	3		2						1							
	SI4	mHealth and ICT	5	3	4	3		2	1		1			1							

Figure 12: EGM cross-cutting themes

			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	1
	HS3	Community health workers and home visits	1	2	1	1	1	1
Financial incentives and livelihoods	FS1	Vouchers and subsidies	1	4	1	3	4	4
	FS2	Income generation and savings programmes	2	11	4		12	5
	FS3	Cash transfer programmes	3	16	6	1	7	6
School- and community-based education	SC1	Sexual health education and other instruction at school	3	28	2	9	17	3
	SC2	Courses and other instruction outside of school	3	19	8	1	14	6
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	CI1	Social groups and clubs	2	8	1	1	5	3
	CI2	Drama and music		3	1		1	
	CI3	Peer education and mentorship	2	12	3	3	10	4
	CI4	Family mobilisation and dialogue	1	4	1	5	6	1
	CI5	Community mobilisation and dialogue	2	14	4	3	11	4
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	

5. Features of the impact evaluation evidence base

In this section, we present our analysis of the impact evaluation evidence base for ASRH programming in L&MICs, first for 131 completed impact evaluations. We look at overall trends and some features of the programmes evaluated. We then discuss the impact evaluations that are ongoing and note possible emerging trends.

5.1 Impact evaluations in the evidence base

5.1.1 Evidence by intervention category

Figure 12 displays the volume of the evidence base by intervention category and broader grouping. 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 a school. A wide variety of approaches fall into this category but the primary theory of change is 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.

Most of the approaches in this category have a topical focus on HIV prevention. Atwood *et al.* (2012b), for example, evaluates an HIV-prevention curriculum called Making Proud Choices. This curriculum is designed to improve adolescent attitudes, self-efficacy and skills around condom use. Other programmes, such as the *Comprendiendo nuestra sexualidad* (Understanding our sexuality) programme in Peru evaluated by Cáceres *et al.* (1994), are designed for general sex education.

We did not find any impact evaluations in L&MICs measuring the effects of a curriculum covering all elements of comprehensive sexuality education, as defined by the International Planned Parenthood Federation (IPPF) (Braeken and Cardinal, 2008). Curricula described with specific approaches include 'responsible sexuality education' and 'abstinence-oriented sex education' (Martiniuk *et al.* 2003, Thato *et al.* 2008). Overall, many studies poorly described the curriculum being evaluated, often providing only cursory lists of topics covered.

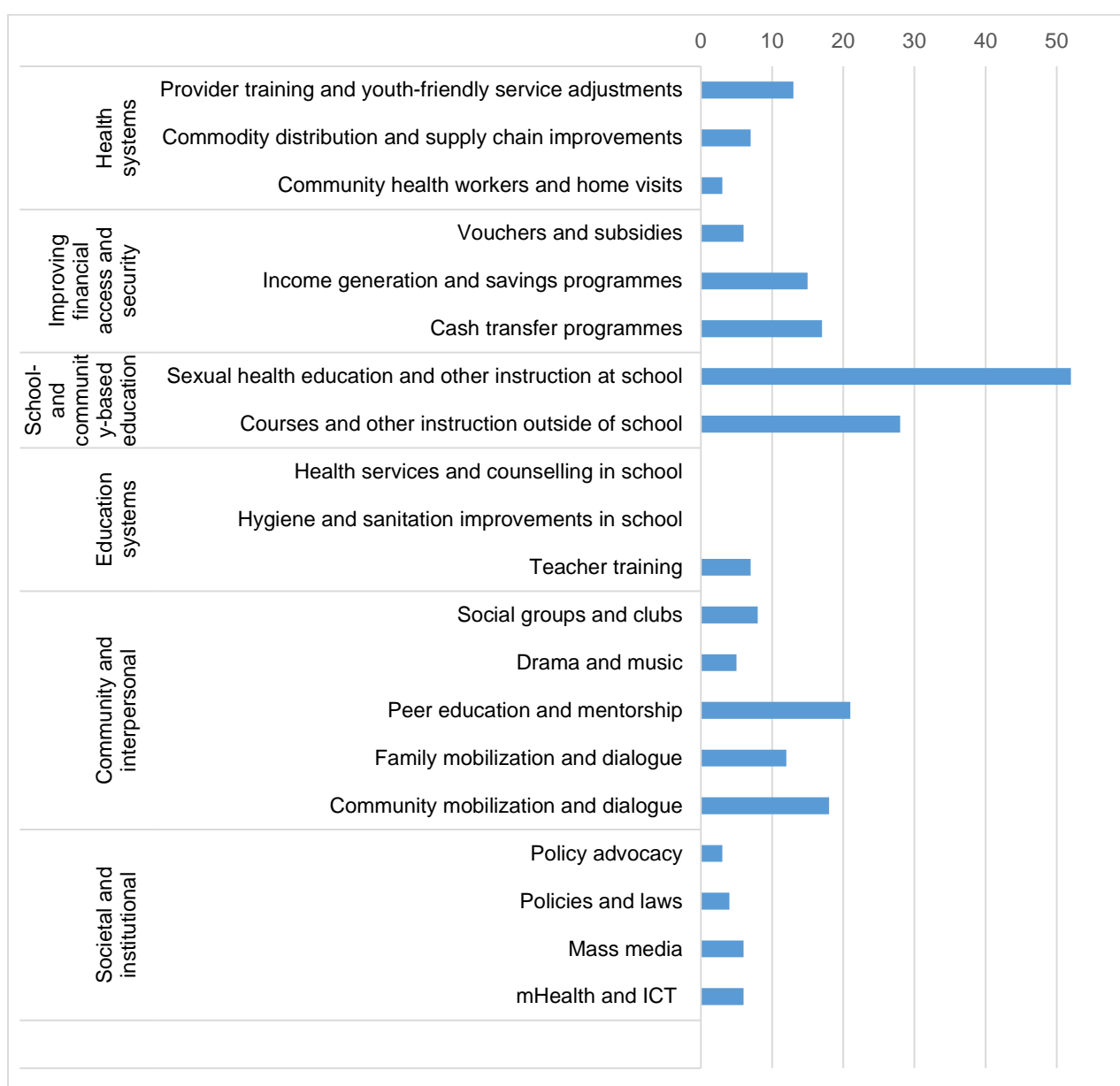
The intervention category with the second largest evidence base also takes an instructional approach but outside the classroom. Again, the common mechanism among these studies is structured instruction and/or facilitation aiming to change adolescent knowledge, attitudes and ultimately behaviours. Adolescents in these types of programmes met after school and at weekends in places like the homes of group leaders ((Kaljee *et al.* 2005); (Acharya *et al.* 2009)).

The intervention category with the third largest amount of evidence is peer education and mentorship. This peer-to-peer category was evenly split in terms of the primary activity. In nine of the evaluated programmes, the peer served primarily to educate, while in nine others the peer acted to mentor adolescents around choices and behaviours connected to SRH and other topics. No study was coded just as peer education and mentorship; the evaluated programmes always included at least one other intervention, often instruction at, or outside, a 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 category only includes activities specifically targeting SRH-related issues within schools. The category for sanitation was intended to represent physical improvements only, such as installing new toilets. We coded feminine hygiene interventions that focused on education and commodity distribution elsewhere.

In addition, there is a dearth of evidence around the use of community health workers and home visits specifically for adolescents, and on the use of vouchers and subsidies to affect ASRH outcomes.

Figure 13: Number of studies by intervention category



Note: The intervention categories have been ordered as it appears in the EGM

5.1.2 Evidence by outcome category

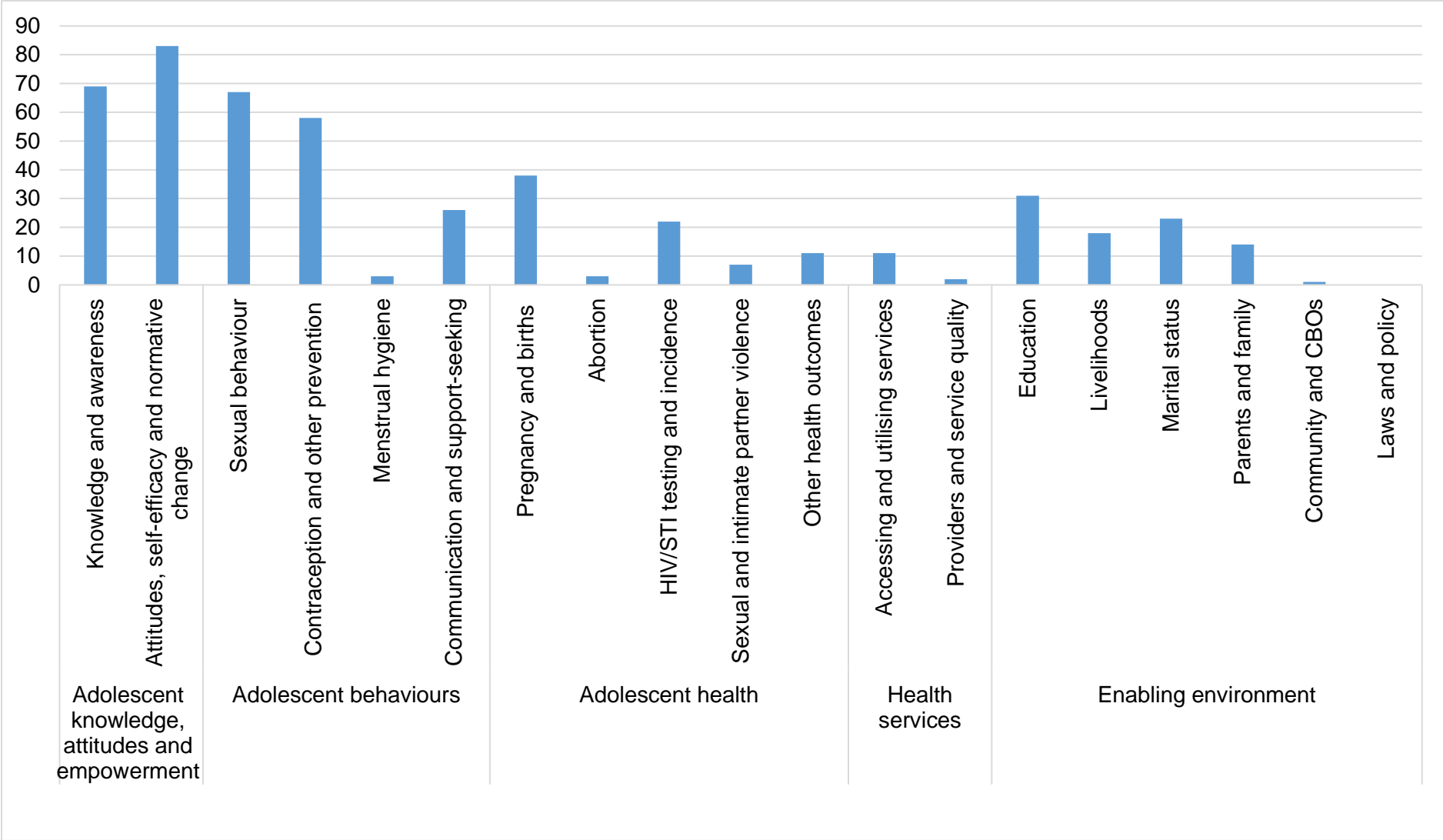
Figure 14 shows the volume of evidence by outcome category, as grouped in the EGM. The outcome category with the most evidence is attitudes, self-efficacy and normative change (KB2). Indicators falling into this category include opinions and beliefs on condom use, attitudes towards sexual conduct and gender empowerment indices. This category also includes skills such as leadership and decision-making and proxy measures of future behaviour change.

For example, Halfors *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. Of the 82 studies falling into this KB2 category, eight studies measured normative change. The social norms in question were primarily around sex, condom use and gender (for example, (Mathews *et al.* 2012; Pulerwitz *et al.* 2015; Austrian and Muthengi, 2014).

Following KB2 are knowledge and awareness (KB1) and sexual behaviour (AB1). Knowledge and awareness indicators include knowledge of contraception methods, HIV transmission and prevention, the legal age of marriage and the proximity of healthcare centres and providers. Sexual behaviour includes condom use, number of partners, frequency of sex and age of sexual debut.

Within broader outcome groups, the most common types of outcomes measured fall into adolescent knowledge, attitudes, empowerment and behaviours. These indicators are self-reported, covering retrospective, current and prospective measures. Many indicators are single questions while other studies use an index of questions, for example, a gender empowerment index, decision-making index or HIV and AIDS knowledge index (Bandiera *et al.* 2012; Sieverding and Elbadawy, 2016; Chhabra *et al.* 2010).

Figure 14: Number of impact evaluations by outcome category



5.1.3 Geographic characteristics of the evidence base

Figure 14 shows that the majority of evidence on ASRH programmes in L&MICs (82 studies) comes from Sub-Saharan Africa. Twenty-two studies are based in Latin America and the Caribbean, while only three are from the Middle East and North Africa, and two are from Eastern Europe and Central Asia. The profusion of evidence from Sub-Saharan Africa is most likely a result of the heavy influence of HIV funding and the large number of studies with an HIV prevention focus.

Figure 15: Number of impact evaluations by region

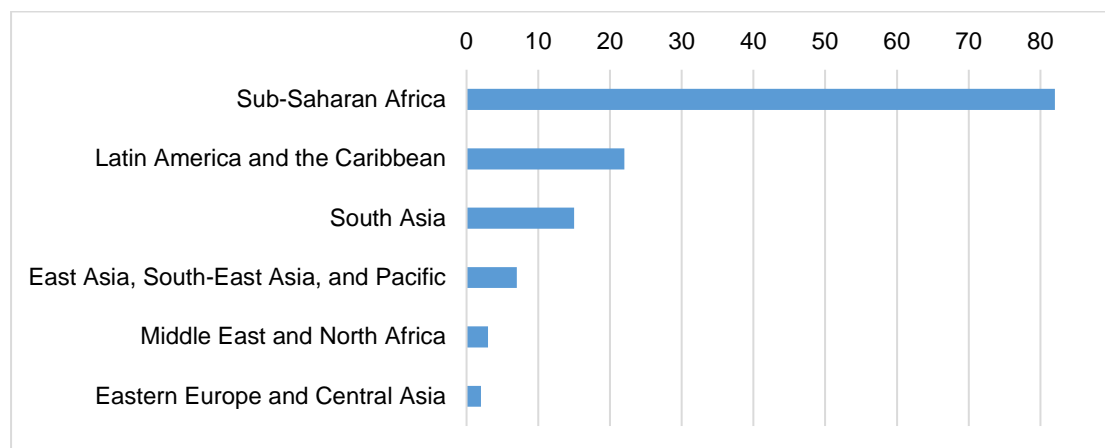
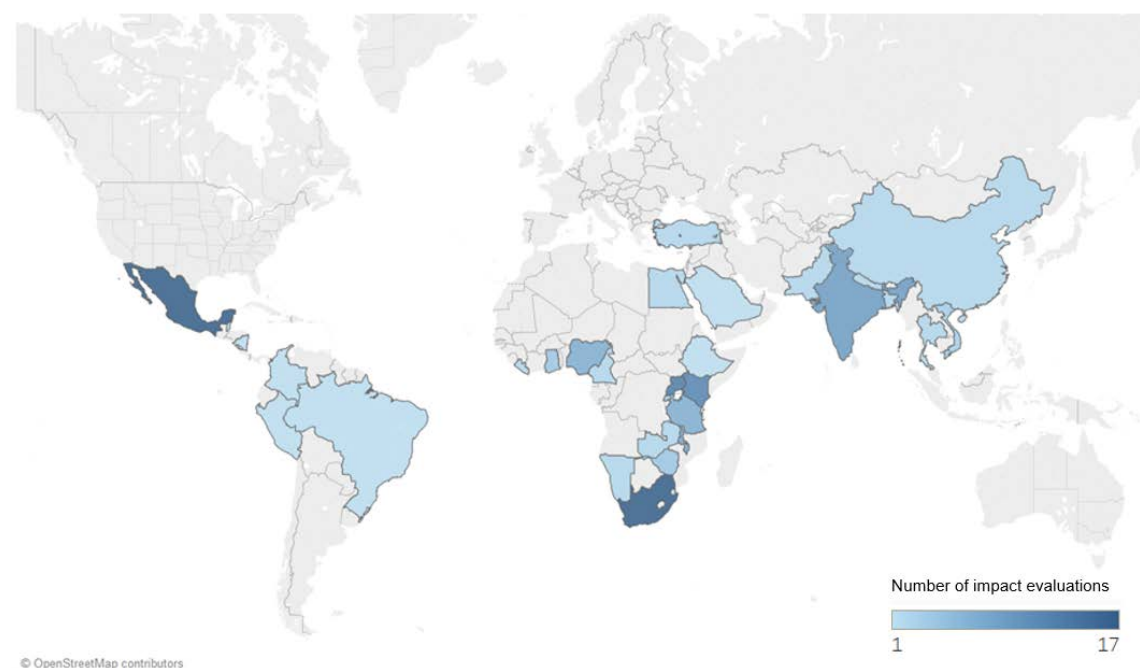


Figure 16 presents a heat map of the impact evaluation evidence by country. The darker a country, the more impact evaluation evidence there is.

Figure 16: Impact evaluation evidence heat map

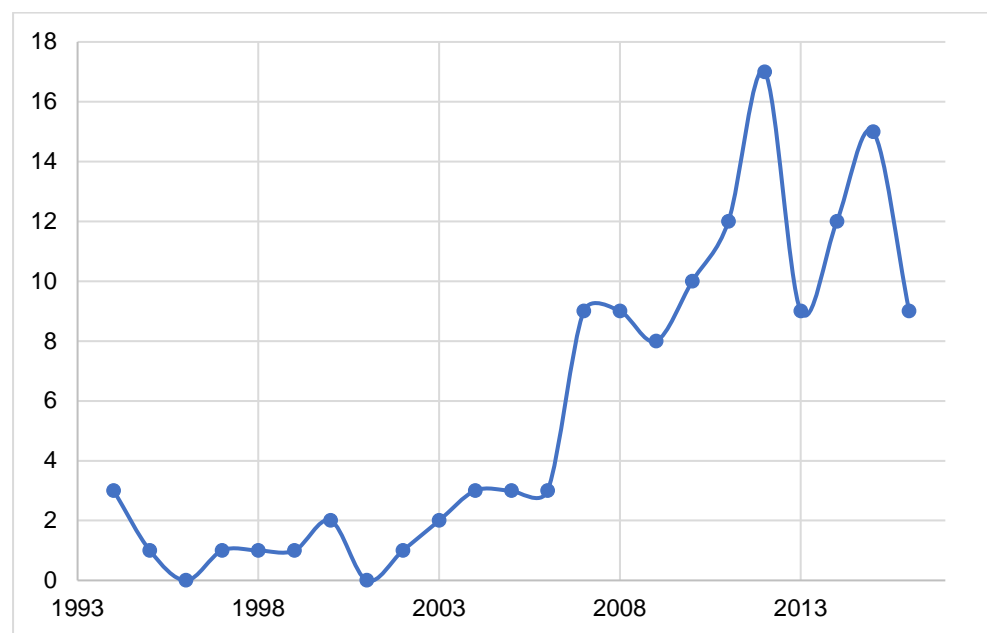


The evidence base from Sub-Saharan Africa is concentrated in a few countries, notably South Africa, Kenya and Uganda. Very little of the evidence base comes from West Africa (eight studies in total from Ghana, Liberia and Cameroon). Overall, the two countries with the greatest amount of evidence (17 studies each) are South Africa and Mexico. Nine studies in Mexico and 10 in South Africa have a primary thematic focus of HIV and AIDS prevention. The 17 studies based in Mexico measure 10 different programmes.⁷ For programmes with multiple studies, each study is different (by location, population, year and other factors), but the evaluated programming and theories of change are very similar. Other programmes with multiple studies in countries other than Mexico and South Africa include the Zomba Cash Transfer Programme in Malawi, the African Youth Alliance programme (Tanzania, Ghana and Uganda) and Focus on Kids in Vietnam.

5.1.4 Publication trends

We wanted to see when impact evaluations of ASRH programming in L&MICs were published and to highlight any time trends (see Figure 17). In line with our inclusion criteria, we only searched for evaluations published in or after 1990. Sixty-five per cent of studies in this evidence base were published in or after 2010.

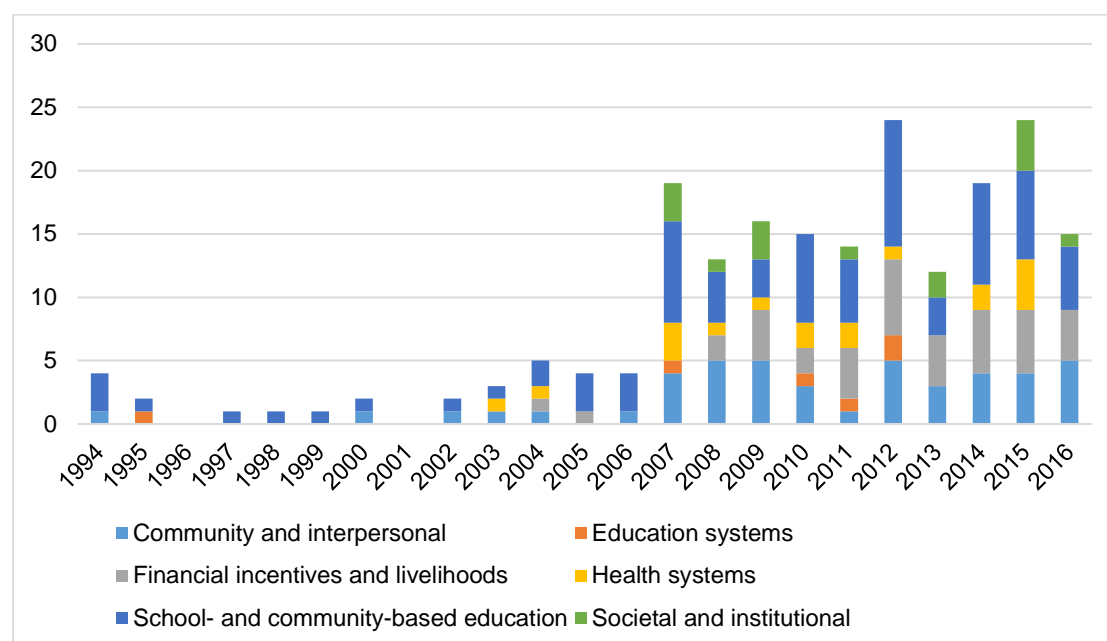
Figure 17: Number of impact evaluations by publication year



Looking at time trends, we found that evaluations of instructional-based interventions are not new, but that societal and institutional approaches such as mass media and policy advocacy were first evaluated as recently as 2007. An ASRH programme using mHealth or ICT approaches was first evaluated in 2013.

⁷ For example, five studies evaluated the *Oportunidades* (Opportunities) programme, three studies evaluated the *Cuídate Promueve tu Salud* programme and two studies evaluated the programme *Conéctate*.

Figure 18: Number of impact evaluations, by intervention grouping and publication year



Note: There were no impact evaluations published in 1996 and 2001.

5.1.5 Cost and cost-effectiveness

We also looked at which of the included impact evaluations had information on intervention costs or, ideally, cost-effectiveness analysis. Combining cost-effectiveness with an understanding of the problem being addressed and contextual factors (such as human resource availability, input prices and local institutions) can provide insights on a programme’s value for money in a defined situation. It can also help to identify the factors to which the outcomes of interest are most sensitive (Dhaliwal *et al.* 2013).

While cost-effectiveness analysis provides an understanding of an intervention’s cost in relation to its impact, we also identified studies that provided basic costing of interventions, anticipating a dearth in cost-effectiveness evidence. Out of 131 impact evaluations, only 13 look at the intervention cost and fewer still compare this to the estimated effect size. 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.

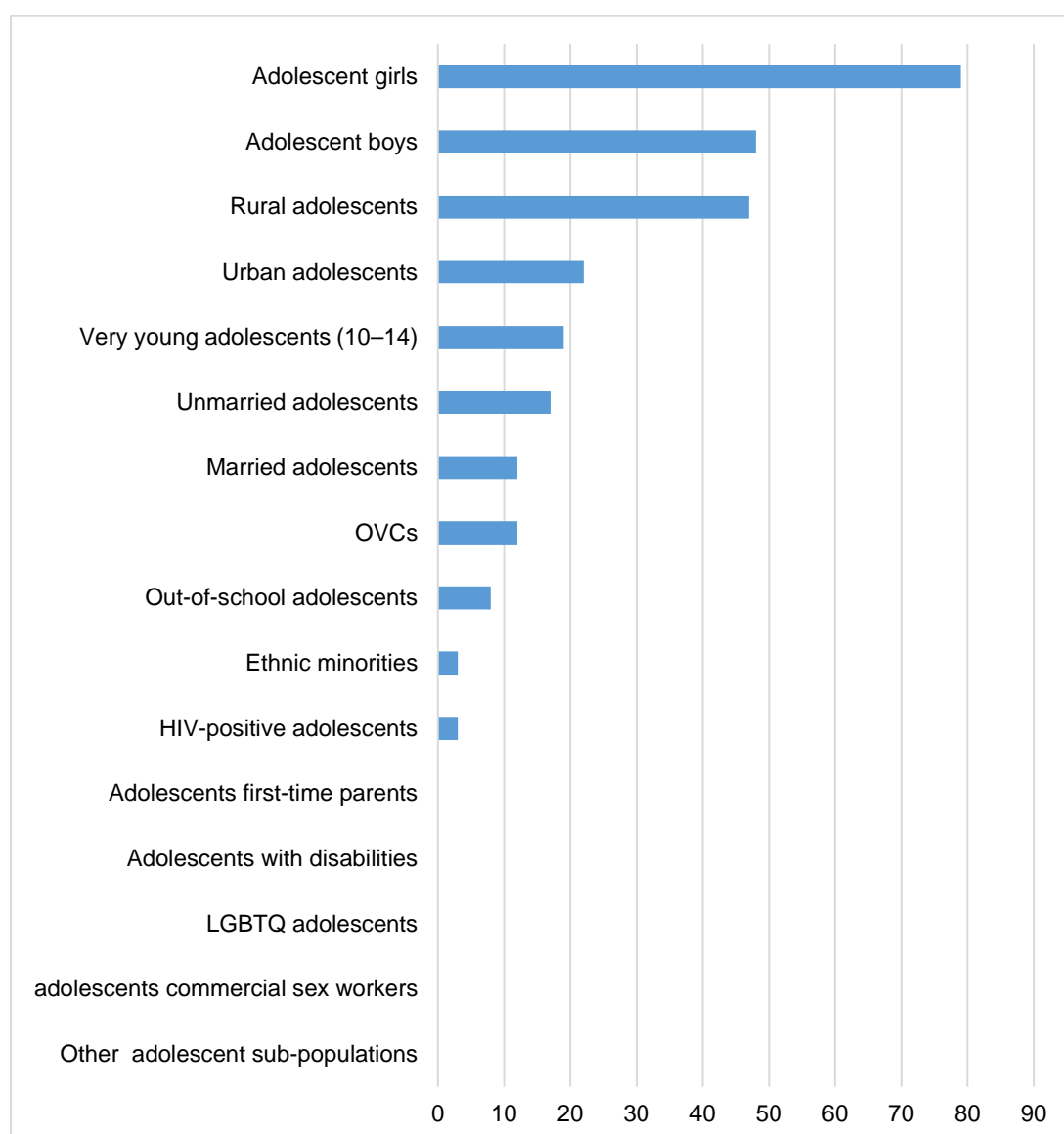
While this lack of important evidence on cost is not unique to international development programming, it is an unfortunate and important gap in evidence. Furthermore, it limits decision-makers’ ability to design and invest in cost-effective programmes.

5.2 Evidence for specific adolescent populations

For a population as diverse as all people aged 10–19 in L&MICs, it is extremely important to assess whether the current evidence base assesses effectiveness for specific sub-populations. What works for a married adolescent does not necessarily work for an unmarried adolescent; what works for girls does not necessarily work for boys.

Figure 19 provides an overview of the number of studies that provide effects for adolescent sub-populations, and the following sections discuss these results in further detail. While a considerable number of studies provide disaggregated effects for some sub-groups, particularly by sex, the evidence base does not go far enough to unpack those results. Furthermore, these studies are not capturing other important characteristics that affect ASRH, such as marital status, sexuality or school status.

Figure 19: Number of impact evaluations providing effects for sub-populations



5.2.1 Adolescent girls

Adolescent girls face gender norms and other social standards that can expose them to SRH risks and reduce their access to SRH services and care. We looked to see how many studies provide effects specifically for adolescent girls. Seventy-nine impact evaluations did; of these, 45 disaggregate data by sex and 34 focus specifically on girls. While some studies provide a detailed introduction on why and how a programme specifically targeted girls, many provide only a cursory explanation.

Approximately half of these studies that disaggregate results by sex are studies on programmes providing instruction in the classroom. Of those studies focusing specifically on girls, more than half fall into the financial incentives and livelihoods intervention grouping. None of these girl-only studies assess provider training or adolescent-friendly services.

5.2.2 Adolescent boys

Forty-eight impact evaluations provide effects specifically for adolescent boys. These studies provide varying levels of discussion around the differences in effects, many providing no discussion on why impacts may be different for boys or girls.

Only three impact evaluations focus exclusively on adolescent boys. Pulerwitz *et al.* (2015), examines a multi-component mobilisation intervention with the aim of changing norms surrounding gender and intimate partner violence among boys and young men aged 15–24 years.

Awasthi *et al.* (2000) assess a community-based intervention to impart core educational messages and address pre-existing ideas about sexual health and sexually transmitted disease (STD) prevention practices. The intervention focused on young men in the urban slums of Lucknow, India. Abolfotouh (1995) assesses the AIDS Education Program, a lecture given by physicians at selected male secondary schools in the Asir region of Saudi Arabia, estimating differences in participants' knowledge, attitudes and beliefs.

For a population as wide and diverse as all people aged 10–19 in L&MICs, it is extremely important to assess whether the current evidence base assesses effectiveness for specific sub-populations.

5.2.3 Very young adolescents

We coded studies that provided results specifically for VYAs aged 10–14. Nineteen studies focused exclusively on VYAs. For example, Pick *et al.* (2007) evaluated a life skills and HIV prevention programme for Mexican elementary school students. The authors' argument for focusing on this age group is that safe behaviours and protective factors in adolescent lives should be introduced at an early age. Of these 19 studies, four disaggregate by gender and four focus on girls only.

Three further studies do not focus exclusively on VYAs but disaggregate results by age, and thus provide results for VYAs as a subset of a broader adolescent population.

5.2.4 Rural and urban adolescents

Thirty-three impact evaluations and six ongoing studies report that the evaluations were based in rural areas, while 12 completed evaluations and two ongoing studies report they were conducted in urban areas. Most of these studies simply indicate the location of the intervention and do not discuss why the needs and SRH challenges for adolescents might be different in rural versus urban areas.

Seven studies provide disaggregated effects for adolescents from rural and urban areas. For example, Mbizvo *et al.* (1997) measures changes in reproductive health behaviour, breaking down results by age, sex and an urban versus rural location.

5.2.5 Unmarried and married adolescents

The SRH needs of unmarried and married adolescents are varied and important to distinguish. Unmarried adolescents have difficulty accessing contraception and can face discrimination when accessing other sexual health services. Married adolescents, particularly female married adolescents, are often among the largest sub-groups of sexually active adolescents (Bearinger *et al.* 2007).

We looked for studies providing effects for only unmarried or only married adolescents and found 17 that did so. Most of these disaggregate their results by marital status. Five explicitly target only unmarried adolescents. For example, Baird *et al.* (2012) evaluates an intervention for adolescent girls who have never married. This intervention provided a conditional (tied to school attendance) and unconditional cash transfer, aiming to increase school enrolment and affect other outcomes such as HIV prevalence. We found no studies that include only married adolescents.

5.2.6 Out-of-school adolescents

We also looked to see whether studies provide effects for out-of-school adolescents, as this group can face reduced access to information and services. In total, eight studies provide specific effects for out-of-school adolescents. Most of these feature results disaggregated by schooling status. Two focus on out-of-school adolescent girls only.

Dunbar *et al.* (2014), for example, evaluates the Shaping the Health of Adolescents in Zimbabwe! (SHAZ!) Project, a structural intervention to prevent HIV specifically among out-of-school adolescent girls. For this particular study, 75 per cent of participants were out-of-school because they had completed secondary school, not because they left school early. The authors argue that adolescent girls who have completed, or are no longer in, school are at higher risk for certain health issues than girls in school (Dunbar *et al.* 2014).

5.2.7 Categories without evidence

We found no studies focusing on, or providing effects for, adolescents identifying as LGBTQ. No study provides effects for adolescents with physical disabilities, for adolescent first-time parents or for adolescent sex workers. For this last category, we did not include the study that focused on girls who had engaged in transactional sex at least once in the past (Atwood *et al.* 2012a).

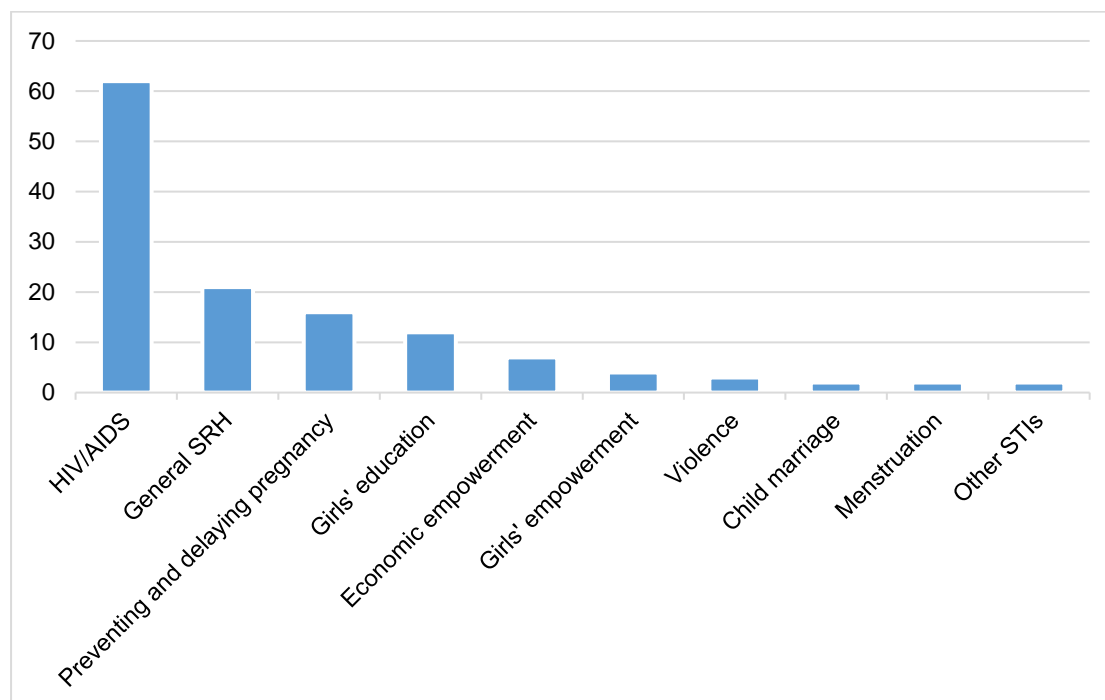
5.3 Features of programmes in the evidence base

5.3.1 Thematic focus of programmes

To better understand this evidence base, we coded the studies by thematic area (the overall frame of reference from which the researchers approach a study). In most cases, this is the topic the authors focused on the most.

For example, if a study's authors evaluate a sex education programme but focus their discussion on HIV prevention, we coded that study under HIV and AIDS. If a programme covered many different topics and the study described broader goals of SRH, we coded that study as general SRH. Figure 20 shows the distribution of studies by thematic area. Sixty-two studies, approximately half of the evidence base, are thematically focused on HIV and AIDS.

Figure 20: Number of impact evaluations by thematic area



The economic empowerment thematic area, comprising seven studies, could involve studies on either gender (though most focus on girls) and specifically on improving economic wellbeing. The four studies falling into the girls' empowerment thematic area, on the other hand, express a broader definition of empowerment including

other areas of life, and focus only on girls. Those coded as girls' education primarily assess interventions in the financial incentives and livelihoods intervention category.

Sixteen studies primarily thematically focus on delaying pregnancy. Several of these assess an education-based intervention, such as the implementation of a compulsory school attendance law in Turkey (Kirdar *et al.* 2011). Others focus on contraception. Decat (2015), for example, measures the effects of a supply-side intervention that trained providers and improved the supply chain. No study measures the effects of an intervention focused specifically on long-acting reversible contraception (LARCs), though a few mention LARCs as part of a larger list of contraceptives.

5.3.2 Rights in programming

The SRH rights of adolescents are generally absent from the impact evaluation evidence base, only appearing in a small selection of studies. When these rights are mentioned, it is among a long list of topics covered by a sexual health programme, with little description of what these rights include and how they are addressed.

Four studies measure outcomes framed around rights. One relates to knowledge of the minimum marriage age and two measure attitudes around partner rights and sexual consent (Cowan *et al.* 2010; Kapadia-Kundu *et al.* 2014; Stanton *et al.* 1998). Another study measures parental and sibling attitudes around girls' access to sports and secondary school (Sieverding and Elbadawy, 2016).

5.3.3 Adolescent-friendly approaches

We also coded 11 studies that identify interventions as being 'youth-friendly' or 'adolescent-friendly'. We coded a study as having this approach only if the authors explicitly use one of those phrases to describe the evaluated approach. We coded nine of these studies as provider training and youth-friendly service adjustments interventions and another nine were coded as community mobilisation and dialogue intervention. Some studies explain what this approach meant in practice while others simply mention the adoption of that approach without a definition or example.

Finally, we attempted to distinguish pilot programmes from evaluations of existing programmes. We do not report exact numbers, however, given the ambiguity around reporting of the type of programme being evaluated. It was often unclear whether the evaluated activities existed before the evaluation, or whether they continued after the evaluation. Overall, many evaluations appeared to evaluate pilot programmes and few of these studies directly report plans for continuing the programme after the evaluation.

5.4 Anticipated new evidence

As part of the EGM search and screening process, we searched for information on ongoing impact evaluations to help understand the current direction of impact evaluation investment. Figure 21 presents a map of the 21 ongoing studies for which there was enough public information to meet our EGM criteria.

Overall, the ongoing EGM appears similar to the map of completed impact evaluations. We continue to evaluate similar types of programming and interventions for which we already have evidence. However, Figure 21 shows that only two of the studies we found are currently measuring interventions operating within a school. Eleven are evaluating an instructional approach outside of a school setting. Of the ongoing studies that we found, none have records of measuring mass media approaches. We found seven ongoing evaluations measuring the effects of family mobilisation and dialogue approaches.

For example, a current study in India is evaluating a programme called Samata (Beattie *et al.* 2015). Among other activities, this programme aims to sensitise parents about girls' education, early marriage and gender norms by conducting home visits and meetings with families. While there are currently only eight completed evaluations that evaluate that type of intervention, we would like to note that there are 10 ongoing studies which are measuring the impact of social groups and clubs.

Figure 21: EGM of ongoing impact evaluations on ASRH programming

			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
Intervention categories			Outcome categories																		
Health systems	HS1	Provider training and youth-friendly service adjustments			1							1									
	HS2	Commodity distribution and supply chain improvements								1		1									
	HS3	Community health workers and home visits			1					1				1			1				
Financial incentives and livelihoods	FS1	Vouchers and subsidies			2	1			2					2			2				
	FS2	Income generation and savings programmes	4	2	4	2			4		2	1	1		3	4	2				
	FS3	Cash transfer programmes	3	3	2	2		1	4		1	3	2		4	3	2	2			
School- and community-based education	SC1	Sexual health education and other instruction at school	2	2	2				1				2		1	1					
	SC2	Courses and other instruction outside of school	4	6	6	4		3	6		2	2	1	1	6	4	4	2			
Education systems	ES1	Health services and counselling in school	1	1	2				1		1		1		2		1				
	ES2	Hygiene and sanitation improvements in school																			
	ES3	Teacher training	1	1	2					2			1		1	1	1				
Community and interpersonal	C11	Social groups and clubs	3	5	5	5		4	7		1	3	1		6	3	6	2			
	C12	Drama and music			1				1						1		1				
	C13	Peer education and mentorship	1	1	2	1					1			2							
	C14	Family mobilisation and dialogue	1	3	5	3		4	2			2		1	2	1	2	4			
	C15	Community mobilisation and dialogue	1	1	1	1				2			1		2		2				
Societal and institutional	S11	Policy advocacy			1				1						1		1				
	S12	Policies and laws																			
	S13	Mass media																			
	S14	mHealth and ICT		1	1	1					1		1					1			

6. Features of the systematic review evidence base

We included systematic reviews that met our EGM inclusion criteria and that 3ie has given a medium or high confidence rating. We only included reviews that primarily searched for impact evaluations and other evidence of similar rigour, and that included evidence predominantly from L&MICs.

As with the inclusion criteria for impact evaluations, there are lessons to be learned from synthesised evidence from high-income countries. However, we sought to specifically identify how much of the L&MIC evidence base has been collectively synthesised. Given varying definitions of rigorous impact evaluations and our other inclusion criteria, not all studies included within these systematic reviews are included in our EGM.

6.1 Overall characteristics of included systematic reviews

We found 13 systematic reviews that met these requirements, all given a rating of medium confidence in their findings.⁸ These are mapped into the EGM framework in Figure 22. Eighteen studies had a rating of low confidence, primarily because they exclude grey literature and do not address the risk of bias.

No systematic review included in this EGM was published prior to 2003, the first being Speizer *et al.* (2003). Only two of the reviews perform meta-analysis, potentially indicating a high degree of heterogeneity in the evidence base. Both of these studies focus 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 try to summarise overall results. Some indicate why meta-analysis was not possible while others do not.

Some reviews cast a wide net in terms of age range (for example, 9–26 years) but still met our inclusion criteria (Scott-Sheldon *et al.* 2013). Others, such as Gottschalk and Ortayli (2014), focus exclusively on the age range 10–19. Most systematic reviews look at a wide range of L&MICs; four review evidence specifically in South Africa.

6.2 Key systematic review topics

Seven systematic reviews focus on HIV prevention. Harrison *et al.* (2010), for example, reviews 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) assesses behavioural interventions aimed at reducing sexual risk-taking in the context of HIV prevention in Sub-Saharan Africa, and includes a meta-analysis for 31 studies. In terms of condom use, the authors find high degrees

⁸ Two protocols also met our inclusion criteria. Given the dates on the protocols (2011 and 2012), however, we approached the authors to confirm that the reviews were still ongoing. As of publication, one author confirmed that their review will be published and the other did not respond. We have chosen not to report on the latter review.

of heterogeneity of results among female adolescents but an overall increase in condom use among male adolescents (Michielsen *et al.* 2010).⁹

Looking at a similar evidence base in South Africa, including only one of the same studies (Jewkes *et al.* 2008), Scott-Sheldon *et al.* (2013) conducted a meta-analysis of 10 studies. They find significant improvements of risky sexual behaviour reduction, such as a delay in sexual debut and increased condom use among sexually active youth, due to behavioural interventions. However, they only find one study that assessed STI outcomes, which reported a preventive effect for herpes simplex virus-2, but not for HIV.¹⁰

Two systematic reviews focus on adolescent contraceptive use and delaying pregnancy. Gottschalk and Ortayli (2014) focus on access to contraceptives, looking for all intervention types except those only evaluating sexual education in school. The authors find 15 studies and discuss common approaches such as community engagement, youth-friendly services and peer education. Among other findings, this review concludes that effective programmes typically had multiple approaches and targeted both user and service provision issues.

'To address unmet need among adolescents, it is necessary to understand which strategies work to increase contraceptive behaviors among this age group and to identify gaps in the evidence base for future research.'
Gottschalk and Ortayli (2004), p.1

McQueston *et al.* (2013) find 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. They also conclude 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, Sharp and Dellis, 2010, Kesterton and Cabral de Mello, 2010).

⁹ (RR = 1.32 (95%, CI = 1.25–1.40).

¹⁰ Among the 10 included studies, the authors find significant treatment effects for their three outcomes of interest using a fixed effects model for early and later assessments: delay in sexual intercourse (0.07; CI=0.02, 0.12 (early, <52 weeks)), 0.15; CI=0.11-0.20 (late, ≥ 52 weeks), increasing condom use (0.17; CI=0.11-0.23 (early), 0.19; CI=0.13-0.25 (late)) and reducing the number of sexual partners (0.95; CI=0.83-1.07 (early), 0.44; 0.35-0.53 (late)).

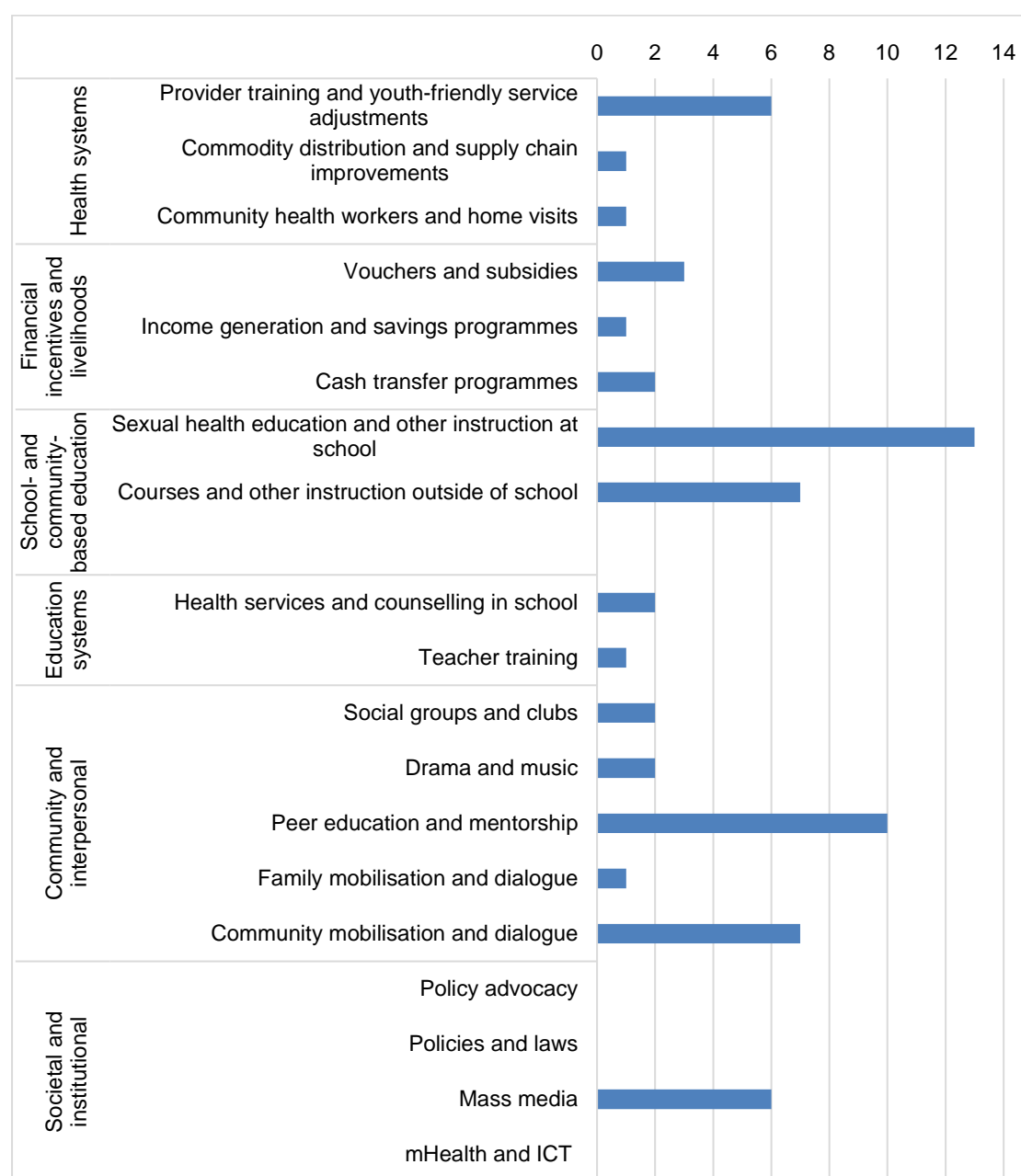
Figure 22: EGM of systematic reviews on the effectiveness of ASRH programming

		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
Intervention 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 ICT																			

Figure 23 details the types of interventions reviewed in the systematic reviews. Many of these studies had large research questions (for example, ‘What works to prevent HIV among adolescents?’), for which the authors discussed a wide range of interventions. Therefore, the amount of evidence noted in the systematic review EGM and in Figure 23 does not reflect a synthesis of available evidence for each of the intervention categories.

The reviews may provide cursory explanations of say, peer-to-peer approaches, counting the number of studies and providing examples of the mechanism. However, they may not synthesise results in a manner that assesses overall effectiveness of that intervention across different studies and contexts.

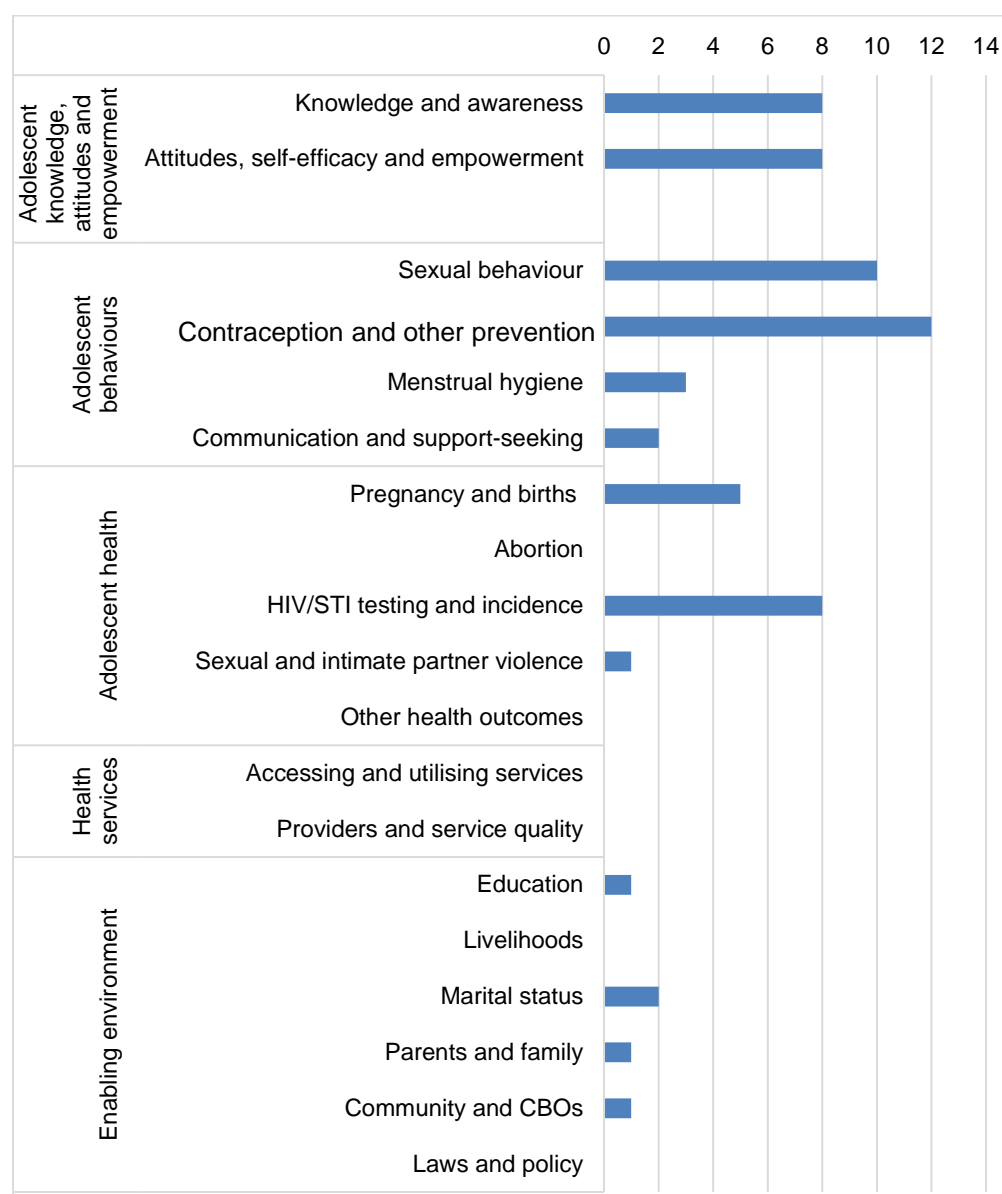
Figure 23: Systematic reviews by intervention category



As with the impact evaluation evidence base, many systematic reviews synthesise the impact of instructional approaches in and outside of school. Ten systematic reviews are interested in peer approaches and seven in community-based approaches. Many of these, however, provide only cursory reports of study findings and do not take steps to fully synthesise results for these approaches.

Figure 24 presents the systematic review evidence by outcome category. In general, this evidence base reflects that of the impact evaluation evidence base. No included systematic review assesses the impact on providers, service quality or rates of accessing and using services. One systematic review examines the existence of cost-effectiveness analysis, comparing the cost analyses of included studies (Mavedzenge *et al.* 2011).

Figure 24: Systematic reviews by outcome category



We investigated whether the studies address adolescent sub-populations in their research question. That is, we looked to see if a review explicitly set out to answer a question on effectiveness for an adolescent sub-population, rather than inadvertently including a primary study that provided effects for that group.

Five systematic reviews disaggregate results by sex, though none focus only on the effects on one sex. One systematic review discusses the evidence base for married and unmarried adolescent girls. None synthesises effects for VYAs, rural or urban adolescents, LGBTQ adolescents or other adolescent sub-populations.

7. Evidence clusters and possibilities for synthesis

We can see multiple evidence clusters in the impact evaluation EGM (areas where several studies assess the same type of intervention or outcomes). When we compare this to the existing systematic reviews that are included, we see promising areas where there is a possibility for new synthesis.

Numerous studies assess programmes providing sexual health education and other instruction at school, as well as courses and other instruction outside school. And quite a few studies evaluate programmes that provide peer education and mentorship or work through community mobilisation and dialogue.

Despite this apparent overlap, much of this coding reflects cursory discussions of these intervention types rather than deep analysis or synthesis. Peer mentorship and education, for example, has a cluster of evidence that, while often mentioned, has not been adequately synthesised. While reviews specifically on this approach exist (for example, Kim and Free 2008), they focus on high-income country evidence. Given recent debates about peer education specifically in L&MIC settings, this area is a prime opportunity for new and high-quality synthesis.

Other areas in which there is a possibility for new synthesis include studies evaluating the effects of cash transfer programmes on ASRH and those evaluating family-based approaches.

There are also many gaps in primary evidence around what types of interventions work specifically for VYAs. Nevertheless, we find nine impact evaluations in the instruction at school intervention category that provide effects for VYAs. While all 13 systematic reviews included in this EGM look for interventions in this category, none analyse effects for VYAs separately. Many even cast a wider net, for example having a target population aged 11–25 ((Magnussen *et al.* 2004).

Within the instruction in school intervention category, there are many differences among the impact evaluations in terms of curriculum length, session topics and

Possibilities for synthesis include:

- **school-based interventions for VYAs**
- **family mobilisation and dialogue interventions**
- **peer-to-peer approaches**
- **effects of cash transfer programmes that target ASRH.**

delivery method. All evaluated interventions do, however, have instructional approaches that aim to address adolescent knowledge, attitudes, skills and ultimately behaviour. The vast majority of these reviews are interested in a range of interventions, including courses at school. For example, (Dick *et al.*) (2006) reviews 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.

This forming cluster of evidence, specifically for 10–14 year olds, should be assessed for the possibility of synthesis, especially if new studies are added.

We also note a potential for further synthesis for the 12 studies in the family mobilisation and dialogue category. Gottschalk and Ortayli (2014) discuss this approach briefly as one used to affect contraceptive behaviour among adolescents. The authors categorise interventions working with parents as those working with adults, also including interventions targeting communication and connection with teachers. To date, no systematic review has looked specifically at the effects of interventions working with just parents and family members.

The 12 impact evaluation studies in the family mobilisation and dialogue category assess attempt to strengthen parent-child relationships through enhancing parents' awareness, knowledge and skills around ASRH issues, including everyday realities and risks. The theory of change behind focusing on the family assumes that good family relationships and communication have a protective effect for adolescents, especially as families can be an important counter-force to peers and other external forces.

A new systematic review could look at this approach in terms of a few or a wide range of outcomes, such as changing attitudes and awareness of ASRH needs among parents or family members. Eight studies included here directly measure changes in the attitudes and behaviour of family members, focusing on parent-child relationships and communication. All eight include parent training either as a standalone programme or in tandem with training for adolescents. These studies could be assessed for opportunities for synthesis to understand better the effects of family-focused ASRH interventions.

Finally, we note evidence clusters around the impact of cash transfer programmes and income generation and savings programmes on adolescent sexual and reproductive attitudes, behaviours and health outcomes. In terms of the effects of cash transfer programmes on ASRH, we included 17 studies in the EGM but no existing systematic review looks directly at this full evidence base. Two of our 13 included systematic reviews (Gibbs *et al.* 2012, McQueston *et al.* 2013) include cash transfer programmes as an intervention of interest. But each only identifies two of the 17 studies we coded to this category within the context of their inclusion criteria.

McQueston, Silverman and Glassman (2013) focus on a broad range of interventions to promote fertility reduction among young people (aged 10–25), including cash transfers, but does not assess other outcomes. Gibbs *et al.* (2012) restrict their synthesis to studies with both gender transformative and livelihood components, including interventions other than cash transfers. We see an opportunity for new

synthesis to explore the theory of cash transfer programmes leading to more generalised improvements in ASRH outcomes, and to analyse the effects of such interventions on these outcomes.

A similar cluster of studies exists for income generation and savings programmes. We included 15 studies 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 synthesis related to the theory that increased income can lead to improved empowerment, which can then lead to better choices and better ASRH outcomes.

8. Gaps in evidence

While we identified 131 impact evaluations assessing the impact of ASRH interventions, there are still many important gaps in primary evidence on what works for ASRH programming in L&MICs.

In this section, we discuss these gaps in impact evaluation, beginning with the gaps that are visually identifiable on the map (gaps in evidence by intervention and outcome categories). We then explore less apparent evidence gaps. These include evidence by adolescent sub-population, specific topics within a particular intervention or outcome category and gaps visible when viewing the evidence in terms of other factors, such as world region.

8.1 Gaps in evidence by intervention and outcome

Looking for evidence gaps in the EGM, we found several areas that have a demand for evidence but few existing studies.

8.1.1 Mass media, mHealth and other ICT

There is little evidence on the effects of mass media or mHealth and other ICT approaches on adolescent health outcomes, health service outcomes and enabling environment outcomes in L&MICs. One study does measure the effect of a mobile phone programme on pregnancy and reproductive health knowledge (Rokicki *et al.* 2015). Another assesses the effect of an online education course implemented at schools on STI prevalence (among other outcomes).

Respondents to the stakeholder survey show some interest in more evidence on these types of communication interventions, and roundtable participants were vocal about needing more evidence. Given this, along with stakeholder perceptions that these interventions are likely to be used more in the future, we believe this should be a priority area for future research.

8.1.2 Community approaches and outcomes

Few studies included here measure effects at the community level (including CBOs), such as changes in norms, attitudes or behaviours. While 18 studies evaluate an intervention focused on community mobilisation and dialogue, most of them measure effects on adolescents only. Only three studies of this intervention type measure

effects on parents. However, nine studies evaluate family mobilisation and dialogue interventions that measured effects on parents.

Only one study surveys the community, measuring attitudes and knowledge among adult community members on early marriage, reproductive health and livelihoods and empowerment for girls (Kanesathasan, 2008). There was a substantial interest at the roundtable for more evidence in this area, especially on interventions creating normative change. We find the lack of reporting on effects in these outcome areas to be an important evidence gap.

Furthermore, we note a dearth in evidence around the use of community health workers and home visits in ASRH programming. Only three studies included here evaluate this type of intervention.

One study focuses on a programme targeting orphans aged 12–14 that aimed to keep them in school and reduce risk factors associated with HIV infection by providing support such as school fees or uniforms (Cho *et al.* 2011). The intervention also used a ‘community visitor’ to monitor school attendance and provide assistance with problems, including accessing health services. The study assesses attitudes, empowerment and behaviour outcomes among adolescents.

Two studies are HIV-related (Baird *et al.* 2014; Beegle *et al.* 2015). Both essentially assess the effect of knowing one’s HIV status on future behaviour, looking at educational and sexual health outcomes. In the interventions assessed by these studies, home visits were only used to provide HIV and other STI testing and counselling; they did not include other educational or health services.

Respondents to our stakeholder survey generally perceive community health workers and other community workers as helpful, but respondents are split about whether there is sufficient evidence on their effectiveness in ASRH programming. The low number of studies and the home visits’ limited use in these interventions suggest that this could be a priority area for future research.

8.1.3 Health services and counselling, and hygiene and sanitation improvements, in schools

We found no impact evaluations of sexual health services and counselling provided in schools, or of improvements in hygiene and sanitation that also evaluated ASRH outcomes. While the latter is less surprising, it is still an evidence gap as no studies even look at outcomes related to menstrual hygiene.

The lack of impact evaluations of sexual health services and counselling provided in schools is surprising. We do not believe this is due to a dearth of programmes or interventions, but it is possible that few are able to identify a counterfactual or funding for evaluations in this area. Even if there is a lack of programming in this area, we believe this is a priority area for future research that could also provide evidence of whether this strategy should be implemented more widely.

8.1.4 Approaches to improve an adolescent's enabling environment

Most theories of change regarding ASRH include some influence of the surrounding environment – parents, peers, the wider community and/or schools. However, we did not find many studies that assess outcomes in some of these areas. Specifically, few studies look at the effects of parents or communities, such as changing attitudes towards adolescents' access to SRH services and contraception.

Participants at our roundtable event expressed high levels of interest in new evidence on normative change. Similarly, our roundtable event participants and stakeholder survey respondents largely feel there is insufficient evidence on family and community mobilisation and dialogue interventions. Of the eight studies that seek to measure normative change, all assess interventions at the adolescent level and not at the level of parents, communities or service providers.

8.1.5 Other gaps in interventions and outcomes

Interestingly, we note very little evidence in our EGM around ASRH service providers and service quality. Only two studies report on this (Cowan *et al.* 2010; Aninanya *et al.* 2015).

This could be due to the way provider service quality is measured, such as by asking adolescents their opinion of services or whether they had used services as proxies to measure provider behaviour or service quality, which is then coded into attitudes, self-efficacy and empowerment. However, very few of the studies included here even do this. One study that does (Ross *et al.* 2007) evaluates a programme that trained providers on youth-friendly SRH services, in terms of health facility use among other outcomes.

In terms of outcomes, there is very little evidence on how ASRH programming in L&MICs can affect abortion rates. One study retrospectively asked participants if they had ever had an abortion but does 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.

8.2 Other evidence gaps

We found other important gaps in evidence that do not necessarily fit into the intervention and outcome categories of our EGM, including specific topics, considerations and sub-populations. We therefore looked for other aspects of the evidence to identify important nuances in the evidence base.

Across all studies, we found few evaluations in West Africa or Latin America. This is probably partly because we only searched for abstracts and studies available in English. As we made use of snowballing techniques and contacted researchers, we suspect that there are not many additional studies addressing these regions. As such, this appears to be a gap in evidence.

Additionally, we did not find many studies providing a clear explanation of ASRH programming and/or a theory of change. More details about the intervention (for example, the content of educational programmes, topics discussed in groups or the contextual environment), as well as the overall programme evaluation, would strengthen most of the studies.

8.2.1 Pregnancy prevention and family planning

Interventions addressing adolescent contraceptive use fall into many different categories of our framework. Furthermore, many programmes take a general approach to ASRH, including a wide range of topics including sexual behaviours, STI prevention and the delay and prevention of pregnancy. Of the 62 impact evaluations that focus on HIV and AIDS, some address pregnancy prevention but from the lens of HIV prevention, highlighting the beneficial multiple purposes of condoms. Few impact evaluations focus specifically on what works for preventing and delaying adolescent pregnancy.

We coded 16 studies in the overall thematic area of adolescent pregnancy prevention and family planning. Much of the evidence base focuses on either general condom use or on delaying sexual debut. Evidence on effectiveness currently does not clearly distinguish between delaying pregnancy for an unmarried or a married adolescent.

In terms of outcomes, 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. Of 58 studies that measure contraceptive and condom use, 30 focus on HIV and AIDS and other STIs and 11 come under the general SRH category. Only six studies have a primary thematic focus on family planning.

Very few of these 58 studies assess the effectiveness of programming related to LARCs for adolescents. Some mention 'modern contraceptive use' but do not define what this means. One study measures contraceptive use broadly but lists injectables as one method. No impact evaluation measures the use of intrauterine devices. Overall, this is a large evidence gap that needs to be addressed as LARCs becomes increasingly available to adolescents.

Demand for evidence

Survey respondents expressed a need for more evidence on adolescents who are very young, male, out-of-school, married or LGBTQ. This indicates a need to understand effects of programming in light of factors that make adolescents vulnerable, marginalised or hard to reach.

8.2.2 Addressing rights and empowerment

Addressing the SRH-related rights of adolescents is an important component of ASRH programming yet few studies mention the inclusion of rights within programming – or the use of a rights-based approach – and fewer describe these rights in detail. Given the emphasis on rights in our stakeholder survey results, consultative events and recent calls for a larger emphasis on rights in programming (Berglas *et al.* 2014), this lack of explicit evaluation of rights-focused programming is an important evidence gap.

'The field has long recognised that you cannot advance ASRH without also addressing rights.'
Stakeholder survey respondent

A rights-based approach in an ASRH programme might, for example, focus on the gendered inequities and inequalities that exist around SRH and take into account discriminatory practices and unjust power distributions (UNICEF, 2012a). These approaches are being evaluated for impact within high-income countries but rigorous evidence is lacking in L&MICs (Rohrbach *et al.* 2015).

Of those studies in the evidence base that note SRH rights as a programme topic, few attempt to measure changes directly related to knowledge or attitudes around these rights. Some studies may have been implicitly trying to measure such changes by tracking shifts in behaviour or other related outcomes. If so, this causal link is not often described.

Another gap in this evidence base is any record of adolescents having an active role in the programming and experiments. Taking adolescents' needs, wants and interests into account when addressing such personal topics is very important. Approaches need to be developed on how to do this appropriately and effectively (Shaw, 2009).

8.2.3 Gender analysis

Despite the importance of gender in understanding ASRH, much of the current impact evaluation and systematic review evidence base does little to take gender into account. The majority of studies provide, at most, a cursory mention of gender and the implications these strong social norms have on SRH needs, access and care.

Morgan *et al.* (2016), looking specifically at health systems research, recommend incorporating gender analysis into the content, process and outcomes of research through ensuring gender-responsive research questions. The authors also recommend sex disaggregation of results, considering gendered social norms in data collection, using explicit gender analysis frameworks in data analysis and eliciting participant feedback directly.

While coding each study for these aspects did not fall into our project scope, we nevertheless observe that almost no study uses a gender analysis framework to understand the role of gender in the evaluated programme or in the evaluation itself. The studies evaluating programming that targeted both adolescent boys and girls

describe gender the least. Studies that target just adolescent girls do tend to describe what makes the context and needs different for a particular sex (for example, (Kapadia-Kundu *et al.* 2014; Leventhal *et al.* 2016; Acharya *et al.* 2009)).

The three studies that focus on boys, however, do not really discuss the effects of gender norms on adolescent boys in terms of SRH issues. When disaggregated by sex, many studies provide only a cursory comparison of results of boys and girls. They do not provide further discussion on why each group may respond differently to programming and why effects on boys and girls may (or may not) be different. They do not use gender analysis to understand or explain their data, or do not report this information.

There is a lack of studies that focus specifically on adolescent boys, which constitutes an important gap in evidence. Evaluations of programming in this area could look at two broad theories of change. One, that providing programming to adolescent boys addresses male-specific sexual health and SRH issues. Or that targeting boys to, for example, change gender norms and ideas of masculinity can improve ASRH outcomes for both boys and girls (Pulerwitz *et al.* 2015).

8.2.4 Very young adolescents

VYAs aged 10–14, as noted earlier, are not only less able to access SRH services and support but are also at a different life stage than older adolescents. Many in this age group have not yet experienced, or are still going through, puberty.

While we note 16 studies that focus exclusively on VYAs, there are still many gaps in evidence. Seventy-five per cent of stakeholder survey respondents identify the evidence base for this sub-population as weak.

The most common programme interventions for VYAs in our evidence base are in the categories of instruction at school, family mobilisation and dialogue or social groups and clubs. No studies evaluate provider training or adolescent-friendly services for this population. And none evaluate, among other categories, mHealth and other ICT, or drama and music approaches to ASRH.

Only two studies provide effects on pregnancy and births for VYAs and only one for HIV or STI testing and incidence. For contraception and other prevention, only three studies measure effects for VYAs. We recommend further research investment to address these important gaps in evidence.

‘We need to know a lot more about interventions aimed at VYAs – 10–14 is a crucial window of opportunity...behaviours, attitudes and habits that are established during this period can change the trajectory for a girl or boy and break generational patterns of poor health and risky behaviour.’
Stakeholder survey respondent

8.2.5 Other sub-populations

We found large gaps in evidence for other sub-populations. There has been an increasing focus on the need for inclusive ASRH programming that specifically targets marginalised adolescents and other sub-populations. However, there is a need for more evidence on what works for these specific populations of adolescents, including adolescent boys, LGBTQ adolescents and married adolescents (Woog *et al.* 2015; McGinn *et al.* Patton *et al.* 2016).

The stakeholder survey respondents underscore this demand; more than half of them feel that the state of evidence is weak for VYAs, male adolescents, out-of-school adolescents and LGBTQ adolescents. Additionally, respondents often left open-ended comments about the need for more evidence. These comments specifically related to VYAs and other vulnerable, marginalised or hard-to-reach adolescents (including out-of-school adolescents, boys and married adolescents).

Marriage creates different needs, and different access to health services and commodities for adolescents. For female adolescents in unequal and restrictive cultures, getting married may restrict their freedom of movement, and their control over household money and health-seeking decision-making. Gender-biased laws and traditional practices can affect access to contraception, benefitting – or disadvantaging – married adolescent girls who are expected to have sex and bear children.

While some studies analyse these differences in terms of programming effects, only nine studies explicitly focus on unmarried adolescents. However, this group can face more difficulties accessing contraception as a result of gendered norms and ageism that influence laws and health service practices. Four studies provide effects on contraceptive outcomes for unmarried adolescents, and three for both married and unmarried adolescents. More evidence is needed.

Of the studies that measure outcomes related to intimate partner violence and sexual violence, none disaggregated results by marital status. No study in our EGM evaluates ASRH programming explicitly for married adolescents.

‘We definitely need more evidence on...marginalised, vulnerable or hard-to-reach adolescents.’

Stakeholder survey respondent

Adolescents identifying as LGBTQ, as well as young men who have sex with men, face a unique set of challenges. As some respondents to the stakeholder survey indicated, we urgently need evidence on what works for these sub-populations. Overall, 82 per cent of stakeholder survey respondents report that the evidence base for LGBTQ adolescents is weak. Populating the EGM, we found no studies measuring effects for this sub-population. This is an important gap in research into ASRH programming in L&MICs.

Evidence is also needed on the effects of SRH programming on adolescent first-time parents, adolescents engaged in sex work, migrant adolescents, those with

disabilities and other overlooked adolescent sub-populations. In particular, as development aid priorities shift to fragile and conflict-affected states, the sector requires more knowledge about the SRH contexts and needs of displaced and refugee adolescents.

For other adolescent sub-populations, we need more research that specifically looks at the different SRH programming contexts and needs based on where adolescents live. For example, we need to clearly understand differences between the SRH needs and contexts of rural and urban adolescents.

'Most efforts have neglected those arguably at greatest risk: adolescent women participants who have completed or left school.'
Dunbar et al. 2014, p.3

More studies need to assess programming that targets out-of-school adolescents, particularly those who have left school early.

Very few studies look at the effects of ASRH programming on HIV-positive adolescents. For example, no study assesses the effects of adolescent-friendly SRH services or provider training on this population, which needs to use the healthcare system regularly.

Overall, even studies that disaggregate findings by a certain characteristic, rarely explore in detail the differences in approach and effects for a particular population. Much more research is needed to look into these questions.

9. Limitations of this scoping paper

There are many programmes that focus on ASRH, or are related to ASRH, beyond those captured in our review of current programming. Additionally, relying primarily on information from the larger ASRH funders and implementers, and not thoroughly capturing the full scope of programming by smaller implementers, may have biased our perception.

We distributed our stakeholder survey to a convenience sample (individuals and groups with whom we were familiar, as well as their networks). It is possible that the reach of our networks does not represent the overall ASRH population of implementers, policymakers and experts. If anything, this may have overemphasised the perceived value and awareness of impact evaluation evidence among stakeholders.

Our survey did not specifically sample adolescents because it was not specifically about adolescent needs. Rather, it was about the perception of current evidence and the need for new evidence on interventions concerned with ASRH.

Due to time constraints, we conducted our literature search in English only, and in primarily English-based databases and websites (excluding, for example, databases such as LILACS and SciELO). While our search captured some studies in other languages (and we screened those published in Spanish, French or German), we have inevitably missed studies in other languages. In particular, not conducting the

full search in Spanish and French could be a contributory factor to the general dearth of evidence we found from South America and West Africa.

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 that 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 and outcome of our 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.

10. Conclusion and final recommendations

This scoping report provides policymakers, funders and other decision-makers a detailed assessment of the current state of evidence on ASRH programming in L&MICs that they can use to best prioritise future investments in research. It provides researchers with insight into the ASRH-related research gaps most demanded by stakeholders and areas in which the current evidence base needs to be improved. ASRH implementers may apply this assessment to inform programme design.

Further investment is needed in, among other research areas:

- studies evaluating the impact of mHealth and other ICT approaches for ASRH;
- studies evaluating the effectiveness of engaging families, communities and healthcare providers in ASRH, particularly in terms of normative change;
- studies focused on pregnancy prevention and family planning for both unmarried and married adolescents, including evaluation of LARCs use;
- studies assessing the impact of ASRH programming on adolescent sub-populations such as married, HIV-positive, and LGBTQ adolescents;
- studies of interventions that target adolescent boys to influence ASRH outcomes for both boys and girls;
- gender-responsive programme evaluations;
- cost-effectiveness analysis embedded in impact evaluations;
- studies in Francophone Africa and other geographic areas currently underrepresented in the evidence base;
- synthesis of instructional approaches for VYAs;
- synthesis of studies for family mobilisation and dialogue;
- synthesis of studies using peer-to-peer approaches;
- synthesis of studies assessing cash transfers for ASRH.

While there is already a considerable evidence base of impact evaluations 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. Implementers, researchers, funders and policymakers involved in L&MIC ASRH programming also make this clear. Only one third of respondents to our stakeholder survey feel that, on average across all interventions, there is sufficient evidence to inform ASRH programming and policy.

Studies of ASRH programming often assess only a narrow scope of outcomes, and do not adequately address the diversity of adolescents or the effect of social norms. Only 10 per cent of survey respondents on average feel that the state of evidence for adolescent sub-populations is strong. Policymakers and implementers should keep this in mind when extracting information from this evidence base.

Furthermore, studies often include inadequate descriptions around the context of the evaluation, the interventions and associated theories of change. For areas for which there is already a sizable evidence base, the evidence is generally specific to certain contexts or topics. In some cases there are still opportunities for researchers to contribute new high-quality research, evaluating, for instance, the latest curricula.

There are also too few quality systematic reviews using rigorous methodologies to seek to answer questions on ASRH programming in L&MIC contexts. New syntheses should focus on areas where there are emerging or established evidence clusters, there is a high demand for more, better or more nuanced evidence, and few or no high-quality synthesis has been done specifically on evidence from L&MICs.

A wide range of qualitative and quantitative evidence is needed to help us understand the complexities and nuances behind the effects of ASRH programming in L&MICs. The importance of rigorous, well-designed and well-reported impact evaluations in this field cannot be undervalued. Systematic reviews should synthesise the evidence to provide a more generalizable, more comprehensive, and even more detailed understanding of different interventions. Stakeholders want more nuanced evidence that focuses not on whether a programme works, but which interventions are most effective, for whom and at what cost.

While we do have evidence around what works within ASRH programming, we need better quality evaluations and systematic reviews for a wider range of interventions and outcomes that take into account the wide array of ASRH contexts, service users and needs.

Appendix A: Participants in EGM consultation events

Table A1: New York consultative workshop, 12 January 2016

Name	Organisation
Laura Laski	UNFPA
Susanna Lehtimaki	UNFPA
Marissa Billowitz	IPPF (Western Hemisphere Region)
Silvia Huaynoca	IPPF (Western Hemisphere Region)
JoAnn DiLernia	Planned Parenthood Federation of America-Global
Susan Wood	International Women's Health Coalition
Sarah Keogh	Guttmacher Institute
Caitlin Shannon	EngenderHealth
Ariadna Capasso	Management Sciences for Health
Carolyn Westhoff	Columbia University
Linda Casey	Plan International
Seema Jalin	United Nations Foundation
Nicole Ippoliti	FHI 360
Suzanne Petroni	International Center for Research on Women
Kristin Mmari	Johns Hopkins University
Amita Vyas	George Washington University
Mychelle Farmer	Jhpiego
Rebecca Kohler	IntraHealth International
Taryn Couture	Population Action International
Julio Pacca	Pathfinder International
Anna Mackay	Marie Stopes International
Gael O'Sullivan	Abt Associates
Chelsea Ricker	Independent consultant

Table A2: San Francisco consultative workshop, 19 January 2016

Name	Organisation
Margot Fahnestock	The William and Flora Hewlett Foundation
Helena Choi	The William and Flora Hewlett Foundation
Ruth Levine	The William and Flora Hewlett Foundation
Sarah Lucas	The William and Flora Hewlett Foundation
Kristina Kastler	David and Lucile Packard Foundation
David Wood	Equal Access
Mara Decker	University of California, San Francisco
Antonia Biggs	University of California, San Francisco
Ndola Prata	University of California, San Francisco
Nora Miller	WomanCare Global
Sono Aibe	Pathfinder International
Patrice Martin	IDEO.org
Jessa Blades	IDEO.org
Bethany Young Holt	CAMI Health
Ritu Schroff	The Bill & Melinda Gates Foundation
Jane Hutchings	PATH
Amy Adelberger	Global Impact Advisors

Table A3: Nusa Dua, Indonesia consultative workshop, 25 January 2016

Name	Organisation
Ashley Jackson	Population Services International
Cate Lane	USAID
Regina Benevides	Evidence to Action Project
Judith Helzner	Independent consultant
Mariela Rodriguez	CARE
Martha Murdock	Management Sciences for Health
Seema Jalan	United Nations Foundation
Meghan Guida	Management Sciences for Health
Sarah Keogh	Guttmacher Institute
Marissa Yeakey	Population Reference Bureau
Roy Jacobstein	IntraHealth International
Worknesh Kereta	Pathfinder International
Deb Almond	Save the Children
Brad Kerner	Save the Children
Khim Khad Lee	Save the Children
Liesbeth Hof	SRHR Alliance-Rutgers
Tam Fetters	Ipas
John Muzige	International Rescue Committee
Erin Wheeler	International Rescue Committee
Teshome Admassu	David and Lucile Packard Foundation
Whitney Sogol	Concern Worldwide
Mihoko Tanabe	Women's Refugee Commission
Anushka Kalyanpur	International Medical Corps
Soumya Alva	John Snow Inc.
Ronnie Lovich	Education Development Center
Thamar Debebe	The David and Lucile Packard Foundation
Denemadjibe Mbaikar	Care International (Chad)
Benediction	
Kodmon Esaie	Care International (Chad)
Célestin Nkwakam	Care International (Chad)
Kasahun Mormu	David and Lucile Packard Foundation

Table A4: Assessing the Evidence Gaps roundtable, 27 June 2016, Washington DC

Name	Organisation
Regina Benevides	Evidence to Action Project
Margot Fahnestock	The William and Flora Hewlett Foundation
Cate Lane	USAID
Katelyn Bryant-Comstock	Population Action International
Caitlin Shannon	EngenderHealth
Soumya Alva	John Snow Inc.
Silvia Huaynoca	IPPF (Western Hemisphere Region)
Sara Harris	Population Reference Bureau
Kim Whipkey	PATH
Ashley Jackson	Population Services International
Shawn Malarcher	USAID
Roy Jacobstein	IntraHealth International
Rebecka Lundgren	Institute for Reproductive Health
Nicole Cheetham	Advocates for Youth
Anjala Kanesathasan	Evidence to Action Project
Wendy Castro	Save the Children
Shiza Farid	United Nations Foundation
Jill Gay	What Works Association
Meg Greene	Independent consultant
Linda Sussman	USAID
Emily Sullivan	Family Planning 2020
Mervyn Christian	Advance Family Planning

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This scoping paper summarises a range of activities 3ie undertook to assess stakeholder demands and priorities for impact evidence for adolescent sexual and reproductive health (ASRH) interventions in low- and middle-income countries. It explores the characteristics of the current evidence base of impact evaluations and systematic reviews and evidence needs identified by key stakeholders 3ie consulted through a series of workshops and a survey.

While there is a sizeable evidence base assessing the effectiveness of ASRH programming in L&MICs, there are still important evidence gaps, such as on mHealth and programmes that aim to change the norms, attitudes and behaviours of families and communities. Some evidence exists on programmes focused on pregnancy prevention within the broader HIV prevention interventions. However, there is not enough evidence on what works for whom within adolescent populations, including very

young adolescents, young married girls and LGBTQ youth. There are multiple possibilities for systematic reviews of existing studies, including on peer-to-peer approaches, effectiveness of family engagement and on cash transfer programmes directly targeting and improving ASRH.

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