ISSUE PAPER SERIES

A REVIEW OF CONTROL-COMPARISON INTERVENTIONS ON GIRLS AND HEALTH IN LOW AND MIDDLE-INCOME COUNTRIES

by

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Paper Commissioned by Girl Hub,
a strategic partnership between Nike Foundation and the
UK Department for International Development

February 2013

GIRLEFFECT.ORG

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INTEGRATED APPROACHES TO IMPROVING THE LIVES OF ADOLESCENT GIRLS

ISSUE PAPERS SERIES

This paper is one of a series of five Issue Papers commissioned by the Department for International Development, UK (DFID) and the Girl Hub, synthesizing key evidence on integrated approaches to economic assets, health, education, social norms and preventing violence, in improving the lives of adolescent girls. The focus on integrated approaches (addressing more than one area such as health and education) aimed to assess evidence testing the strength of integrated approaches, and to avoid duplicating recent sectoral based reviews.

Each Issue Paper is accompanied by a mapping of relevant research and evaluations of interventions. These mappings are available separately at the address below, where a compilation of mappings is also available.

The Issue Papers were commissioned to feed into a Technical Expert Meeting on Adolescent Girls, hosted by DFID and the Girl Hub on the 17th-18th October 2012 in London. The meeting drew together more than 60 leading experts working on adolescent girl research, programming, and evaluation to discuss priority research and evidence gaps and consider key methodological questions around research in this area.

This report represents solely the view point of the author, and does not necessarily represent the views or policy of Girl Hub, Nike Foundation, or DFID.

All the Issue Papers, the mappings, the compilation of mappings and the workshop report are available on http://www.girleffect.org.

OUTLINE

I. EXECUTIVE SUMMARY

Much attention has been devoted in recent years to the adolescent girl in low- and middle-income countries. The large number of related interventions has likely been beneficial to girls, but too little evidence is available on impact. The purpose of this paper is to assess progress made since the release of the influential papers **Girls Count** (Levine et al., 2008) and **Start with a Girl** (Temin & Levine, 2009). Through a structured in-depth literature review we shed light on what has been learned and what research and program evidence is still needed.

The literature review yielded 190 bibliographic references to interventions in low- and middle-income countries that included girls' health as an outcome. These consisted of published primary articles, published secondary literature reviews, grey-literature reports and citations in review articles.

Among the 190, there were 49 citations describing control-comparison pre-post intervention studies for which girl-specific results are reported. This group of 49 forms the basis for the discussion in this paper.

The thematic breakdown of the 49 featured studies is the following:

- 18 have a primary focus on HIV/AIDS.
- 18 have a primary focus on sexual and reproductive health.
- 6 have a primary focus on mental health.
- 2 have a primary focus on non-communicable disease.
- 4 have a primary focus on financial education or savings.
- 1 has a primary focus on leadership.

This group of 49 studies has the following characteristics:

- Approximately one-half are single-sex girl-only interventions.
- One-half include girls younger than 14 years of age.
- One-third target school-enrolled girls with classroom-based content.
- One-half took place in rural areas only, 20 percent in urban areas, and 27 percent in mixed urban and rural settings.
- 60 percent involved random allocation of the intervention to participants.
- 63 percent had a follow-up period longer than 12 months; 29 percent followed participants for longer than 24 months.
- Costing information was found for 20 percent.
- 61 percent were multi-level, engaging actors in addition to the targeted girl herself.
- One-quarter of studies incorporated school retention or school re-entry as a goal.
- 27 percent incorporated cash or in-kind incentives or offered credit.
- 31 percent included training in financial education or saving.
- 20 percent offered vocational training.
- 29 percent incorporated training in health, economic, social or legal rights.

- 45 percent had program content designed for an age range of six years or less and/or a school grade range of three or fewer years.
- Slightly more than one-half offered girls a safe space in the community to meet regularly.

There was not enough information provided in the documents found to classify programs along the following dimensions: girl literacy status/educational attainment, and program implementation methods.

The interventions that demonstrated an impact on health status, health behaviors or health mediators for girls had the following common characteristics. The majority:

- were single-sex, girl-only interventions;
- included girls younger than 14 years of age;
- were offered to rural populations;
- had a follow-up period of more than 12 months;
- used a multi-level intervention approach;
- provided a safe space in the community for girls to regularly meet in groups;
- offered financial education or savings training;
- had a rights training element;
- employed age- or grade-specific targeting and content;
- collected cost data.

These findings are indicative of promising design and evaluation elements for girls' health. We should not however make simple attributional statements about the merits of these features without first having more evidence from future (and a handful of on-going) studies in which the treatment is randomly allocated and follow up is long term. Better tools are needed for reporting on implementation methods and accurately assessing participant exposure.

II. INTRODUCTION

For the past 15 years the Population Council has undertaken policy and intervention research designed to improve the health and overall wellbeing of girls in developing countries. The approach has consistently been one of utilizing empirical analysis to carefully identify the economic, social and cultural antecedents that directly influence girls' health outcomes and choices; and then attempting - through program and policy experiments - to shift these. Particularly influential early work in this area included **The Uncharted Passage** (Mensch et al., 1998) and **Growing Up Global** (Lloyd, 2005).

With the appearance of **Girls Count** (Levine et al., 2008) and **Start with a Girl** (Temin & Levine, 2009), attention to girls as a program target group blossomed. This burgeoning of girl interventions was also fueled by the recognition that girls lie at the very heart of meeting the MDGs. The purpose of this paper is to assess progress made since the release of **Girls Count** and **Start with a Girl**.

Recently, much attention has been focused on the adolescent girl. October 2012 saw the UN declaration of the first annual "Day of the Girl Child." The explosion of interventions for girls has likely been beneficial to girls, but do we really know to what extent and how girls are faring in the wake of these various programs? Good intentions are needed but they do not always result in improved outcomes. The time is right to assess the impacts of resources going toward girl-focused programs.

Through a structured in-depth literature review the paper will attempt to shed light on what we have learned and what we still need to learn through research and programmatic evidence. With the end of the MDG window approaching and post-MDG discussions ramping up, taking stock is more relevant than ever.

The conceptual framework utilized for the paper is the Sen (1993) capabilities approach. Health capabilities include knowledge, skills and attitudes, but of key importance to influencing health behaviors and outcomes are factors in the environment surrounding the girl (culture, social norms, economic constraints, barriers to access) that influence choice and functioning – in other words, if and how girls are able to put knowledge and skills into action. We were therefore purposeful in our review to include not only programs intended to improve girls' health, knowledge, skills and status; but also those that considered the characteristics of the environment the girl resides in but does not have control over.

The review strategy is described in the next section. The focus was on multi-sectoral and multi-level interventions aimed at HIV prevention, sexual and reproductive health, mental health and non-communicable diseases. Programs that were not necessarily multi-sectoral but prominent in the field were also included.

The "health" impacts discussed in the paper are along the continuum of that deemed necessary to change health behaviors and ultimately health outcomes. Categories along the spectrum include: health knowledge, attitudes, intentions, behaviors, service use, mediators and status.

III. METHODOLOGY

CRITERIA FOR INCLUSION

The following eligibility criteria were used to identify program interventions and studies to be included in the review:

Language: English only (contract resources were not sufficient to cover review in other languages).

Geography: Global with an emphasis on low- and middle-income countries.

Population: Adolescent girls aged 10 to 19.

Types of interventions: Integrated/multi-sectoral interventions that address adolescent girls and health plus another area. Not specifically health alone.

Study design: Qualitative, quantitative (cluster-randomized trials, quasi-experimental design, pre-post designs, post-only designs).

Intervention components: Reproductive health, HIV/AIDS, mental health, substance abuse, non-communicable disease, plus one or more of the following: formal education, livelihood, vocational, microfinance, financial education or other economic components, legal, violence.

Outcomes: HIV, HSV-2, STIs, sexual, reproductive, contraceptive, mental health, alcohol, smoking, substance misuse outcomes and behaviors; health care utilization; health agency, skills and decision-making; health attitudes; health knowledge.

Date: From 1995 to present.

SEARCH STRATEGY

KEY SEARCH TERMS

Based on the main concepts examined in the review, key questions, and eligibility criteria for inclusion, we developed the following key search terms to identify relevant literature:

Population: (Girls, females, or women) AND (adolescents, youth, young, adolescence, teenager, daughter, school girl, teenage mothers).

Interventions: intervention, program, programme, life-skills, skill-building, workshop, training.

Types of interventions: multi-sectoral, multi-level, integrated, multi-pronged, holistic, multi-dimensional.

Health: HIV, HSV-2, STIs, sexual, reproductive, contraceptive, mental health, health, disease, well-being, psychological, mental, physical, reproductive, sexual, maternal, non-communicable disease, smoking, alcohol, substance abuse, misuse.

Other intervention topics: economic, financial, vocational, livelihoods, empowerment, micro-credit, microfinance, savings, leadership.

SOURCES

The review includes published, peer-reviewed studies, gray literature, and conference abstracts. Efforts were also made to identify unpublished studies and program interventions.

The following sources were used in the search:

Bibliographic databases: The following databases were searched for published and peer-reviewed studies:

- Google Scholar
- PubMed
- ProQuest
- JSTOR
- POPLINE (Population, family planning, and related health issues)
- JOLIS (World Bank and IMF Papers)
- WHOLIS (World Health Organization Library Database)

Website searches: The following websites were searched for relevant research and working paper series:

- World Health Organization (http://www.who.int/en/)
- The World Bank (http://www.worldbank.org/)
- UNICEF (http://www.unicef.org/)
- CARE (care.org)
- Plan (http://plan-international.org/)
- Mercy Corps (https://www.mercycorps.org/)
- Nike Foundation (http://nikeinc.com/pages/the-nike-foundation/)
- Department for International Development, UK (www.dfid.gov.uk)
- Governance and Social Development Resource Centre (http://www.gsdrc.org/)
- The Overseas Development Institute (ODI) http://www.odi.org.uk/)
- International Centre research for women (http://www.icrw.org/icrw-library)
- The London School of Hygiene & Tropical Medicine (http://www.lshtm.ac.uk/publications/)
- Institute of development studies (http://www.ids.ac.uk/go/home)
- International Development Research Centre (http://publicwebsite.idrc.ca/EN/Pages/default.aspx)
- Poverty Action Lab (http://www.povertyactionlab.org)
- Innovation for poverty action (http://www.poverty-action.org/)
- The Center for Global Development (http://www.cgdev.org/)
- The Center of Evaluation for Global Action (CEGA) (http://cega.berkeley.edu)

- Centre for International Development (CID) Micro-Development Initiative, Harvard University (http://www.hks.harvard.edu/centers/cid/programs/micro-development-initiative)
- The Development Impact Evaluation Initiative (DIME)
- The Chronic Poverty Research Centre (CPRC) (http://www.chronicpoverty.org)
- UNESCO (http://www.unesco.org/)
- ELDIS (http://www.eldis.org/)
- Freedomfromhunger (http://www.freedomfromhunger.org/)
- Population council (http://popcouncil.org/)
- Policy pointers (http://www.policypointers.org/)
- Search4Development Netherlands (http://www.search4dev.nl/)
- BRIDGE – (http://www.bridge.ids.ac.uk/)
- BRAC (http://www.brac.net/)
- Bread for the World (http://www.bread.org)
- Centers for Disease Control and Prevention (http://www.cdc.gov/)
- Futures without violence (http://www.futureswithoutviolence.org/section/our_work/international)
- ActionAid International (http://www.actionaid.org.uk/)
- Breakthrough (http://breakthrough.tv/)
- Centre for Development and Population Activities CEDPA (http://www.cedpa.org/)
- EngenderHealth (http://www.engenderhealth.org/index-main.php)
- Human Rights Watch (http://www.hrw.org/home)
- International Planned Parenthood Federation (http://www.ippf.org/en)
- International Women's Health Coalition (http://www.iwhc.org/index.php?option=com_content&task=view&id=132&Itemid=74)
- Save the Children (http://www.savethechildren.org/)
- Pathfinder International (http://www2.pathfinder.org/site/PageServer)
- Tostan (http://www.tostan.org/)
- United Nations Development Programme (UNDP) (http://www.undp.org/content/undp/en/home.html)
- UNFPA (http://www.unfpa.org/public/)
- Bill & Melinda Gates Foundation (http://www.gatesfoundation.org/Pages/home.aspx)
- Population Services International (http://www.psi.org/)

- Guttmacher Institute (http://www.guttmacher.org/)
- Family Health International (http://www.fhi360.org/en/index.htm)
- Youth Coalition (http://www.youthcoalition.org/html/index.php)
- Global Fund to Fights AIDS, Tuberculosis and Malaria (http://www.theglobalfund.org/en/)
- USAID (http://www.usaid.gov/)
- World Vision (www.worldvision.org)
- Partners in Health (http://www.pih.org/)
- International Rescue Committee (http://www.rescue.org/)
- Marie Stopes International (http://www.mariestopes.org/)
- Clinton Foundation (http://www.clintonfoundation.org/)
- African Development Bank (http://www.afdb.org/en/)
- Packard Foundation (http://www.packard.org/)
- JHPIEGO (http://www.jhpiego.org/)
- Restless Development (www.restlessdevelopment.org)
- Hewlett Foundation
- Packard Foundation
- AIDS Alliance
- HIV and AIDS Consortium
- Stepping Stones
- Interact Worldwide
- UNAIDS

Web searches: We also conducted web searches using Google to identify other relevant organizations that implement adolescent girl interventions or conduct evaluations of such interventions. Once identified, the organization websites were searched for relevant literature.

IV. STATE OF THE LITERATURE

The literature review yielded 190 bibliographic references to interventions in low- and middle-income countries that included girls and health. These consisted of published primary articles, published secondary literature reviews, grey-literature reports and citations in review articles.

Of the 190 citations, 32 were secondary review articles. Among the 158 primary citations describing projects, 4 did not mention having an evaluation component. A further 27 were featured in review documents which did not contain enough detail to determine the evaluation design and for which primary references were not found through the internet search.

This yielded 127 primary studies detailing intervention projects. The following is the breakdown of these:

- 51 references describe mixed-sex adolescent/youth interventions for which girl-specific results are not reported in the abstract. Many of these are school-based. It is possible that a number of them were not designed with sufficient sample size/statistical power to perform a gender disaggregated analysis. The thematic breakdown of these projects is the following:
    - 19 have a primary focus on HIV/AIDS
    - 19 have a primary focus on sexual and reproductive health
    - 8 have a primary focus on mental health
    - 5 have a primary focus on non-communicable disease
- A further 5 citations describe quantitative interventions with fewer than 100 participants. The thematic breakdown is the following:
    - 2 have a primary focus on HIV/AIDS
    - 2 have a primary focus on sexual and reproductive health
    - 1 has a primary focus on mental health
- 22 references describe projects that did not include a control group in the evaluation design. The thematic breakdown is the following:
    - 2 have a primary focus on HIV/AIDS
    - 19 have a primary focus on sexual and reproductive health
    - 1 has a primary focus on microfinance

The 49 remaining citations describe control-comparison studies with pre- and post-intervention assessments and for which girl-specific results are reported. This group forms the basis for the discussion in this paper.

The thematic breakdown of the featured 49 is the following:

- 18 have a primary focus on HIV/AIDS
- 18 have a primary focus on sexual and reproductive health (SRH)
- 6 have a primary focus on mental health
- 2 have a primary focus on non-communicable disease (NCD)
- 4 have a primary focus on financial education or saving
- 1 has a primary focus on leadership

TABLE 1 provides information on characteristics of program participants (page 33).

GENDER COMPOSITION

Among the projects that provide girl-specific results, approximately one-half are single-sex girl-only interventions. SRH projects are more commonly single-sex (two-thirds) than are those classified as HIV, mental health or NCD. School-based programs featured here (mainly HIV, mental health and NCD) are more likely to be mixed-sex, due to the fact that most are undertaken in co-ed schools and during classroom hours.

INCLUSION OF VERY YOUNG ADOLESCENTS

The formation of health beliefs, attitudes and behaviors begins at a very young age. Many interventions, however, target age groups in which it is more difficult to change these precursors. Although one-half of the featured studies included girls before the age of 14 years, not all incorporated age-specific program content (the latter issue is discussed further in the program features section). SRH and mental health projects were the most likely to include girls younger than 14 years of age.

SCHOOL-ENROLLED VS. NON-ENROLLED GIRLS

Studies also differed by school enrollment status of the intended participants. Enrollment status of participants has a major influence on program design and delivery (including location, time of day, day of week, pedagogical/engagement methods, and single- versus co-ed sessions). In settings where girls' access to schooling is restricted, a study using a school-enrolled population would be non-representative and favor more advantaged girls, leading to a potentially biased picture of the likely impact on the overall population of girls if the intervention was scaled up.

Of the 49 featured studies, one-third targeted school-enrolled girls and only 3 focused exclusively on out-of-school girls, a particularly difficult to reach group. The remainder were largely community-based projects, open to both in- and out-of school participants. The majority of mental health and NCD studies found were school-based interventions.

LITERATE/HAS SOME EDUCATION

Literacy and educational attainment of target participants impact the methods used for engagement and assessment of impact. From a welfare point of view, non-literate girls are among the most difficult to reach, often being members of socially marginalized or mobile populations. Due to the strong social, cultural and economic constraints on such girls, they are also hard to retain in studies. The majority of projects in the review did not clearly specify literacy or educational attainment criteria for participation. The only explicit information found was the extent to which interventions were aimed at school-enrolled participants – and the grade level they were aimed at. The most common were the upper primary or lower secondary grades.

MARRIED VS. UNMARRIED

Compared with unmarried girls, married girls are usually more subject to restrictions on their physical and social mobility, are under pressure to bear children, and more vulnerable to sexual and domestic violence. For these reasons, married girls are problematic to reach and retain in many interventions. Only three projects (five studies) in the review had a clear marital status inclusion criteria: two of these, Zomba in Malawi and the Nyeri Youth Health Project in Kenya, were for never married girls, and one, the First Time Parents Project in India, was designed specifically for young women who were currently pregnant or had an infant.

HAS A CHILD OR NOT

Obviously, girls with children have experiences, needs and constraints that differ from girls who do not have children. Also, depending on the context, girls with children will have experienced pregnancy at a

young age and some outside of a marriage or union. These can present additional social and cultural challenges for girls. Only one project of the 49 case-comparison studies found made a distinction in its design, targeting and content regarding whether a girl had a child or not – the First Time Parents Project in India.

PARENTAL SURVIVAL/CO-RESIDENCE

The majority of programming for orphaned and vulnerable children or displaced children is intended for younger children. Most such interventions lack gender-specificity in their targeting and design. Moreover, among the OVC interventions that have been evaluated, many do not disaggregate results by gender. In this review, we encountered the following with regard to inclusion criteria pertaining to girls' orphan and co-resident parent status: three interventions (four studies) included only orphans and were intended to address HIV prevention and AIDS mitigation. One intervention in Uganda (SUUBI) also assessed reproductive health behaviors, as well as mental health status.

RESIDENCE TYPE

Urban versus rural is obviously a vast oversimplification of the range of different geographic areas where adolescent girls reside. Descriptions of interventions, however, often use these common terms. Half of the studies in the review took place in rural settings; one of five in urban areas; and another 27 percent in both urban and rural settings. HIV prevention interventions were more likely to take place in rural areas (two-thirds); sexual and reproductive health and other types of studies were spread more evenly across geographic areas.

TABLE 2 describes characteristics of the interventions and evaluations (page 35).

STUDY DESIGN

In 60 percent of the 49 studies featured, the intervention was randomly allocated to participants, mostly at the cluster level (enumeration area, school, or classroom) but some at the individual level. The remaining forty percent of studies were quasi-experimental or some variation thereof. Random allocation of the treatment was most commonly observed in HIV prevention and mental health interventions.

FOLLOW-UP INTERVAL

The length of follow-up for measuring project impact ranged from 3 to 108 months, with the average across all studies being 27 months. (Note that single interventions with multiple published studies are represented by publication in each appendix table.) HIV interventions, many of which have larger budgets and more rigorous designs than sexual and reproductive health interventions, have the longest follow-up periods at 38 months on average (though this is skewed to the right due to MKV in Tanzania having five publications in the matrix). SRH interventions had a mean follow-period of 25 months. Mental health studies (most of which were with school-based younger populations) had the shortest mean tracking period at 8 months. This is likely also due to mental health indicators being amenable to change more quickly than many of the HIV and SRH outcomes that the other interventions target. The other three smaller categories of intervention each had a mean follow-up length of 18 months.

Across the 49 featured studies, 63 percent had a follow-up period of more than 12 months, while 29 percent followed participants for longer than 24 months. Again, HIV prevention interventions were more likely than others to have longer tracking periods.

COST INFORMATION

Costing information is not plentiful for health interventions that involve girls. Such data should be collected more regularly, and the capacity to do so needs to be more heavily invested in. Across the 49 studies,

costing information was found for only 20 percent. The majority of these are SRH interventions evaluated by the Population Council for which costing information was coordinated by Sewall-Menon, et al. (2012).

MULTI-LEVEL APPROACHES

Three out of five interventions had components that involved actors in addition to the target girl herself. These included direct training of and/or engagement with educators, parents, community leaders, sexual partners, community health workers, etc. (School-based programs that only worked within the classroom were not classified as multi-level.) SRH and HIV interventions were the most likely to employ this strategy, with the school-based mental health projects being least likely.

MULTI-SECTORAL ELEMENTS

The interventions reviewed were scanned for non-health program components that recognized the multi-dimensional determinants of adolescent health behavior and status.

Approximately one-fourth of studies incorporated school retention or school re-entry as an explicit goal. This did not vary greatly across program theme but was more common among those targeting younger adolescents.

Twenty-seven percent of programs incorporated elements involving credit, cash or in-kind incentives to participants. Most with cash or in-kind incentives involved younger adolescents and were tied to school retention. Those with credit components were mainly for older adolescents and aimed at micro-enterprise development.

Thirty-one percent of interventions included financial education and/or savings as components. Most projects with a credit component did so, but a number of others had financial education as an element in and of itself. Among the health interventions featured, SRH projects were the most likely to include this feature. Vocational or livelihood skills training is a related approach, often – but not always – offered in combination with micro-credit. Vocational training is becoming less common as market demand studies are deemed necessary to determine the type of job training to offer.

Training in health, economic, social or legal rights is another aspect of adolescent interventions. Twenty-nine percent of all projects had such an element, with SRH being the most common type to include it.

AGE AND GRADE-SPECIFIC CONTENT

Social, psychological and physiological needs differ for girls at different stages of development and interventions should in principle be more effective when tailored to the specific age and development stage of the girl.

Forty-five percent of the featured studies had program content designed for an age range of six years or less and/or a grade range of three or fewer years. This was most common for school-based studies that targeted a narrow grade range; in this review, these are the mental health and NCD interventions. Among the non-school-based studies, financial education and saving, and leadership programs were more likely than the HIV or SRH interventions to have age-specific content.

Slightly more than one-half of interventions discussed covered at least two adolescent development stages (an age-range larger than six years) and included content and/or delivery methods that were not described as age-, development stage-, or life-cycle specific.

SAFE SPACES AND SOCIAL SUPPORT

Slightly more than one-half of the 49 studies had a component where girls come together regularly in same-sex groups in safe places in the community. This approach is intended to increase access to mentors,

social support and positive social capital of girls. This approach was the most common in SRH interventions and those that are not school-based.

IMPLEMENTATION METHODS

Insufficient information was provided in the studies reviewed to establish a clear set of mutually-exclusive implementation process descriptors. The ones for which there was any degree of representation among the 49 studies included (a) in-school versus out-of-school, (b) whether the program had a multi-level element or not, and (c) the use of a safe space in the community for girls.

V. WHAT ARE THE CHARACTERISTICS OF PROGRAMS THAT SHOWED IMPACT?

TABLE 3 displays the types of impacts and outcomes reported for girls (page 37).

Only a minority of interventions showed impact on girls' health status. Fourteen of the 49 studies (covering 12 different interventions) reviewed had a significant effect on girls' health status. The most common outcome affected – regardless of project objective – was a reduction in self-reported pregnancies (six studies, five interventions). The second most common was a reduction in HSV-2, reported in two studies (two interventions). For each of the following seven outcomes there was one study (one intervention) that demonstrated impact: HIV, FGM, GHQ-12, depression, conduct problems, pro-social behavior and PTSD.

Of the five interventions that reported a reduction in self-reported pregnancy rates, four were single-sex girl-only; three included girls younger than age fourteen years; only one was for school-enrolled girls only; all five included rural areas (three exclusively rural, two mixed rural and urban); four of five were cluster randomized trials (CRTs); all five had follow-up periods greater than 12 months; three of five included a school retention or re-entry element; two had a school economic incentive; two had age- or grade-specific content; two incorporated safe spaces in the community; and four of the five were multi-level, engaging actors in addition to the girl herself.

The two interventions that reduced HSV-2 incidence (Baird et al. 2012; Jewkes et al. 2008) each had a sizeable number of rural participants, were CRTs, and had follow-up periods of 24 months. The only intervention that impacted HIV incidence was the Zomba study in Malawi (Baird et al. 2012). The Tostan intervention in Senegal (UNICEF et al. 2008) reported a decline in FGM, while Muyinda et al. (2003) reported a decline in STI symptoms among girls in Uganda. The latter two studies utilized a multi-level intervention, intensively training and sensitizing adult women, who then work with local adolescent girls – an approach well worth considering in future interventions.

Of the six interventions that had positive impacts on girls' mental health status, five were targeted to children younger than fourteen years of age; five were school-based programs; five included rural populations; in all six the intervention was randomly allocated to participants.

Seven studies (seven interventions) reported changes to two or more self-reported sexual behaviors. Two of these are classified as HIV prevention programs, four are SRH and one is financial education/savings. Six of the seven are girl-only programs; four included girls younger than age fourteen; all were community-based (none were classroom-based); all seven had a presence in rural areas (four were rural only; three were mixed urban and rural); five had a financial education or savings component; three involved vocational skills training; six brought girls together on a regular basis in groups in a safe space in the community; four had multi-level components; two were CRTs and five were quasi-experimental in design.

Ten studies (ten interventions) reported changing two or more health mediators among girls. Here health mediators are defined as increases in school enrollment, marriage age, self-esteem, communication about HIV or SRH, legal or financial literacy, or safety from violence. Nine of these ten interventions were single-sex girl-only; seven included girls younger than fourteen years of age; six were among rural populations; four had a school retention or re-entry element; six had a financial education or savings component; seven provided training in rights; seven had age-/grade-specific content; all ten utilized safe spaces in the community; seven used a multi-level approach; eight followed girls for more than 12 months; seven had costing information; one was a CRT, the others were quasi-experimental in design.

In sum, the interventions that demonstrated an impact on health status, health behaviors or health mediators for girls had the following common characteristics. The majority:

- were single-sex, girl-only interventions;
- included girls younger than 14 years of age;
- were offered to rural populations;
- had a follow-up period of more than 12 months;
- used a multi-level intervention approach;
- provided a safe space in the community for girls to regularly meet in groups;
- offered financial education or savings training;
- had a rights training element;
- employed age- or grade-specific targeting and content;
- collected cost data.

VI. CRITICAL OPPORTUNITIES

RESEARCH OPPORTUNITIES

Cluster randomized experiments to test the program characteristics demonstrated as promising in quasi-experimental studies should be funded. The on-going Population Council (2012) study in Zambia will add some evidence.

Segmented interventions (multi-arm studies) to assess the impact of different program elements should be supported. Most interventions only test a package versus nothing, making it impossible to assess which element had what impact. Five on-going studies should shed light on this issue (Poverty Action Lab, 2007; Population Council, 2012; Ashraf, McGinn, Low, 2012; Austrian et al., 2012; Bhatacharjee and Dos, 2011).

Further investigation is needed of the effect of girl-only versus mixed-sex interventions (e.g. through an identical intervention with a girl-only groups tested against mixed-sex groups).

Research is needed on what aspects of the interview environment might most impact girls' self-reporting of sensitive behaviors.

Operations evaluations are needed on how girl programs are implemented. There is still too little information available in the literature. It might be worthwhile to consider developing an mHealth tool to allow programmers to quickly submit "how" information on a regular (e.g., daily/weekly) basis.

Medium- and long-term follow-up of interventions are needed. We currently only know the short-term, or medium-term, impacts of interventions. More longitudinal research of existing well-designed interventions is needed.

Greater use of biomarkers (with funding for adequate sample size and long-term follow-up) and other objective measures are encouraged.

Simple costing tools should be developed and costing data collected.

PROGRAMMING OPPORTUNITIES

Simple clear tools should be developed for documenting in real time (daily/weekly) how the intervention is being implemented, who is getting what, how frequently and with what intensity (mHealth tools perhaps).

A more narrow age range is needed for targeting, developing content and choosing engagement methods with participants.

It appears that interventions with financial education/savings and/or formal education support are promising for girls' health and should therefore be expanded.

Program managers should receive support for implementing simple costing tools.

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ANNEX 1
MAPPING OF INITIATIVES

IN A SEPARATE EXCEL DOCUMENT. FIND IT ONLINE AT GIRLEFFECT.ORG.

ANNEX 2
FEATURED PROGRAMS

CONTROL-COMPARISON STUDIES WITH GIRL-SPECIFIC RESULTS REPORTED

HIV

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TABLE 1 PARTICIPANT CHARACTERISTICS

	SINGLE SEX	AGE<14 YEARS INCLUDED	SCHOOL-ENROLLED ONLY	LITERATE/ SOME EDUCATION	OUT OF SCHOOL	MARRIED V. UNMARRIED	HAS CHILD OR NOT	PARENTAL SURVIVAL, CO-RESIDENCE	RURAL	URBAN	MIXED URBAN RURAL
HIV PREVENTION											
Wight, Plummer, Ross. 2012.									y		
Doyle et al. 2011.									y		
Doyle et al. 2010.									y		
Larke et al. 2010.									y		
Ross et al. 2007.									y		
Baird, Garfein et al. 2012.	y	y				never married					y
Hallfors et al. 2011.	y	y	y	Y				orphaned	y		
Dunbar et al. 2010.	y				y			orphaned		y	
Cowan et al. 2010.									y		
Pronyk et al. 2008.	y								y		
Jewkes et al. 2008.									y		
Poverty Action Lab. 2007.	y								y		
Duflo et al. 2006.		y	y	Y					y		
Harvey et al. 2000.			y	Y					not specified	not specified	
Erulkar et al. 2012.	y	y							y		
Underwood and Schwandt, 2011.	y	y									y
Coffman et al. 2011.			y	Y						y	
Maticka-Tyndale et al. 2007		y	y	Y							y
HIV TOTAL	**39%**	**33%**	**28%**	**28%**	**6%**	**6%**	**0%**	**11%**	**67%**	**17%**	**17%**
SEXUAL AND REPRODUCTIVE HEALTH											
Population Council. 2012.	y									y	
Ashraf, McGinn, Low. 2012.	y		y	Y						y	
Austrian et al. 2012.	y	y								y	
Baird, Chirwa, et al. 2009.	y	y				never married					y
Erulkar et al. 2009.	y	y							y		
Ssewamala et al. 2009.		y	y	y				otphaned	y		
ICRW. 2008.										y	
Peña et al. 2008.	y	y								y	
Santhya et al. 2008.	y					married	pregnant / infant		y		
UNICEF et al. 2008.	y	y							y		
Brady et al. 2007.	y	y			y				y		
Erulkar and Chong. 2005.	y				y					y	
Grant, et al. 2005.	y									y	
van Rossem and Meekers. 2000.											y
Meekers et al. 2005.											y
Erulkar et al. 2004.		y				unmarried					y

TABLE 1 PARTICIPANT CHARACTERISTICS

	SINGLE SEX	AGE<14 YEARS INCLUDED	SCHOOL-ENROLLED ONLY	LITERATE/ SOME EDUCATION	OUT OF SCHOOL	MARRIED V. UNMARRIED	HAS CHILD OR NOT	PARENTAL SURVIVAL, CO-RESIDENCE	RURAL	URBAN	MIXED URBAN RURAL
Muyinda et al. 2003.		y							y		
Shuey et al. 1999.		y	y	y					y		
Mgalla et al. 1998.	y	y	y	y							y
SRH TOTAL	**67%**	**61%**	**22%**	**22%**	**11%**	**17%**	**6%**	**6%**	**33%**	**33%**	**28%**
MENTAL HEALTH											
Ssewamala et al. 2009.		y	y	y				orphaned	y		
Baird, de Hoop, Ozler. 2011.	y	y				never married					y
Bolton et al. 2007.			y	y					IDP camp		
Tol et al. 2012.		y	y	y							y
Jordans et al. 2010.		y	y	y							y
Tol et al. 2010.		y	y	y							y
MENTAL HEALTH TOTAL	**17%**	**83%**	**83%**	**83%**	**0%**	**17%**	**0%**	**17%**	**17%**	**17%**	**67%**
NON-COMMUNICABLE DISEASE											
Smith et al. 2008.			y	y					not specified		
Resnicow et al. 2008.			y	y					not specified		
NCD TOTAL	**0%**	**0%**	**100%**	**100%**	**0%**	**0%**	**0%**	**0%**			
FINANCIAL EDUCATION OR SAVINGS											
Bandiera et al. 2012.	y										y
Hallman et al. 2012.			y	y					y		
Austrian. 2011.	y	y								y	
Bhattacharjee, Das. 2011	y								y		
FINANCIAL TOTAL	**75%**	**25%**	**25%**	**25%**	**0%**	**0%**	**0%**	**0%**	**50%**	**25%**	**25%**
LEADERSHIP											
Catino et al. 2011.	y	y							y		
LEADERSHIP TOTAL	**100%**	**100%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**100%**	**0%**	
ALL FEATURED PROGRAMS	**47%**	**49%**	**35%**	**35%**	**6%**	**10%**	**2%**	**8%**	**47%**	**20%**	**27%**

TABLE 2 STUDY CHARACTERISTICS

	STUDY DESIGN	LONGEST FOLLOW-UP (MOS)	FOLLOW-UP>12 MONTHS	FOLLOW-UP>24 MONTHS	COST INFO-MATION	ECOLOG ICAL, MULTI-LEVEL	SCHOOL RETENTION / REENTRY	INCENTIVE (CREDIT, CASH, IN-KIND)	FINANCIAL EDUCATION /SAVING	VOCATION-AL / LH TRAINING	RIGHTS TRAINING	AGE/GRADE-SPECIFIC CONTENT (≤6 YRS; 3 GRADES)	SAFE SPACE, SOCIAL SUPPORT
HIV PREVENTION													
Wight, Plummer, Ross. 2012.	CRT	108	1	1		y							
Doyle et al. 2011.	CRT	108	1	1		y							
Doyle et al. 2010.	CRT	108	1	1		y							
Larke et al. 2010.	CRT	36	1	1		y							
Ross et al. 2007.	CRT	36	1	1		y							
Baird, Garfein et al. 2012.	CRT	24	1	0		y	y	y					
Hallfors et al. 2011.	CRT	24	1	0		y	y	y				y	
Dunbar et al. 2010.	CRT	24	1	0				y	y	y		y	y
Cowan et al. 2010.	CRT	48	1	1		y						y	y
Pronyk et al. 2008.	CRT	24	0	0		y		y	y	y	y		y
Jewkes et al. 2008.	CRT	12	0	0									
Poverty Action Lab. 2007.	CRT	36	1	1		y	y	y	y	y	y	y	y
Duflo et al. 2006.	CRT					y	y	y					
Harvey et al. 2000.	CRT	6	0	0									
Erulkar et al. 2012.	QE	24	1	0	Y				y	y	y		y
Underwood and Schwandt, 2011.	QE	12	0	0		y	y				y		y
Coffman et al. 2011.	QE	36	1	1								y	
Maticka-Tyndale et al. 2007.	QE	18	1	0		y						y	y
HIV PREVENTION TOTAL		38	72%	44%	6%	72%	28%	33%	22%	22%	22%	33%	39%
SEXUAL AND REPRODUCTIVE HEALTH													
Population Council. 2012.	CRT	18	1	0		y					y		y
Ashraf, McGinn, Low. 2012.	CRT	not clear	not clear	not clear								y	y
Austrian et al. 2012.	CRT	not clear	not clear	not clear	Y	y		y	y				y
Baird, Chirwa, et al. 2009.	CRT	24	1	0		y	y	y					
Erulkar et al. 2009.	QE	24	1	0	Y	y	y	y	y	y			y
Ssewamala et al. 2009.	CRT	10	0	0		y	y	y	y			y	y
ICRW. 2008.	QE	36	1	1		y				y			y
Peña et al. 2008.	Prepost non-equivalent control group	not clear	not clear	not clear		y					y	y	y
Santhya et al. 2008.	QE	24	1	0	Y	y					y		y
UNICEF et al. 2008.	QE	84	1	1		y					y	y	y
Brady et al. 2007.	QE	30	1	1	Y	y	y				y	y	y
Erulkar and Chong. 2005.	QE	24	1	0	Y				y		y		y
Grant, Mensch, et al. 2005.	QE	10	0	0					y	y		y	y

TABLE 2 STUDY CHARACTERISTICS

	STUDY DESIGN	LONGEST FOLLOW-UP (MOS)	FOLLOW-UP>12 MONTHS	FOLLOW-UP>24 MONTHS	COST INFO-MATION	ECOLOG ICAL, MULTI-LEVEL	SCHOOL RETENTION / REENTRY	INCENTIVE (CREDIT, CASH, IN-KIND)	FINANCIAL EDUCATION /SAVING	VOCATION-AL / LH TRAINING	RIGHTS TRAINING	AGE/GRADE-SPECIFIC CONTENT (≤6 YRS; 3 GRADES)	SAFE SPACE, SOCIAL SUPPORT
van Rossem, Meekers. 2000.	Repeated cross-section	13	1	0									
Meekers et al. 2005.	Repeated cross-section	24	1	1									
Erulkar et al. 2004.	QE	36	1	1	Y	y			y				y
Muyinda et al. 2003.	QE	12	0	0		y							y
Shuey et al. 1999.	Repeated cross-section	24	1	0								y	
Mgalla et al. 1998.	Post-test of schools with, without program	8	0	0		y					y		
SRH TOTAL		25	75%	31%	35%	76%	24%	24%	35%	18%	41%	39%	82%
MENTAL HEALTH													
Ssewamala et al. 2009.	RCT	10	0	0			y	y	y	y		y	y
Baird, de Hoop, Ozler. 2011.	CRT	24	1	0		y	y	y					
Bolton et al. 2007.	RCT	4	0	0								y	y
Tol et al. 2012.	CRT	3	0	0									
Jordans et al. 2010.	CRT	3	not clear	not clear								y	
Tol et al. 2010.	CRT	3	not clear	not clear								y	
MENTAL HEALTH TOTAL		8	25%	0%	0%	17%	33%	33%	17%	17%	0%	67%	33%
NON-COMMUNICABLE DISEASE													
Smith et al. 2008.	QE	12	1	1								y	
Resnicow et al. 2008.	CRT	24	1	0								y	
NCD TOTAL		18	100%	50%	0%	0%	0%	0%	0%	0%	0%	100%	0%
FINANCIAL EDUCATION OR SAVINGS													
Bandiera et al. 2012.	CRT	24	1	0					y	y			Y
Hallman et al. 2012.	QE	18	1	0	Y	Y			y		Y	y	Y
Austrian. 2011.	QE	12	0	0	Y	Y			y		Y	y	Y
Bhattacharjee and Das. 2011.	QE	not clear	not clear	not clear		Y		y	y	y			Y
FINANCIAL ED. & SAVINGS TOTAL		18	67%	0%	50%	75%	0%	25%	75%	25%	50%	50%	75%
LEADERSHIP													
Catino et al. 2011.	Comparison with district means	18	1	0	Y	Y	y		y	y	Y	y	y
LEADERSHIP TOTAL		18	100%	0%	100%	100%	100%	0%	100%	100%	100%	100%	100%
ALL FEATURED PROGRAMS		27	63%	29%	20%	61%	24%	27%	31%	20%	29%	45%	55%

TABLE 3 GIRL EFFECTS

	HEALTH KNOWLEDGE	ATTITUDES	HEALTH INTENTIONS	HEALTH BEHAVIOR	HEALTH SERVICE USE	HEALTH MEDIATOR	HEALTH STATUS
HIV PREVENTION							
Wight, Plummer, Ross. 2012.	1						
Doyle et al. 2011.	1	1					
Doyle et al. 2010.	1						
Larke et al. 2010.							
Ross et al. 2007.	1	1					
Baird, Garfein et al. 2012.				2			HIV,
HSV-2, pregnancy							
Hallfors et al. 2011.		2				2	
Dunbar et al. 2010.	1					1	
Cowan et al. 2010.	1	1					pregnancy
Pronyk et al. 2008.				1	1	1	
Jewkes et al. 2008.				1			HSV-2
Poverty Action Lab. 2007.	not yet available						
Duflo et al. 2006.	1			1		1	pregnancy
Harvey et al. 2000.	1	1		1			
Erulkar et al. 2012.	2		1			1	
Underwood, Schwandt. 2011.						3	
Coffman et al. 2011.						1	
Maticka-Tyndale et al. 2007.				1			
Total number significant effects	10	6	1	7	1	10	5
Completed HIV studies with significant effects (n)	10	6	1	7	1	8	4
Completed HIV studies with significant effects (%)	59%	35%	6%	41%	6%	47%	24%
SEXUAL AND REPRODUCTIVE HEALTH							
Population Council. 2012.	not yet available						
Ashraf, McGinn, Low. 2012.	not yet available						
Austrian et al. 2012.	not yet available						
Baird, Chirwa, et al. 2009.				1		1	pregnancy
Erulkar et al. 2009.	1	1		2		5	
Ssewamala et al. 2009.		1					
ICRW. 2008.	1	1		1		2	
Peña et al. 2008.						2	
Santhya et al. 2008.	1	2		3	2	3	
UNICEF et al. 2008.		1					FGM
Brady et al. 2007.		2	1			3	
Erulkar and Chong. 2005.		1		2			
Grant, Mensch, Sebastian. 2005.	1					4	
van Rossem and Meekers. 2000.	2					1	

TABLE 3 GIRL EFFECTS

	HEALTH KNOWLEDGE	ATTITUDES	HEALTH INTENTIONS	HEALTH BEHAVIOR	HEALTH SERVICE USE	HEALTH MEDIATOR	HEALTH STATUS
Meekers et al. 2005.	1			1		1	
Erulkar et al. 2004.				2		1	
Muyinda et al. 2003.	1			1	1	1	STI symptoms
Shuey et al. 1999.				1		1	
Mgalla et al. 1998.						1	
Total number significant effects	8	9	1	14	3	26	3
Completed SRH studies with significant effects (n)	6	6	1	8	2	12	3
Completed SRH studies with significant effects (%)	40%	40%	7%	53%	13%	80%	20%
MENTAL HEALTH							
Ssewamala et al. 2009.						1	
Baird, de Hoop, Ozler. 2011.							GHQ-12
Bolton et al. 2007.							depression
Tol et al. 2012.							conduct problems
Jordans et al. 2010.							pro-social behavior
Tol et al. 2010.							PTSD
Total number significant effects						1	5
Completed mental health studies with significant effects (n)						1	5
Completed mental health studies with significant effects (%)						17%	83%
NON-COMMUNICABLE DISEASE							
Smith et al. 2008.	1			1			
Resnicow et al. 2008.				1			
Total number significant effects	1	0	0	2	0	0	0
Completed NCD studies with significant effects (n)	1	0	0	2	0	0	0
Completed NCD studies with significant effects (%)	50%	0%	0%	100%	0%	0%	0%
FINANCIAL EDUCATION OR SAVINGS							
Bandiera et al. 2012.				2			pregnancy
Hallman et al. 2012.	1	1				3	
Austrian. 2011.	1	1				3	
Bhattacharjee and Das. 2011.	not yet available						
Total number significant effects	2	2	0	2	0	6	1
Completed financial studies with significant effects (n)	2	2	0	1	0	2	1
Completed financial studies with significant effects (%)	67%	67%	0%	33%	0%	67%	33%
LEADERSHIP							
Catino et al. 2011.						4	pregnancy
Total number significant effects	0	0	0	0	0	4	1
Completed leadership studies with significant effects (n)	0	0	0	0	0	1	1
Completed leadership studies with significant effects (%)	0%	0%	0%	0%	0%	100%	100%