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Review article

A Systematic Review of Adolescent Girl Program Implementation in Low- and Middle-Income Countries: Evidence Gaps and Insights

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A B S T R A C T

Increasing attention to adolescent girls has generated an abundance of programs and a growing body of research on adolescent girls in low- and middle-income countries. Despite this, questions remain about what implementation approaches in program design are most effective, hindering efficient resource allocation, program scale-up, and replication across settings. To address these questions, we conducted a systematic review to identify lessons learned and gaps in the evidence base. We searched four electronic databases to identify studies published between 1990 and 2014 that evaluated health, social, and/or economic development programs targeting adolescent girls in low- and middle-income countries. Seventy-seven (77) studies meeting specified criteria were identified, of which 19 presented results that allowed conclusions relevant to implementation science. Studies examining the following questions were assessed: To what extent, if any, do multicomponent interventions (as opposed to single-component interventions) improve outcomes for girls? What is the added value of involving actors in addition to the girl herself such as parents, guardians, husbands (i.e., multilevel interventions)? What is the threshold proportion of girls who need to participate in a program to bring about normative and behavior changes at the community level? Is a greater level of program exposure associated with greater programmatic benefit for girls? Can supplemental "booster" activities extend the benefits of a program after it ends? We found evidence to support associations between multicomponent (vs. single component) programs, and longer program exposure (vs. less program exposure), with more favorable outcomes for girls, although both conclusions include methodological limitations. Overall, few studies assessed boosters or program saturation, and evidence on multilevel versus single-level programs was inconclusive. Few studies assessed implementation science questions by design, exposing large gaps in the evidence base. We call for future research to explicitly test such implementation science questions to inform more effective use of resources and to improve outcomes for girls.

IMPLICATIONS AND CONTRIBUTIONS

Evidence from girl-centered programs in low- and middle-income countries suggests longer program exposure and multicomponent (vs. single component) programs may be more effective. Substantial evidence gaps in program implementation are identified. How to improve program design to maximize outcomes for girls is the next-generation question.

The vast majority (86%) of the world's adolescents ages 10–24 live in low- and middle-income countries (LMICs) [1]. Within resource-limited contexts, girls face distinct challenges across multiple health, social, and economic domains. Among adolescents

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ages 15–19, approximately two thirds of new HIV infections are acquired by girls [2]. Further, globally, 11% of births occur among adolescents ages 15–19, and nearly all (95%) of these occur in LMIC settings [3]. Complications during pregnancy and childbirth are a leading cause of death among girls ages 15–24 [4]. The factors that underlie these adverse health outcomes are largely social and economic, reflecting societies' general devaluation of girls and harmful gender norms. For example, child marriage, or marriage before the age of 18, affects an estimated 15 million girls globally every year [5]; more than 85% of girls in low-income countries never complete secondary school [6], and intimate partner violence affects an estimated 29.4% of ever-partnered girls ages 15–19 worldwide [7]. Not only do these practices undermine girls' rights, agency, and current sexual and reproductive health, but such practices also limit their economic opportunities and affect their health and well-being into adulthood [8–12].

These pervasive needs have led to increasing interest in programs that target girls in LMIC [13–15]. Recognition of the interrelated nature of girls' social, economic, and sexual and reproductive health vulnerabilities has increasingly led to program innovations that aim to directly address the gender inequalities adolescent girls face. These include multicomponent programs that combine different interventions—such as life skills education and savings accounts—that aim to redress inequalities faced by girls by building girls' protective assets and thus improving the likelihood of positive health and development outcomes. For example, a theory of change may posit that a girl who is able to increase her economic assets is able to increase her relative power and will be better able to act on information about HIV prevention and better positioned to negotiate condom use than a girl who only receives information about HIV. Similarly, multilevel programs that reach not just the girl but those who act as her gatekeepers—such as parents or husbands—may posit that it is more likely for an intervention directed at girls to succeed if the enabling environment is supportive of change. Such programs might include, for example, economic incentives for girls to stay in school in addition to activities with parents/guardians to increase their support for girls' education.

However, questions remain about whether such combined programs do, in fact, perform better than programs with a single component or a single level. Questions about other implementation design elements, such as optimal program length, also persist. See Figure 1 for definitions of key terms used in this paper.

Given the magnitude of investments in girls programming globally, as well as the implications for achieving current development agendas, such as the 2030 Sustainable Development Goals, greater understanding of what intervention designs are most effective in promoting positive outcomes for adolescent girls in LMIC is urgently warranted. Several recent reviews of adolescent programs have examined the effectiveness of programs for girls (e.g., Hardee et al., 2014 [HIV]; Hennegan and Montgomery, 2016 [menstrual pads for education]) or programs directed at outcomes that disproportionately impact female adolescents (e.g., Kalamar et al. 2016 [child marriage]; Hindin et al., 2016 [unintended repeat pregnancy]; Lundgren and Amin 2015 [intimate partner violence]) [16–20]. These reviews examine the evidence for effectiveness of different programs—such as school-based life skills, conditional cash transfers (CCTs), or youth friendly services. Yet, to our knowledge, no reviews have explicitly explored implementation questions—such as how long a girl needs to be in a program, or what proportion of girls in a community participating can generate a tipping point for sustained change—and the relative impact of such program design choices. As girl-centered programs are considered for replication, expansion, and scale, or new program ideas are innovated for pilots, it is critical that we know what works for girls, and equally important, what does not, to guide investment of finite resources.

We conducted a systematic review of the published and gray literature to identify evidence gaps and what implementation science lessons can be learned about fielding successful adolescent girl-centered programs in LMIC settings. Specifically, we sought to examine studies that explicitly tested variations in intervention design or structure to assess which aspects are most likely to lead to improvements in girls' health, social, or economic outcomes. The following questions guided the review:

- To what extent, if any, do multicomponent interventions (as opposed to single component interventions) improve outcomes for girls?
- What is the added value of involving actors in addition to the girl herself such as parents, guardians, husbands (i.e., multilevel interventions)?
- What is the threshold proportion of girls who need to participate in a program to bring about normative and behavior changes at the community level?
- Is a greater level of program exposure associated with greater programmatic benefit for girls?
- Can supplemental "booster" activities extend the benefits of a program after it ends?

Methods

Data sources

Studies were identified using a keyword search of four electronic databases: PubMed, the Cumulative Index to Nursing and Allied Health Literature (CINAHL), Economic Literature, and Sociological Abstracts. Search strings included key terms related to the study population, program elements, and outcomes in LMIC. We focused on girl's programs in three broad sectors: health (i.e., sexual and reproductive health, HIV and sexually transmitted infections [STIs]), social (i.e., education, violence, empowerment), and economic. The full list of the search terms is listed in Supplemental File 1. The initial search yielded a total of 44,460 studies, including peer-reviewed articles, book chapters, working papers, and program briefs (henceforth "studies"). An additional 30 studies were identified from a web-based search of nongovernmental organizations (NGOs) that implement programs to improve the health and well-being of adolescent girls. The PRISMA protocol guided the review [21].

Inclusion/exclusion criteria

We considered studies that were (1) published between January 1, 1990, and April 30, 2014, in English; (2) targeted adolescent girls and young women aged 10–24 residing in LMIC; (3) examined changes in knowledge, attitudes, behavior, and/or status (such as pregnancy, employment, grade attainment, marriage) after exposure to a health, social, and/or economic intervention; and (4) reported quantitative outcomes either adjusted for or disaggregated by gender and age group of interest.

Studies were excluded if (1) adolescent girls did not comprise at least 50% of the sample, (2) there were fewer than 100