



Child Pregnancy Prevention in Kenya: Rapid Review of the Literature

Informing specific decisions with rigorous evidence— Designing and analyzing decision focused evaluations

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Executive summary

In Kenya, an estimated 14% of all births occur amongst teens aged 15-19 (Riley, 2019). The increased vulnerability of young girls since the onset of the COVID-19 pandemic calls for more and better evidence-based action. This rapid literature review examines empirical evidence to understand which interventions can reduce the rate of child pregnancy in Kenya and recommend where additional data or evidence generation could answer remaining questions about what works. The review reveals the following interventions as effective in preventing child pregnancies in Kenya: i) keeping girls in school especially during the transition from primary to secondary school; ii) keeping girls engaged through skills/vocational training; iii) providing them with Comprehensive Sexual Education; iv) involving boys in the interventions; and v) designing holistic interventions that focus on empowerment.

As such, the authors recommend some of the following measures and interventions as key for preventing child pregnancy in Kenya: Use of interventions such as conditional cash transfers which keep girls in school, or support them to return to school, especially during transition periods to reduce cases of child pregnancy; use of holistic multi-pronged interventions (which yield more positive results in preventing child pregnancies) compared to single-pronged intervention; adoption of interventions that stress the risks associated with inconsistent condom use and place a special focus on debunking myths associated with condoms; use of co-ed interventions which target boys at a young age, this increases their knowledge and improves their attitudes about some sexual behaviours, and delays their sexual debut (this is an important intervention mainly because involving boys may be an important component to comprehensively solving the problem of child pregnancy) and lastly, interventions focusing on comprehensive sexual and reproductive health programs which have proven to be effective in delaying sexual debut, reducing the incidence of pregnancy and increasing knowledge on sexual and reproductive health.

1. Introduction

Child pregnancies are a global problem occurring in high-, middle-, and low-income countries. Childbearing during the teenage years negatively impacts female educational attainment, as women who become mothers in their teens are more likely to curtail education (KDHS, 2014). There are also adverse medical consequences for teenage mothers and their babies. Pregnancy and childbirth complications are the leading cause of death among girls aged 15-19 and unsafe abortions contribute to maternal morbidity and mortality. In addition, newborns are more likely to be born preterm and have severe neonatal conditions (WHO, 2020). Economically, teen mothers are more likely to drop out of school, resulting in fewer job opportunities which perpetuates the cycle of poverty (Gunawardena, 2019).

While the estimated global adolescent-specific fertility rate has declined by 11.6% over the past 20 years (WHO, 2020), worldwide, approximately 16 million girls between the ages of 15 and 19, and two million girls under age 15, still become pregnant every year (UNFPA, 2015). However, there are big differences in rates across regions. The adolescent fertility rate in Japan for example, is 7.4 whereas the corresponding rate in Angola is 213 per 1000 live births (Ganchimeg et al, 2014). In Kenya, almost one out of every five girls between the ages of 15 and 19 is pregnant or has had a child already (KDHS, 2014). Moreover, an estimated 14% of all births in Kenya occur among teens aged 15-19, with the majority (63%) being unintended (Riley, 2019). The National Council for population and development (2021) reported that pregnancy among girls aged 15-19 years remains a problem. There is significant regional heterogeneity in the incidence of teenage pregnancy in Kenya; 40% of Narok County's teenagers were reported to be pregnant compared to 10% in Garissa, Wajir and Lamu (Muturi, 2021). A 2020 report commissioned by the Homa Bay County Government found that one-third of adolescent girls aged 15 to 19 in Homa Bay were either mothers or pregnant (UNICEF, 2020).

The COVID-19 pandemic has exacerbated the problem of child pregnancy in Kenya. The country responded to the pandemic by closing schools, restricting movement, and redirecting routine health services to COVID-specific needs. Those actions unintentionally made accessing sexual and reproductive health services more challenging, and throughout 2020 the Kenyan media widely reported increased rates of child pregnancy (Plan International, 2020). A study commissioned by the Presidential Policy and Strategic Unit (PASU) found that after lack of money for school fees, unintended pregnancy was the second leading cause of girls not returning to school (PASU, 2021).

This rapid literature review aims to identify rigorously evaluated, evidence-based interventions to prevent child pregnancy in Kenya and elsewhere. We did not undertake a systematic review. Rather, we describe the evidence from Kenya and other contexts to support our recommendations for potentially promising interventions.

2. Findings/Literature review

Our rapid review distills evidence from rigorous impact evaluations, quasi-experimental studies and meta analyses in order to identify the most potent ways to reduce child pregnancies in Kenya, and get a good sense of what interventions have been tested and what works. We also include less rigorous studies in areas where there is a dearth of robust evidence.

In our reading of the literature we identified the following types of interventions that have been studied to prevent child pregnancies: Cash transfers, school-based, community-based and media-based interventions. We also created a separate category for interventions that have been studied in the Global North— this is because the context and causes of teenage pregnancies might differ between the Global North and the Global South. However, while countries in the Global North are contextually different, interventions that are similar to those used in the Global South can be leveraged for recommendation. While this literature review is not comprehensive, we aimed to cover the most relevant interventions and literature. We also briefly discuss some of the policies that have been put in place to reduce child pregnancy in Kenya.

Cash Transfer Interventions

Cash transfers have been widely studied in the context of pregnancy prevention, with several studies showing positive impacts for adolescents. Interventions have been categorized as either conditional or unconditional cash transfer programs. Conditional cash transfers (CCT's) require certain conditions to be fulfilled prior to disbursement, while unconditional cash transfers (UCT's) have no such requirements (DFID, 2011).

Conditional transfers

RCTs conducted have shown CCTs to be effective at preventing pregnancy in Kenya (Austrian et al., 2018), Malawi (Baird et al., 2010 and 2015), and Nicaragua (Barham et al., 2021).

In the Austrian et al. 2018 study, a randomized control trial was conducted in Kibera and Wajir, Kenya. This RCT was unique in that it tested packages of four multi-sectoral interventions, rather than only a single- sector intervention. The control group was placed in a violence prevention intervention. This included community dialogues and action plans where a key group of adult stakeholders in each community met regularly to discuss the challenges facing girls in their area, and developed and implemented a plan to address at least one of those challenges. The three treatment groups received some combination of an education intervention (a CCT), health intervention and a wealth creation intervention¹. The results show that the CCT was a key driver

¹ There were three levels of 'treatment'. At the first level, in addition to Violence Prevention (V), this treatment group received an educational CCT (E). This consisted of a bimonthly payment

in impacting not only educational outcomes, but also in delaying sexual debut and pregnancy for girls in Kibera. At the end of the intervention, 24% of girls in the treatment groups were likely to have initiated sexual activity as compared to 33% of girls in the control group. In addition, girls over 13 in the treatment groups were almost half as likely to have given birth as compared to those in the control group (6% v.11%). The intervention had no impact on condom use, the lower incidence of pregnancy was as a result of a later sexual debut. In Wajir, the effects of the interventions were most significant amongst girls who were out of school at the baseline. Two years after the intervention, 50% of girls in the control group were married as compared to 30% of girls in the intervention groups. Further, 34% of girls in the control group had ever been pregnant as compared to 17% in the treatment groups. The authors attribute this impact to keeping girls in Kibera in school during the transition from primary to secondary school, and via getting girls who were out of school in Wajir into school, for many for the first time, and off the path to marriage.

Similarly, Baird et al. 2010 conducted an RCT in which girls were given an average offer of US \$10/month conditional on satisfactory school attendance (plus direct payment of secondary school fees). They found that the CCT led to significant declines in early marriage, teenage pregnancy, and self-reported sexual activity among program beneficiaries after just one year of program implementation. For program beneficiaries who were out of school at baseline, the probability of getting married and becoming pregnant declined by more than 40% and 30%, respectively. In addition, the onset of sexual activity was 38% lower among all program beneficiaries than the control group. Two years after the intervention ended Baird et al 2015 found that the CCT had a lasting impact on girls who were dropouts at baseline but returned to school. These girls were 10.3 p.p. less likely (control mean 0.399) to have ever been married and 3.8 p.p. less likely (control mean 0.5) to have ever been pregnant. Girls returning to and staying in school led to delayed marriage – which is the main alternative for schooling for young women in Malawi – and reduced the likelihood of becoming pregnant. The CCT did not cause any changes in condom use.

An RCT was conducted by Barham et al. 2021 on a CCT implemented by the government of Nicaragua, 10 years after it began. This CCT was designed to address both current and future poverty of rural households. All households in treatment were eligible to receive up to three years of transfers, and the CCT was conditional on health and education. The conditions for health were preventive healthcare visits

(US\$ 11 in Kibera and US\$15 in Wajir) to the head of the household for the duration of the intervention (2 years), a direct payment of a portion of school fees to the school, and a schooling kit for the girls. All education incentives were conditioned on girls' enrolment and regular attendance at school. At the second level, girls received V, E and a health intervention in which girls engaged in facilitated discussions using a health, life-skills, and nutrition curriculum. Finally, at the third level, girls received V, E, H and a wealth creation intervention (W) which included a financial education curriculum and piggy banks (in Wajir), savings accounts (in Kibera) and a small annual incentive.

for children under five and the household representative attending regular health information workshops. The condition on education was enrolment and regular school attendance for children aged 7-13 years. This study compared the outcomes of two treatment groups, an early treatment and a late treatment. The authors observed that the early treatment group was 11 p.p. less likely to have had sex by age 15 years, a one-third reduction over the mean in the late treatment. Although there were absolute reductions in early marriage and pregnancy for both early and late treatment, the reductions were larger in the early treatment group, possibly due to the late treatment group experiencing an earlier age of menarche leaving them at greater risk of early pregnancy.

Alam et al, 2011 conducted a quasi-experimental study in Pakistan on a female-targeted CCT program, with eligibility conditional on a minimum school attendance rate of 80 percent, as reported regularly by the school. Beneficiary girls were targeted based on their district of residence (districts with the literacy rates below 40 percent in the province), and enrollment in eligible grades (grades 6 through 8) in public schools. Program benefits consisted of a quarterly stipend of approximately PKR 600 (equivalent to US\$10) per female student. The study showed that four years after implementation, participant girls (between 15 to 19 years of age) tended to delay their marriage by 1.4 years and have 0.3 fewer children. However, this result was marginally significant around the 10 percent level. The authors highlighted that as girls have more incentives to stay in school, they can delay marriage and sexual activity and alter decisions such as the timing of childbearing.

Unconditional Cash Transfers

UCTs have had some mixed results on marriage, childbearing and pregnancy. Baird et al's 2015 study included a CCT treatment arm (which was discussed in the foregoing section) and a UCT treatment arm where participants received an average offer of US\$10/month. They found that UCTs reduced marriage and pregnancy rates among baseline schoolgirls during and immediately after the programme. However, there was an almost complete reversal of these outcomes at the five-year follow-up suggesting that the UCT effects were temporary and due to an income effect. The authors state that the UCT arm appeared to have suffered from a 'bounce-back' whereby girls behaved in the same way as those in the control group once the program ended. On the other hand, the authors observed a lasting impact in those in the CCT arm of the intervention.

However, in Kenya, an RCT conducted by Handa et al. 2015 showed lasting effects after four years of a UCT program which provided a monthly cash sum of 1500 Kenyan Shillings Ksh, (USD \$21 in 2007) to eligible households. After four years of implementation UCT reduced the probability of being pregnant among young women aged 12-24 who had never given birth at baseline by 34%. Similar to the findings of Baird et al. 2015 the program impact was smallest among the sample of girls enrolled in school at baseline suggesting that treatment effects

were largest among the group of most disadvantaged girls (Handa et al., 2015).

Khan et al. 2016 conducted a systematic review to synthesize evidence on the impact of conditional and unconditional transfers on contraception use in low- and middle-income countries. This review included 11 papers, some of which have already been discussed in this section (Handa et al, 2015 and Bird et al, 2011). They found that cash transfers were used for increasing school attendance or improving health and nutrition, but not directly for contraception. Three studies showed a positive impact on contraceptive use and four showed a decrease in fertility outcomes. However, two studies observed increases in childbearing and three demonstrated no impact on fertility indicators. Given these mixed results, the authors concluded that the evidence on impact of CCT and UCT on contraception is inconclusive due to the limited number of studies, varying outcome measures, and lack of intervention specifically for contraception.

School-based Interventions

There are several studies aimed at measuring the impact of school-based interventions on child pregnancy. This section explores some of the interventions including scholarships, education subsidies, and education programs. Results school based interventions indicate safer sexual practices, increased sexual and reproductive health knowledge and lower rates of child pregnancy.

Duflo et al., 2015 conducted an RCT in Kenya and showed that an in-kind transfer program that provided girls with school uniforms reduced childbearing. The program caused persistent improvements in outcomes, and reduced pregnancy rates by 2.7%, 4.4% and 2% at 3, 5, and 7 year follow ups. In addition to reducing teenage pregnancy, the education subsidy also increased educational attainment by 3.9% ($p=0.017$) after seven years and decreased the risk of marriage by 3% ($p=0.015$) after five years.

Duflo et al. 2021 conducted an RCT on a secondary school scholarships intervention in Ghana which tracked outcomes for 12 years (2008-2020) after receipt of the scholarship. They found that by age 22 (in 2013), women who had received a scholarship were 7.0 percentage points less likely to have ever been pregnant – a 14.6% drop compared to the rate in the comparison group (47.9%), an effect that persisted by age 28. The authors also suggested that because the great majority of first pregnancies are reported to be unwanted, the fertility decline is almost exclusively a decline in unplanned, out-of-wedlock pregnancies. In addition, the study revealed that scholarships increased secondary school completion rates by 27 percentage points compared to girls who did not receive scholarships. Similar to Duflo et al. 2015, the effects of this program were sustained 11 years after the program.

In Chile, an RCT conducted by Cabezon et al. 2005 on the efficacy of an abstinence-centered sex education program in adolescent

pregnancy prevention. Pregnancy rates for the early intervention group (3.3%) were lower than that of the control group (18.9%). Likewise, pregnancy rates for the intervention and control groups in the late treatment arm were 4.4% and 22.6%, respectively. The students were followed up for four years, during which positive effects were recorded, therefore the impact extends for at least the 4 years of high school if applied during the first year.

Taylor et al 2014 conducted a RCT to test the impact of a teenage pregnancy prevention program² in schools in KwaZulu-Natal. The results indicated that students adopted significantly healthier attitudes including intentions to abstain from sex while in school ($p < 0.05$), plans to communicate with partners about teenage pregnancy ($p < 0.05$) and increased reports of condom use ($p < 0.01$). However, increases in the treatment group regarding intentions to prevent pregnancy and to use condoms were matched by that of the control group. Amongst the abstinent students, the TP program appeared to reinforce sexual abstinence whilst at school and to promote condom use amongst the sexually active.

A pre-post evaluation conducted by Humphres et al. 2011 on the Kenya Adolescent Reproductive Health Project (KARHP) after 10 years of implementation revealed that reproductive health knowledge and behavior had improved among adolescents between baseline and endline. The study found significant ($p < 0.01$) improvements in the proportion of adolescents who reported safer sexual practices at first sex in comparison with an earlier survey of the same project in 2004. At baseline 18% of boys used condoms as compared to 34% at endline. Likewise 21% of girls used condoms at baseline compared to 53% at endline.

Agbemenu 2009 examined Comprehensive Sex Education (CSE) programmes³ in Kenya and recommended the scaling up and proper implementation of the 'Tuko Pamoja' program nationwide because:

- It was well designed and did not require computer technology to be administered.
- It had a strong focus on developing decision-making skills of adolescent girls.

² The program was developed to address concerns expressed by teens in prior focus group discussions and to empower them to understand the biological, psychosocial, and economic pressures related to TP. The program aimed to assist them to clarify aspects such as their attitudes toward TP and intentions to avoid becoming pregnant or causing a TP, and to offer them the implementation skills to achieve these goals.

³ Comprehensive sex education (CSE) teaches that abstinence is the best method for avoiding sexually transmitted infections (STIs) and unintended pregnancy. CSE also teaches the use of condoms and contraception to reduce the risk of unintended pregnancy and of infection with STIs, including HIV/AIDS. CSEs provide education on interpersonal and communication skills and help young people explore their own values, goals, and options.

- Teachers received very detailed instructions on how to deliver curriculum content using specific communication techniques to encourage behaviour change.
- Tuko Pamoja's lesson plans were also the most comprehensive⁴ and was designed for in- and out- of- school youth.

Sharma 2021 provides some evidence that targetting men is another strategy to changing young adult attitudes towards negative sexual practices. She studied the effects of a sexual harassment awareness training for college students in New Delhi using an RCT. She found that sexual harassment awareness training for men reduces sexual harassment reported by women in their peer groups by 0.06 standard deviations. However, this was due to an increase in men's perception of peer disapproval against sexual harassment and not a change in their intrinsic attitudes towards it. Thus, though this paper is not directly related to preventing teen pregnancies, it shows that by leveraging the peer group effect it is possible to engage men to improve girl's outcomes.

Community-based Interventions

There have been various community-based interventions aimed at improving adolescents' health outcomes. Some of these include community and school health training, youth programmes and health personnel training. Evidence on these interventions is mixed.

Bandiera et al. 2020 evaluated a multifaceted policy intervention attempting to jump-start adolescent women's empowerment in Uganda by providing them vocational training and information on sex, reproduction, and marriage. They found that four years post intervention, the probability of having a child was 2.7 pp lower in treated communities than in control communities: given that at baseline 11.3 percent of girls have at least one child, this corresponds to a 24 percent drop in fertility rates over a two-year period. In addition, adolescent girls in treated communities were more likely to be self-employed while early entry into marriage/cohabitation, and the share of girls reporting sex against their will fell sharply. The results highlight the potential of a multifaceted program that provides skills transfers as a viable intervention to improve the economic and social empowerment of adolescent girls.

Similarly findings from an RCT of a community-based, multi-component HIV and reproductive health intervention aimed at changing attitudes towards sex and sexual risk taking for adolescents in rural Zimbabwe showed that women in intervention communities were less likely to report ever having been pregnant (Cowan et al, 2011). The intervention included a youth programme for in- and out-of-school youth, a programme for parents and community stakeholders, a 22 session community-based programme and a training programme for nurses and other staff working in rural clinics. The study found that unmarried

⁴ With regards to information on contraceptives, condom use, non-vaginal sexual intercourse and dispelling myths on sexual activity.

women in the treatment group had a significantly lower risk of any pregnancy — 4.7% of them had ever been pregnant, as compared to 7.8% in the control group.

In contrast to the above studies, an RCT conducted on a multicomponent intervention programme⁵ on the sexual health of adolescents in rural Tanzania showed no evidence of an effect on the reported incidence of pregnancy (Ross et al, 2007). Despite the treatment group's increased sexual and reproductive knowledge, and improved reported attitudes and behaviours (i.e. delayed sexual debut and a reduction in the reported number of partners), there was no consistent impact on biological outcomes. One of the potential explanations for this could be that the behavioral changes were not large enough to impact biological outcomes, at least within the three-year follow-up period. In addition, this intervention was not without limitations. The interventions were deliberately constrained to be affordable and replicable on a large scale, and the trial cohort included some young people who only received one or 2 years of the main, in-school component, rather than the full 3 years.

Media-based Interventions

There have been various studies to measure the impact of media-based interventions on child pregnancies. The studies reviewed in this section find mixed results, however there is some promise in the use of text messages (Rokicki et al, 2017) and tv shows (Banerjee et al, 2018) to positively impact sexual and reproductive health outcomes.

Rokicki et al, 2017 conducted an RCT on female school-going adolescents aged 14 - 24 years in Ghana whose schools were assigned to either unidirectional intervention, interactive intervention, or control. The unidirectional intervention sent participants text messages with reproductive health information. The interactive intervention engaged adolescents in text-messaging reproductive health quizzes. The control group had placebo messages with information about malaria. Although they found no changes in reproductive health outcomes overall, both unidirectional and interactive interventions lowered odds of self-reported pregnancy by 86% and 85% respectively, for sexually active participants.

Banerjee et al. 2018 conducted an RCT in South-Western Nigeria to estimate the impact of MTV Shuga, a show that provided information on HIV, on attitudes and behaviour relating to HIV and risky sexual behaviour to youth. They found that youth that watched MTV Shuga showed significant improvements in knowledge and attitudes towards HIV. Receiving the treatment increased the probability of getting tested for HIV. The self-reported measure increases by 2.5 percentage points, over a mean of 8.6 percent in the control group. However, the show did

⁵ Included community activities; teacher-led, peer-assisted sexual health education in years 5–7 of primary school; training and supervision of health workers to provide 'youth-friendly' sexual health services; and peer condom social marketing

not induce greater condom use. A possible reason for this is the strong cultural resistance to condoms in Nigeria.

Otieno, 2014 and Akullo et al 2020's descriptive studies offer some suggestive evidence on the effectiveness of using media to reduce teenage pregnancy. Otieno studied an abstinence campaign, which was advertised across all local television channels in Kenya. The study found that participants who had ever viewed the campaign reported higher abstinence but did not plan to remain abstinent in the future. However, there are some limitations to this study. The sample size was 80 participants, as such the effect of the abstinence campaign may be overstated. In addition, as descriptive research, it is difficult to ascribe any real effects of the abstinence campaign since there is no control group with which to make any comparisons. Finally, the girls' perceptions of abstinence were also not collected before the onset of the campaign so one cannot make statements about if the advert changed them. Likewise, Akullo et al, 2020 studied the effects of using the radio to create awareness and engender community dialogues in order to reduce the risk of teenage pregnancy in Lira District, Uganda. Exposure to radio programs that educated teens on SRH was correlated with a drop in teenage pregnancy in five sub-counties in Lira District.

Global North Interventions

Various sex education interventions have also been implemented to prevent teen pregnancy in the Global North. While the socioeconomic and demographic contexts are not akin to those of Kenya, these interventions are similar to those tested in Kenya and so can provide useful insights. The studies in this section reveal the effect of implementation fidelity and contextual factors on the impact of interventions.

An RCT conducted in England by Stephenson et al 2008 assessed the effectiveness of a school-based peer-led sex education in reducing unintended teenage pregnancy. It included sessions designed to improve pupils' skills in sexual communication and condom use and their knowledge about pregnancy, sexually transmitted infections (STIs), contraception, and local sexual health services. The study revealed that the proportion of girls with one or more live births by the age 20.5 years was 7.5% in the intervention arm and 10.6% in the control arm, adjusted OR 0.77 (95% CI 0.51–1.15). In addition, fewer girls in the peer-led arm self-reported a pregnancy by age 18 years (7.2% intervention versus 11.2% control, adjusted OR 0.62 [95% CI 0.42–0.91]). In Scotland, a specially designed sex education programme delivered by teachers did not reduce conceptions or terminations by age 20 years compared with conventional teacher led sex education (Henderson et al, 2007). A possible reason for the difference in results is the mode of delivery of the intervention. Stephenson et al, 2008 studied the effect of a peer-led sexual education program while Henderson et al, 2007's was teacher led. Peer-led sex education may be more effective than teacher led sex education.

Findings from an RCT conducted in the US in which sexually active urban adolescent girls were randomized to a theory-based sexual risk-reduction (SRR) intervention or to a health promotion control group revealed that girls in the treatment group documented a 50% reduction in pregnancies at 12 months after the start of the intervention (Morrison-Beedy et al, 2013). The authors suggested that theory-based behavioral interventions tailored to adolescent girls may reduce unintended pregnancies by increasing knowledge and changing attitudes and behaviours towards risky sexual behaviour. In another US-based intervention, Philliber et al, 2002 aimed at reducing pregnancy using a comprehensive youth development approach,⁶ coupled with sexuality education and contraceptive provision to those who become sexually active revealed that female program participants were less likely to have experienced a pregnancy compared to the control group (10% v. 22%, $p < 0.01$).

Coyle et al 2004 conducted a RCT on middle school children in California, US, and found that a theoretically-based curriculum designed to reduce sexual risk behaviours amongst adolescents had a significant impact on boys and not girls. Boys in the intervention group also exhibited significantly greater knowledge than control students about HIV, other STDs, and pregnancy prevention ($p < 0.001$), supported fewer peer normative beliefs supporting sexual intercourse ($p = 0.01$), had more positive attitudes toward not having sex ($p = 0.03$), had stronger sexual limits ($p = 0.04$), and were less likely to be in situations that could lead to sexual behaviours ($p < 0.01$). The data suggests that the influence of older boyfriends contributed to the lack of an effect for girls.

Kirby et al 1997 conducted an RCT on Postponing Sexual Involvement (PSI), a SRH program designed for middle school students. They found that 3 months after the implementation there were small but statistically significant changes in some attitudes, behaviours and intentions related to sexual activity. However, after 17 months none of these effects were sustained. The authors suggested a possible reason for this lack of an impact on youths' sexual behaviour was the modest length of the program (students received only 5 sessions).

Interventions to Empower Girls

Chang et al 2020 and Nkhoma et al 2020 conducted reviews on studies that considered the impacts of empowerment on fertility outcomes for teen girls and found that these holistic interventions were impactful.

Chang et al 2020 conducted a systematic review of 160 randomised controlled trials and quasi-experiments that aimed to improve women's agency in low- and middle-income countries. They found that interventions that changed perceptions about girls' abilities and

⁶ This included a work related intervention, an academic component (helping students prepare for the SAT and PSAT), an arts component, a sports component and mental and medical health care

opportunities or increased the educational and economic opportunities available to them encouraged girls and women to delay pregnancy.

Nkhoma et al 2020 conducted a review of 9 studies focusing on economic, educational and community empowerment of girls. Three studies were of fair quality; two qualitative and one cross-sectional study were of high quality, while three studies had low quality. They found that interventions which empowered girls reduced the incidence of teen pregnancy and risky sexual behaviour. In particular, interventions which made contraceptives available or school compulsory reduced the number of pregnancies.

Policies in Kenya to reduce child pregnancy

The Kenyan Government has put in place several policies aimed at reducing early pregnancies in the country. One such policy is the Adolescent Sexual and Reproductive Health (ASRH) Policy which provides guidance to government ministries and development partners working with the Ministry of Health on how to respond to adolescents' sexual and reproductive health needs. One of the specific objectives of the ASRH policy is to reduce early and unintended pregnancies. To actualize this, the policy aims to:

- *Promote provision of accurate information and services to prevent early and unintended pregnancies among adolescents;*
- *Enhance existing service provision channels to provide accurate information and services on a wide range of contraceptive methods to capture diverse needs of adolescents;*
- *Strengthen programs to delay sexual debut and promote abstinence among adolescents;*
- *Promote male involvement in prevention of early and unintended pregnancy;*
- *Support sensitization and implementation of the Education Re-entry Policy and a social support system for adolescents;*
- *Strengthen community involvement in prevention of early and unintended pregnancy;*
- *Encourage political leaders, planners and community leaders to enforce laws and policies to prohibit marriage of girls below 18 years;*
- *Support interventions to delay marriage of girls until they attain 18 years by influencing family and community norms; and*
- *Promote educational opportunities for girls through formal and non-formal channels to delay marriage until they attain 18 years; and*
- *Strengthen and scale up social protection for vulnerable adolescent girls to delay sexual debut as well as improve mental health and educational outcomes. (ASRH, 2015)*

The policy recommends involving adolescents in the decision making process around policy, advocacy, budgeting, planning, research and implementation processes. It also recommends a multi-stakeholder, multi-level and multi-pronged approach to addressing SRH issues in

the country. It endorses strengthening linkages between the ministries of health and education, and other key agencies responsible for population and development, youth and sports, gender, the judiciary and law enforcement agencies, and community structures and the media.

In 1994, the ministry of education drafted its first policy addressing early and unintended pregnancy: the School Re-entry Policy. In 2020, the government drafted the National Re-Entry Guidelines for Learners in Basic Education which serve to enable those children who drop out of schools for various reasons, including early pregnancy, to resume learning. Among other things, the Guidelines specify the actions that shall be taken regarding the person responsible for the pregnancy (MoE Kenya, 2020):

- *“the girl shall be encouraged to disclose the identity of the person responsible for the pregnancy and if he is an underage, he shall be given guidance and counselling on his responsibilities*
- *If the person responsible is an adult, the head teacher shall report the case to the police and the Children's Department*
- *If the person responsible is a teacher, disciplinary measures shall be taken in accordance with the Teachers Service Commission code of conduct and school management should advise the girl and her parents / guardians to take legal action.”*

Before the onset of COVID-19 in March 2020, the Kenyan government launched a National Campaign against Teenage Pregnancies (NCPD, 2020). The campaign focused on mobilizing communities through awareness and lobbying on the need to end teen pregnancies, citing its negativity on socio-economic advancement. While the Kenyan Government has a policy framework to tackle this issue, weak implementation, monitoring and a lack of information have prevented effective implementation of these policies (Kenya Ministry of Health, 2015).

3. Recommendations

This review aimed at identifying evidence-based interventions from Kenya and elsewhere to improve adolescent outcomes through preventing child pregnancy. The increased rate of child pregnancies during the COVID-19 period has drawn more attention to the plight of girls in Kenya, and calls for more and better evidence-based action.

This review has found that interventions which keep girls in school, or support them to return to school, especially during transition periods, are likely to reduce their chances of them getting pregnant.

The papers in this review provided broad support for using cash transfers which were conditional on girls being in school to reduce the incidence of teen pregnancy. On the other hand, evidence for unconditional cash transfers is weaker than for conditional cash transfers. In Ghana, providing girls with scholarships kept pregnancy rates low even several years after the intervention. Programs should promote interventions aimed at keeping girls in school, with conditional cash transfers being one effective way to do so.

Multi-pronged interventions seemed to yield more positive results in preventing child pregnancies than single-pronged intervention. Additionally, holistic interventions aimed at empowering girls have positive impacts on not just fertility outcomes, but girls' aspirations, confidence, and educational and economic attainments.

Multi-pronged interventions had significant impact when they targeted both in and out of school youth, as out of school youth are more at risk of early pregnancy. Interventions targeted at out of-school youth should include vocational and financial training as the studies in this review show that keeping girls engaged and financially independent are key to reducing the chances of early pregnancy. Interventions should also focus on building girls' confidence as empowering them has spillover effects beyond fertility outcomes.

Interventions should stress the risks associated with inconsistent condom use and should place a special focus on debunking myths associated with condoms. In addition, condom promoting interventions can be targeted at early teens when their perceptions of condoms are beginning to form. Studies in this review had mixed evidence on improved condom use following interventions. There are a few possible explanations for this. One is that there is a strong cultural resistance to condom use. According to Kinaro et al 2018, some youth in Kenya associate condom use with cancer, and women insisting condom use are perceived to be unfaithful partners. In addition, a study by FHI360 in partnership with the Kenyan Ministry of Health (2011) concluded that young people do not fully appreciate the risk of not using condoms during sexual intercourse. As a result, it is important to begin sensitising youth from an early age, so that by the time they are sexually active, they know how to use condoms and any misconceptions about them are dispelled.

Co-ed interventions showed the importance of targeting boys at a young age, as they reported increased knowledge and improved

attitudes about some sexual behaviours, and delayed sexual debut. Involving boys may be an important component to comprehensively solving the problem of child pregnancy. Additionally, providing sexual harassment training to young men increased their perceptions of peer disapproval against sexual harassment, **showing that the peer group effect can be leveraged to engage men for women's empowerment.**

Comprehensive sexual and reproductive health programs have proven to be effective in delaying sexual debut, reducing the incidence of pregnancy and increasing knowledge on sexual and reproductive health. Additionally, special attention should be paid to the length of the intervention as studies which had relatively short interventions only saw marginal improvements in outcomes, some of which were reversed after a few years. As such, comprehensive sexual health education should be considered by implementers, as they are more effective than abstinence-only programs in reducing child pregnancy. However, high implementation fidelity is crucial and the effectiveness of CSE programs is highly contextually dependent.

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Appendices

Appendix 1: Results Table

Paper	Method	Country	Effect on Pregnancies	Effect on Marriage	Effect on SRH Knowledge	Effect on Condom Use
Agbemenu, 2009	Comparative study	Kenya				
Akullo et al, 2020	Descriptive study	Uganda				
Alam et al, 2011	Regression Discontinuity Design and Difference-in-Difference	Pakistan	Girls participating in the program have 0.3 less children than control group	Girls participating in the program delayed marriage by 1.4 years compared to control group		
Austrian et al, 2020	Clustered and Individual RCT	Kenya	Kibera: 6% of treatment girls were likely to get pregnant compared to 11% of control girls. Wajir: 17% of treatment girls had ever been pregnant, compared to 34% of control girls	Wajir: 30% of treatment girls married, 50% of control girls married		
Baird et al, 2010	RCT	Malawi	Probability of being pregnant fell by 30%	Probability of being married fell by 40%		insignificant effect
Baird et al, 2015	RCT	Malawi	Treatment girls were 3.8 p.p. less likely (control mean 0.5) to have ever been	Treatment girls were 10.3 p.p. less likely (control mean		insignificant effect

			pregnant 2 years after the implementation ended	0.399) to have ever been married		
Bandiera et al, 2020	Stratified RCT	Uganda	The probability of having a child was 2.7 pp lower in treated communities than in control communities	the midline ITT estimate shows girls in treated communities to be 6.9 pp less likely to be married/cohabiting at follow-up, corresponding to 53 per- cent of the baseline mean	The program also significantly improves girls' health-related knowledge, on a basic question related to pregnancy and as measured by a HIV-related knowledge index	condom use increased by midline among sexually active girls: the percentage of girls who always use a condom when having intercourse was 13 pp higher, although again this impact dies out by endline.
Banerjee et al, 2019	Clustered RCT	Nigeria			Testing for HIV increased by 2.5 percentage points, over a mean of 8.6 percent in the control group.	insignificant effect

Barham et al, 2019	RCT	Nicaragua	6 percentage point (10 percent) lower probability of having had a child by 2010 when the young women were 19–22 years old (p-value 0.17).	probability of being married when they were surveyed at ages 19–20 years old each reduced by about 10 percentage points.		
Cabezon et al, 2005	RCT	Chile	Pregnancy rates for the early intervention group (3.3%) were lower than that of the control group (18.9%). Likewise, pregnancy rates for the intervention and control groups in the late treatment arm were 4.4% and 22.6%, respectively.			
Chang et al, 2020	Review	Low and Middle Income Countries				

Cowan et al, 2010	Clustered RCT	Zimbabwe	Unmarried women in the treatment group had a significantly lower risk of any pregnancy — 4.7% of them had ever been pregnant, as compared to 7.8% in the control group.		In males there was an increase in knowledge related to sexually transmitted disease (STD) acquisition (AOR=1.32;95%CI:1.08–1.61) and pregnancy prevention (AOR=1.59;95%CI: 1.27–1.99) In women there was an increase in knowledge related to STD acquisition (AOR=1.45;95%CI:1.17–1.79) and pregnancy prevention (AOR=1.32;95%CI:1.14–1.55) in the intervention arm	
Coyle et al, 2004	RCT	United States			Boys in the intervention group also exhibited significantly greater knowledge than control students about HIV , other STDs, and pregnancy prevention (p<0.001)	insignificant effect
Duflo et al, 2015	RCT	Kenya	The program caused persistent improvements in outcomes, and	Intervention decreased the risk of marriage by 3% (p=0.015)		insignificant effect

			reduced pregnancy rates by 2.7%, 4.4% and 2% at 3, 5, and 7 year follow ups.	after five years.		
Duflo et al, 2021	RCT	Ghana	Women who had received a scholarship were 7.0 percentage points less likely to have ever been pregnant – a 14.6% drop compared to the rate in the comparison group (47.9%),	Girls in treatment are 6.2 percentage points (p-value 0.067) less likely to be married or cohabiting (compared to a base of 47.5% in the control group)		
Humphres et al, 2011	Pre-Post Study, a knowledge, attitude and practices survey, school assessment, qualitative assessment	Kenya	Among the sexually-active girls in the sample, 40% had ever been pregnant		The ten-year evaluation study found that nearly half of the boys (48%) and 42% of girls in the study had ever heard about contraception/family planning	At baseline 18% of boys used condoms as compared to 34% at baseline. Likewise 21% of girls used condoms at baseline compared to 53% at baseline.

Handa et al, 2015	Clustered RCT	Kenya	After four years of implementation UCT reduced the probability of being pregnant among young women aged 12-24 who had never given birth at baseline by 34%.	there was no significant impact on likelihood of early marriage		
Henderson et al, 2007	Clustered RCT	Scotland	no significant difference between treatment and control			
Khan et al, 2016	Review	Low and Middle Income Countries				
Kirby et al, 1997	RCT	United States	3.7% of people in the treatment group reported ever being pregnant or causing a pregnancy, compared to 1.5% in the control group (p=.006)			insignificant effect
Morrison-Beedy et al, 2013	RCT	United States	Medical record audits for girls documented a 50% reduction in positive pregnancy tests at 12 months post intervention			

Nkhoma et al, 2020	Review	United States, Brazil, Canada, Kenya, Nigeria, Nepal and Sweden				
Otieno, 2014	Descriptive study	Kenya				
Philliber et al, 2002	RCT	United States	Female program participants were less likely to have experienced a pregnancy compared to the control group (10% v. 22%, p<0.01).			Females had significantly elevated odds (2.4) of having used a condom and a hormonal method at last coitus
Rokicki et al, 2017	Clustered RCT	Ghana	Both unidirectional and interactive interventions lowered odds of self-reported pregnancy by 86% and 85% respectively, for sexually active participants.			The interactive intervention appeared to increase risk of sex without a condom in the past year (OR = 3.47; 95% CI = 1.12, 10.74).

Ross et al, 2007	Clustered RCT	Tanzania	There was no evidence of an effect of the intervention on pregnancy incidence.		Knowledge of pregnancy prevention was 84% amongst males in the intervention, and 72% amongst females in the intervention, compared to 50% and 46% respectively in the control group	Use of condoms at last sex was 29% amongst males in the intervention, and 27% amongst females in the intervention, compared to 20% and 22% respectively in the control group
Sharma, 2021	RCT	India			Sexual harassment awareness training for men reduces sexual harassment reported by women in their peer groups by 0.06 standard deviations.	
Stephenson et al, 2008	Clustered RCT	England	The study revealed that the proportion of girls with one or more live births by the age 20.5 years was 7.5% in the intervention arm and 10.6% in the control arm.			

Taylor et al, 2014	RCT	South Africa			The results indicated that students adopted significantly healthier attitudes including intentions to abstain from sex while in school ($p < 0.05$) and plans to communicate with partners about teenage pregnancy ($p < 0.05$)	The results indicated increased reports of condom use ($p < 0.01$). But the use of condoms consistently was not achieved
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