



**COST-BENEFIT ANALYSIS OF NON-MONETARY
INSTRUMENTS TO DETER CHILD MARRIAGE
IN GHANA**

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PRELIMINARY DRAFT AS OF MARCH 15, 2020

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GHANA**

Ghana Priorities

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LIST OF ABBREVIATIONS

CATs	Conditional asset transfers
CCTs	Conditional cash transfer
CEDAW	Convention on the Elimination of all Forms of Discrimination against Women
CPC	Child protection committee
DALY	Disability Adjusted Life Year
ECMP	End Child Marriage Programme
FH	Finote Hiwot
GDHS	Ghana Demographic Health Survey
GDP	Gross Domestic Product
GLSS	Ghana Living Standard Survey
GoE	Government of Ethiopia
HTP	harmful traditional practices
IPV	Intimate partner violence
JHS	Junior High School
LC	Local council
MoHCC	Ministry of Health and Child Care
PSW	Para social workers
RR	Risk ratio
SDGs	Sustainable Development Goals
SHS	Senior High School
SSA	sub-Saharan Africa
STPs	Social transfer programmes
UNICEF	United Nations' Children Fund
VHT	Village health teams

ACADEMIC ABSTRACT

The Constitution of Ghana and the Ghana Children's Act prohibit child marriage. Although the incidence of child marriage has reduced in Ghana over time, it has increased in the regions in the northern sector of the country. This study focuses on three interventions to reduce the marriage of girls between the ages of 15 and 17 years (the high prevalence age group) living in the five northern regions of Ghana (high prevalence regions). The interventions considered are community dialogues, conditional asset transfer and educational support in the form of free school uniforms. The choice of these interventions is informed by evidence from other countries that find that interventions that empower girls, offer incentives such as conditional cash transfers to offset financial distress, and engage communities – are most effective in delaying child marriage

The cost-benefit analysis of the three interventions reveals that the Community Dialogues intervention, a relatively low-cost intervention, has the highest benefit-cost ratio (BCR) of 3.8, and is the most cost-beneficial policy option in the fight against child marriage. However, the Community Dialogues intervention does not have the highest overall impacts on the indicators measured. The highest number of marriages avoided, pregnancies delayed or girls who remain in school is attributable to the Conditional Asset Transfer (CAT) intervention (BCR=2.7). Education Support is the least effective where it relates to reducing the risk of child marriage, but makes a considerable impact on girls' school retention (BCR = 2.9).

Key words: child marriage, delayed marriage, community dialogues, asset transfers, school uniforms, Ghana

Acknowledgements: We acknowledge the research support provided by Vera Akyeampong.

POLICY ABSTRACT

The Problem

Article 14(2) of Ghana's Children's Act (560) of 1998 defines child marriage as a marriage in which at least one partner is a child below the legal age of 18 years. UNICEF (2016) defines child marriage as "a formal marriage or informal union of children under the age of 18 years". UNICEF (2016) observes that 1 in 5 girls between the ages of 20 and 24 years were married before their 18th birthday, while 1 in 20 girls marry before they turn 15 (de Groot et.al. 2018). Child marriage forces girls to assume adult responsibilities even though they are not physically, emotionally, psychologically and mentally ready for such responsibility. The result has been harmful to these girls, their children, families and the community, making it a priority to eliminate it globally.

The incidence of child marriage is high among girls, and rare among boys. Domfe and Oduro (2018) using data from the 2014 Ghana Demographic and Health Survey report a national incidence of 27.2% among girls. The authors also find that the incidence of child marriage is higher in rural Ghana at 34.3% compared to the urban rate of 19.4%. Furthermore, their research reveals that the incidence of child marriage is highest in the Northern Region of Ghana (38.0%). The incidence is higher among the poorest population and uneducated women (de Groot et al. 2018). Although the national incidence rate of child marriage has reduced in Ghana over time, it has increased in the regions in the northern sector, with an incidence rate of 33.6% in 2014 compared to 26.4% in 2011 (de Groot et al. 2018).

World Vision Ghana (2017) identifies the interplay of economic, structural and social factors as being the main drivers of child marriage. The World Vision Study in four regions of Ghana found that whilst teenage pregnancy was a reason why many girls in southern Ghana were married off or of lived in a consensual union with the fathers of their children, in the northern sector of the country, child marriage occurred largely because of cultural practices. For example, the practice of bride exchange involves giving a daughter away in marriage to a member of the family of her brother's wife. Parents sometimes marry off their daughters in order to strengthen relationships between families. Poverty was found to be a causal factor among communities in the four regions where the World Vision Study was undertaken. In the Upper East Region and Northern Region, it was found that some parents would marry off their daughters in order to acquire wealth in the form of livestock.

The Constitution of Ghana and Ghana's Children's Act prohibit child marriage. Ghana has ratified international instruments such as the African Charter on the Rights and Welfare of the Child and the Convention on the Elimination of all Forms of Discrimination against Women (CEDAW) which contain provisions against child marriage and as the Pew Research Center (2016) reports is among many sub-Saharan African countries that have deployed policies to ban child marriage.

While these laws exist, their effectiveness is limited due to the challenges involved in enforcing them, particularly in communities where social and cultural norms are strongly adhered to. The effectiveness of these laws depends on the ability of these laws to eliminate cultural and social biases and change behavioral patterns that promote discrimination against girls.

Following from the study by Domfe and Oduro (2018), our study will focus on interventions to reduce child marriage of girls between the ages of 15 and 17 years (the high prevalence age group) who live in the five northern regions of Ghana (high prevalence regions). The interventions are non-monetary instruments which attempt to engage the complicated nexus of poverty and culture that promotes child marriage: (1) community dialogues to engage both extended families and local leaders, (2) a conditional asset transfer to girls who remain both enrolled in school and unmarried, and (3) education support in the form of school uniforms to all girls.

The assumptions, which form the basis for all the interventions, are listed below:

- The number of girls in the northern regions, between the ages of 15 and 17, is 123,946.
- The prevalence rate for adolescent marriage, ages 15-19, is 26%, the average of the northern regions (Ghana Multiple Cluster Indicator Survey, 2017/18).
- All girls, who marry, drop out of school.
- Most girls (67%), who marry before the age of 18, become pregnant before 18 (Yaya et al, 2019).
- One child is born per pregnancy.
- The dropout rate from primary to junior high school is 50.67%.
- The average age of adolescent maternal deaths is 17.
- Unless otherwise indicated, all monetary figures are reported at an 8% discount rate.

The benefits modeled are common to all the interventions and include the associated dangers of adolescent pregnancy, the increased probability of falling victim to intimate partner violence (IPV), and the income boost that comes with completed junior high school education.

The health-related benefits are based on the above assumption that most (67%) girls, who marry, become pregnant before the age of 18. The averted dangers associated with adolescent pregnancy were included as benefits in all the interventions, and their respective risk ratios are presented below.

	Risk ratio
Child mortality, when mother is <18 yrs	1.3
Induced abortions	1.9
Cesarean procedure	1.8
Obstetric fistula	1.3

Regarding the averted IPV, the Ghana Ministry of Gender (2015) estimates that victims experience a 5% reduction/year in earnings over a lifetime. The risk ratio is 1.37.

Intervention 1: Community Dialogues

Overview

This involves educating and sensitizing children, families and communities about the negative impacts of child marriage on girls, their children and the community. Sensitization is not just for the girls but also for the parents and extended families because in most cases these girls do not have a say in the decision to get married since such decisions are made by their parents. The purpose of this intervention is to address the social norms associated with the practice of early marriage.

Implementation Considerations

The parameters associated with this intervention are based on an experiment undertaken by the Population Council in the countries of Burkina Faso, Tanzania, and Ethiopia (Erulkar et al., 2017). It involves the development of a facilitator’s manual, recruitment and training of facilitators, and the organization of community dialogues over a period of two years. To enhance the effectiveness of this intervention, focus groups are formed based on age, gender and stage in life, with separate groups for adolescents and adults. Based on the experience of Hiwot in Ethiopia (Jones et al, 2016), these focus groups are targeted for peer-to-peer, mother-to-mother or house-to-house education with meetings held weekly for 16 weeks each, after which new groups made up of new community members are formed to start the discussion.

The uptake rate for this intervention is 69%, resulting in the number of girls exposed to the community dialogues intervention at 63,164.

Costs and Benefits

Costs

The costs incurred in implementing this intervention are the cost of the dialogues which includes cost of recruiting facilitators and developing the facilitator's guide. Based on Erulkar et al. (2017), the cost of community dialogues in Burkina Faso, per marriage averted was US\$159 (at a prevalence rate of 24%), for a total of GHS 8.5 million. Also included among the costs of the intervention are administrative charges, which are assumed to be 1% of total costs.

Benefits

The benefits are derived from the 6,131 avoided early marriages and include the averted health conditions associated with adolescent pregnancy, of which 4,108 are delayed by the intervention: pregnancy costs, valued at GHS 892,000, maternal deaths (3), infant deaths (33), cesarean sections (526), abortions (665), and fistula (2) avoided. An additional benefit is the avoided productivity loss from intimate partner violence, to which child brides are more exposed, and which is valued at GHS 1.3 million. Finally, this intervention appeared to have no impact on girls' school retention for the 15-17 year old group; Erulkar et al (2017) report a risk ratio of 0.99. Total benefits from the intervention are estimated at GHS 38.2 million, with the largest benefit coming from infant mortality, GHS 32.1 million.

Intervention 2: Conditional Asset Transfer

Overview

This intervention involves the transfer of an asset to the parents of girls, provided that they remain both unmarried and enrolled in school. The asset could be a sheep or any livestock that is locally relevant. In this analysis it is the equivalent to 3% of average annual income in 2019. This intervention is aimed at providing the family with an additional income source, which, it is hoped, would reduce the financial incentives associated with child marriage.

Implementation Considerations

The intervention would be implemented for three years, modeled with one cohort of girls. The asset is available to all girls who are enrolled in Junior High School and are unmarried. The girls would be required to re-enroll annually. The asset is given at the end of the successful completion of an academic year. Assuming an uptake rate of 63% as in the Erulkar (2017) paper, 57,661 girls are estimated to be exposed to the intervention. All girls eligible must be offered the asset or else the intervention may stimulate moral hazard behaviour, motivating families to remove their girls from school in order to be offered the asset.

Costs and Benefits

Costs

The costs associated with this intervention include the provision of the asset to all those eligible for three years, provided the girls remain enrolled. The asset is valued at GHS 378.6 in 2019, and the total cost of offering the conditional asset to 57,661 girls is GHS 18.75 million. The costs of JHS schooling, for those who would otherwise have dropped out after getting married, as well as the opportunity cost of going to school are valued at GHS 9 million and 9.2 million, respectively. Administrative costs of running the programme are assumed to be 1% of the total cost of the intervention.

Benefits

The benefits are derived from the 6,821 avoided early marriages and include the averted health conditions associated with adolescent pregnancy, of which 4,570 are delayed by the intervention: pregnancy costs, valued at GHS 1.2 million, maternal deaths (3), infant deaths (37), cesarean sections (585), abortions (740), and fistula (2) avoided. Another benefit is the avoided productivity loss from intimate partner violence, to which child brides are more exposed, and which is valued at GHS 947,000. Finally, there are 4,551 girls, who remain in school, for which there is a marginal increase in their lifetime earnings valued at GHS 62.5 million. The total benefits of the intervention are estimated at GHS 107.3 million, with the largest benefits emanating from the marginal income gain from having completed JHS (GHS 62.5 million) and infant deaths avoided (GHS 37.9 million).

Intervention 3: Education Support- Free School Uniforms

Overview

Ghana already implements a policy of free basic (pre-school, primary, junior and senior high) education for all children of school-going age. This means every Ghanaian child irrespective of location and gender has free access to at least high school education. In addition to the free basic education policy, the Free School Uniform Policy gives every student one uniform for the duration of school. This education support is aimed at giving each child of school age an extra uniform at the start of every academic year.

Implementation Considerations

To ensure the efficiency of the Free Education and the Free Uniform Policies in Ghana, this intervention aims at giving 123,946 girls an extra uniform at the start of each academic year. The analysis covers one cohort of girls, over three years of JHS. Although the free school uniform policy in Ghana provides a free uniform per child at the start of their education, most children will require two or more uniforms so an additional free uniform for these girls at the start of the academic year will reduce the cost to parents and increase the chances of the girls staying in school. With an assumed uptake rate of 70%, 63,959 girls are assumed to initially receive a uniform.

Costs and Benefits

Costs

The costs associated with this intervention include the cost of the uniform, GHS 75, for a total of GHS 4.12 million. The costs of JHS schooling, for those who would otherwise have dropped out after getting married, as well as the opportunity cost of going to school are valued at GHS 6.8 million and 7.0 million, respectively. Administrative costs of running the programme are assumed to be 1% of the total cost of the intervention.

Benefits

The benefits are derived from the 1,330 avoided early marriages and include the averted health conditions associated with adolescent pregnancy, of which 891 are delayed by the intervention: pregnancy costs, valued at GHS 226,000, infant deaths (7), cesarean sections (114), and abortions (144). Another benefit is the avoided productivity loss from intimate partner

violence, to which child brides are more exposed, and which is valued at GHS 184,000. Finally, there are 3,471 girls, who remain in school, for which there is a marginal increase in their lifetime earnings valued at GHS 47.7 million.

Table 1: Benefits summary, by number of beneficiaries

Benefits	Community dialogues	Conditional asset transfer	Education support (uniforms)
Marriages avoided	6,131	6,821	1,330
Pregnancies delayed	4,108	4,570	891
Girls remaining in school	0	4,551	3,471

Table 2: BCR Summary Table

Interventions	Benefit (millions GHS)	Cost (millions GHS)	BCR	Quality of Evidence
Community Dialogues	32.8	8.6	3.8	Medium
Conditional Asset Transfer	107.4	40.1	2.7	Medium
Education support: Uniforms	56.4	19.5	2.9	Medium

Notes: All figures assume an 8% discount rate

The results indicate that the Community Dialogues intervention, a relatively low-cost intervention, has the highest benefit-cost ratio (BCR) of 3.8, and is the most cost-effective policy option in the fight against child marriage. However, the Community Dialogues intervention does not have the highest overall impacts on the indicators measured: The highest number of marriages avoided, pregnancies delayed or girls who remain in school is attributable to the Conditional Asset Transfer (CAT) intervention (BCR = 2.7). Education Support is the least effective where it relates to reducing the risk of child marriage, but makes a considerable impact on girls' school retention (BCR = 2.9).

These results provide useful information to policy makers as to the likely magnitude of costs and benefits from each of these interventions. We do not strongly endorse one intervention over another, given the relative similarity of the BCRs and the uncertainty of the evidence (drawn from three African countries not including Ghana). We recommend the Ghanaian government, should they wish to implement these interventions, conduct initial pilots with a strong monitoring evaluation element to determine the extent to which the on-the-ground reality confirms to the modeling documented in this paper.

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SECTION ONE: INTRODUCTION

Background of the Study

Child marriage, which is the marriage of girls and sometimes boys before the legal age of marriage, has remained both an economic and social challenge for many low-income countries, particularly those in sub-Saharan Africa (Domfe & Oduro, 2018). Wodon, et. al, (2017) estimate that more than 41,000 girls get married every day, especially in sub-Saharan Africa and South Asia. UNICEF (2016) indicates an incidence rate of 39 per cent for the sub-Saharan Africa region. This means that about 4 out of every 10 girls in sub-Saharan Africa marry before they reach the legal marriage age. Not only may the girls not be psychologically prepared, they are also mostly made to marry against their free will.

Erulkar, Medhin, and Weissman (2017: 1) describe child marriage as being characterised by “low levels of development and limited school and work opportunities”. UNICEF (2005), identifies some adverse consequences of child marriage as being physical, intellectual, psychological and emotional impacts, which could end educational opportunity and chances of personal advancement of the victims. Domfe and Oduro (2018) explain that not only does child marriage affect the victims, its ripple effects on the entire society can also be very significant. In other words, as child marriage impedes personal development, particularly in the areas of health and education, the contribution of its victims to the growth and development of the national economy is compromised as well.

Due to the numerous adverse effects of child marriage, there have been a series of campaigns spearheaded by both local and international organisations to address the problem (Nguyen and Wodon, 2015). And while Wodon, et. al. (2017) admit that the campaigns have been effective in reducing the incidence of child marriage across the globe, they acknowledge that a lot more remains to be done. As a result, prevention of child marriage is one of the targets under the Sustainable Development Goals.

However, resources to achieve this target have been a challenge (Wodon, et. al, 2017). This is especially because the affected countries have limited fiscal space to contain the huge investment needed to address the problem. It has therefore become necessary to conduct a benefit-cost analysis to identify cost effective interventions to attract policymakers to make a little more funds available to uproot the canker of child marriage.

Situation of Child Marriage in Ghana

The incidence of child marriage is high among girls, and rare among boys. Domfe and Oduro (2018) using data from the GDHS (2014) reported a national incidence of 27.2% among girls. The authors find that the incidence of child marriage is higher in rural Ghana at 34.3% compared to the urban rate of 19.4%. Their research also reveals that the incidence of child marriage is highest in the Northern Region of Ghana (38.0%). The incidence is higher among the poorest population and uneducated women (de Groot et al. 2018). Although the incidence of child marriage has reduced in Ghana over time, it has increased in the regions in the northern sector, with an incidence rate of 33.6% in 2014 compared to 26.4% in 2011 (de Groot et al. 2018).

World Vision Ghana (2017) identifies the interplay of economic, structural and social factors as being the main drivers of child marriage. The World Vision Study in four regions of Ghana found that whilst teenage pregnancy was a reason why many girls in southern Ghana were married off or lived in a consensual union with the father of the child, in the northern sector of the country, child marriage occurred largely because of cultural practices. For example, the practice of bride exchange involves giving a daughter away in marriage to a member of the family of her brother's wife. Parents sometimes marry off their daughters in order to strengthen relationships between families. Poverty was found to be a causal factor among communities in the four regions where the World Vision Study was undertaken. In the Upper East Region and Northern Region, it was found that some parents would marry off their daughters in order to acquire wealth in the form of livestock.

The Constitution of Ghana and the Ghana Children's Act prohibit child marriage. Ghana has ratified international instruments such as the African Charter on the Rights and Welfare of the Child and the Convention on the Elimination of all Forms of Discrimination against Women (CEDAW) which are against child marriage and as Pew Research Center (2016) reports is among many SSA countries that have deployed policies to ban child marriage.

While these laws exist, their effectiveness is limited due to the challenges involved in enforcing them, particularly in communities where social and cultural norms are strongly adhered to. The effectiveness of these laws depends on the ability of these laws to eliminate cultural and social biases and change behavioral patterns that promote discrimination against girls.

Following Domfe and Oduro (2018), this study focused on interventions to reduce child marriage of girls between the ages of 15 and 19 years (the high prevalence age group) residing in the five northern regions of Ghana (high prevalence regions). The following interventions have been proposed: community dialogue, conditional asset transfer and educational support (free school uniform). The choice of these interventions is partly informed by a review by Lee-Rife, Malhotra, Warner and Glinski (2012) and Kalamar, Lee-Rife and Hindin (2016) that found interventions that empower girls, offer incentives such as conditional cash transfers, and engage communities – as the most effective approaches in delaying child marriage.

The impacts of these interventions are drawn from a summary report by Erulkar, Medhin and Weissman (2017a). That study reports on the impacts from quasi-experimental rollout of these interventions in Burkina Faso, Tanzania and Ethiopia. We used this study since equivalent data from Ghana were absent. The results across these three settings are relatively consistent and the methodology adopted to estimate impacts is relatively robust.

The results indicate that the Community Dialogues intervention, a relatively low-cost intervention, has the highest benefit-cost ratio (BCR) of 3.8, and is the most cost-effective policy option in the fight against child marriage. However, the Community Dialogues intervention does not have the highest overall impacts on the indicators measured. The highest number of marriages avoided, pregnancies delayed or girls who remain in school is attributable to the Conditional Asset Transfer (CAT) intervention (BCR = 2.7). Education Support is the least effective where it relates to reducing the risk of child marriage, but makes a considerable impact on girls' school retention (BCR = 2.9).

These results provide useful information to policy makers as to the likely magnitude of costs and benefits from each of these interventions. We do not strongly endorse one intervention over another, given the relative similarity of the BCRs and the uncertainty of the evidence (drawn from three African countries not including Ghana). We recommend the Ghanaian government, should they wish to implement these interventions, conduct initial pilots with a strong monitoring evaluation element to determine the extent to which the on-the-ground reality confirms to the modeling documented in this paper.

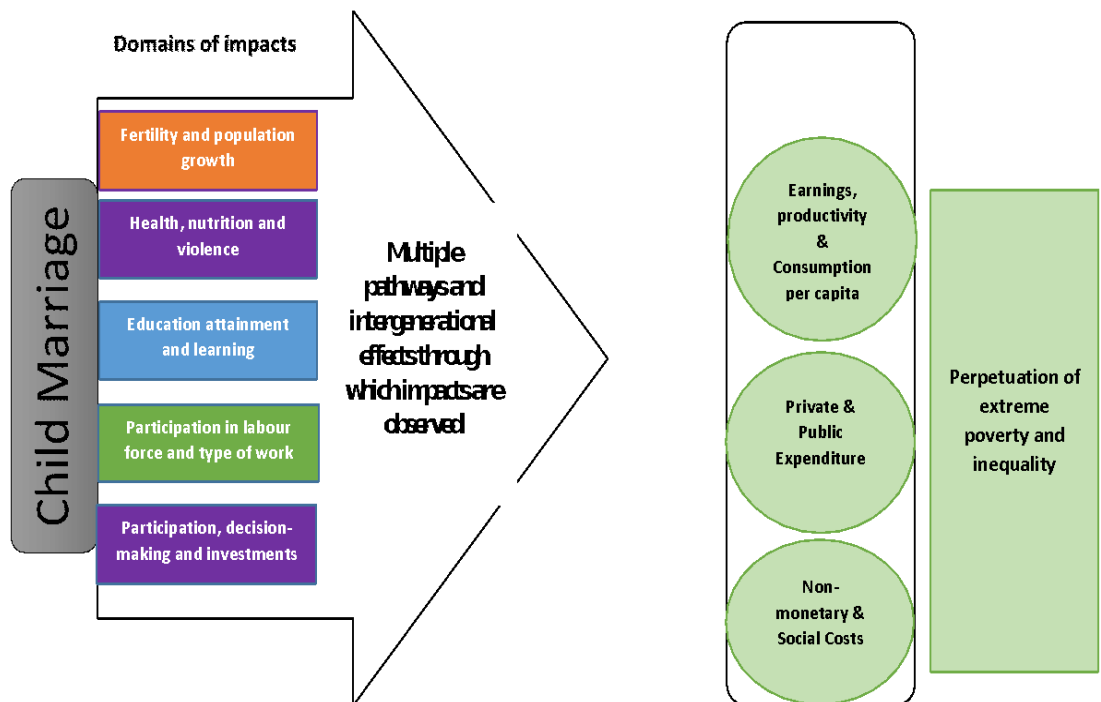
Conceptual Framework

According to Wodon et. al, (2017), the best approach to inspire greater commitment towards ending child marriage, is to demonstrate the negative impacts of the practice and its economic

costs. Information on the cost of the practice of child marriage should be available to inspire the commitment of policymakers in fighting the canker. Information on the benefits gained from preventing the practice will further enhance governments’ appreciation of the need to address the problem of child marriage. This study adopts a conceptual framework used by Wodon, et. al, (2017) that maps out the adverse consequences child marriage has on child brides, their children and the entire society. The framework (Figure 1) shows the various pathways through which the effect could be felt by the victims, their children and the entire community.

The study follows Wodon et. al, (2017), considering five impacts of child marriage: (i) fertility and population growth; (ii) health, nutrition, and violence; (iii) educational attainment; (iv) labor force participation, earnings, and productivity; and (v) decision-making and other areas. The framework suggests that child marriage exacerbates population growth. Victims could suffer health problems and their education could be truncated abruptly – rendering them uncompetitive in the labour market – which could eventually affect future earnings. Wodon et. al, (2017:1) therefore considered the impacts and economic costs associated with child marriage as being very high and advised “.....that investing to end child marriage is not only the right thing to do, but also makes sense from an economic point of view”.

Figure 1: Framework for Assessing the Economic Impacts of Child Marriage



Source: Wodon et. al, (2017)

A baseline child marriage prevalence rate of 26% was assumed, based on the average of the northern regions (UNICEF et al, 2019). The monetized benefits used in the study, derived from avoiding child marriage can be linked to four of the five the impact domains of the Wodon et al. (2017) framework.

-- Fertility and population growth: A foundational assumption of our analysis is that early marriage leads to early pregnancy, and early pregnancy is riskier along several dimensions. We assume that 67% of early marriages would have led to pregnancy before age 18, following Yaya et al. (2019). For tractability, we assume that avoiding child marriage delays pregnancy to an age when it is physically safer to have children (age 22) and therefore all benefits should be considered as relative to pregnancy at this older age. The benefits from delayed pregnancy include avoided medical costs of birth, caesareans and abortions. Avoided medical costs are assumed to equal GHS 266 based on Oduro (2019). Delaying pregnancy leads to a small benefit due to differences in the present value of a pregnancy now as opposed to several years in the future. Caesareans make up 16% of all births, and early pregnancy increases this risk by 80% (Yussi et al. 2017). The medical cost of a caesarean is assumed to be GHS 3000. The prevalence of induced abortions for mothers who are less than 20 years of age is 18.8%, and adolescent mothers are 80% more likely to have an induced abortion (Ghana Maternal Health Survey, 2017). The medical cost of abortion is assumed to be GHS 425 in Ghana (Anitye, O'Brien and Mayhew, 2016).

-- Health, nutrition, and violence: The flow-on health effects of delaying pregnancy are substantial. Here we consider averted maternal deaths, averted child deaths and averted obstetric fistula. The maternal mortality for all women is 310 per 1000 women, but 510 per 1000 women for adolescent girls, an increased risk of .20% (Nove et al. (2014). According to the Ghana Maternal Health Survey (2017), among adult women, the incidence of infant mortality is 27 per 1000 births, but the pregnancies of adolescent women are 30% more likely to result in the death of the infant. Lastly, around 1.6 per 1000 births lead to obstetric fistula in women (Ghana Health Service, 2015) while for adolescents the risk is 28% higher (Tebue et al 2012). The value of maternal and child lives saved follows standard protocols throughout the Ghana Priorities project, and assumes each adolescent maternal life saved avoids 53 years of life lost (YLL), each child life saved avoids 64 YLLs and each YLL is valued at around GHS

13,000 increasing with GDP per capita growth (Wong and Dubosse, 2019). Fistula is assumed to lead to a life-long disability that remains untreated, and the disability weight for untreated fistula is 0.346 years lost to disability (YLD) per year (Higashi et al. 2014). Each YLD avoided is valued at the same as each YLL avoided. In all analyses conducted, the value of avoided child mortality is the first or second largest contributor to the benefits of the interventions.

-- **Education attainment and learning:** In general, throughout the early marriage literature, it is noted that there is a high negative correlation between early marriage and educational attainment. As discussed previously, the impacts of the interventions used for this cost-benefit analysis are drawn from Erulkar, Medhin and Weissman (2017a), including enrolment impacts. Benefits are valued at the marginal lifetime income gain associated with increased education attainment. The marginal increase in wage for a year of JHS is GHS 666 per year, based on Mincerian equations estimated from GLSS 7 data and documented in another paper in the Ghana Priorities series (Turkson, et al., 2019). This increased wage value per year is assumed to increase with real income per capita growth, and lasts for the entirety of the women's working lives. In two of the interventions, the increase in wages associated with more education is the largest benefit.

-- **Participation in labour force:** Child brides are more likely to be the victims of intimate partner violence (odds ratio, 1.50 as estimated by Kidman, 2016). One of the consequences is the productivity loss of abuse victims. The Ghana Ministry of Gender, Children and Social Protection and UNICEF (2015) estimate a 5% reduction in lifetime earnings for victims of IPV.

Assessment of the Quality of Evidence

Assumptions concerning the impact of the interventions are from evaluations conducted in other African countries Erulkar, Medhin and Weissman (2017a); Burkina Faso which has very similar customary practices as in parts of the northern sector of Ghana and Tanzania and Ethiopia may be quite different. The data sources are primarily from nationally representative surveys collected by the Ghana Statistical Service. We are conservative in the assessment of the quality of the evidence, because we depend on impact evaluations from other countries. We rate the quality of the evidence to be 'Medium' for all three interventions.

SECTION TWO: COMMUNITY DIALOGUES (REMEDIAL AND PREVENTIVE)

Description of the intervention

Community dialogue is the provision of an interactive platform for the various categories of people living in a community to express their opinion on an issue of common interest. According to MoHCC (2017: 4), “a community dialogue is a process of a joint problem identification and analysis leading to modification and redirection of community and stakeholders’ actions towards a preferred future for all”. It is an interactive participatory communication process involving all people – the rich and the poor, old and young, men and women – to find a practical solution to address a common problem. Community dialogues offer participants an opportunity to listen, understand, contribute as well as gain insights into an issue. It provides space for information sharing and expression of concern over what is not right (ibid).

As a proposed social intervention to address the incidence of child marriage in the five regions of the northern part of Ghana, it hopes to bring all citizens together on a common platform to exchange and share views on the canker. This involves educating and sensitizing children, families and communities about the negative impacts of child marriage on girls, their children and the entire community. Sensitization is not just for the girls but also for their parents/guardians because in most cases these girls do not have a say in the decision to get married since such decisions are made by their parents/guardians.

The main purpose of this intervention is to address the social norms associated with the practice of early marriage.

Literature Review

The UK Government provided £10 million over 5 years (2011 – 2016) to support the Ethiopian Government’s effort to reduce child marriage. The project, dubbed End Child Marriage Programme (ECMP) or Finote Hiwot (FH) – as it was known locally – was implemented in 29 districts. The overall aim of the project was to improve the wellbeing (health, education, empowerment and prosperity) of girls and women, their children and their families in East and West Gojam zones of the Amhara region of Ethiopia. Specifically, the project sought to delay marriage for at least 37,500 girls in East and West Gojam zones of Amhara region (GoE, 2016).

The main techniques were community-based interactions with faith leaders, participation in religious preaching sessions and school-based activities to create awareness of the adverse consequences of child marriage. The programme identified empowerment of key groups as relevant in meeting its overall aim. For instance, influential members within the communities were empowered through a ‘community conversation’ approach while teachers and children (peer educators) were empowered through school-based activities. Economic incentive packages were provided to some selected households after months of engagements.

The dominant strategies for community dialogue included meeting of the representatives from schools, health, police, district administrations and harmful traditional practices (HTP) committees at district level on a regular basis to work out plans to end child marriage in their areas. Such discussions greatly increased commitment and consensus in making concrete steps to ending the practice (GoE, 2016).

Tangible outputs included the training of 7,019 community facilitators, supporting 1,772 school clubs, helping 452 schools to develop mini-media outputs, providing economic incentives to 4,294 beneficiary households, establishing 248 HTP committees and teaching officials in 24 government offices to use the programme’s reporting format and database. Besides, some selected journalists were trained to produce stories on community conversations, school club activities and economic incentives. The journalists also developed media products in the form of billboards and posters with key messages on child marriage which were displayed for public consumption throughout the study area.

Overall, the programme was rated as a success as it exceeded most of its targets. The discounted benefit to cost ratio was 2.6. This means that the cost involved in the project’s implementation was less than half of the benefits.

Erulkar Medhin and Weissman (2017a) report on another intervention programme implemented in Ethiopia on a pilot basis, dubbed the Berhane Hewan which also employed dialogues to engage the community on the harmful effects of child marriage. The intervention lasted for two years and at the end of it, girls aged 10 to 14 in the study site were less likely to have gotten married compared to the girls in the control sites.

Joy for Children Uganda (2019) conducted a community dialogue initiative to delay marriage and promote schooling for girls and boys in 2019 in Uganda. The choice of the community dialogue was based on the fact that in the African setting, child upbringing is seen as the community’s responsibility. The dialogues comprised between 20 to 40 community members

in each community. During the dialogues, participants were given opportunities to share their diverse opinions on the drivers of child marriage in their communities and the interventions they thought would end the practice. The negative effects of child marriage on the victims, their families and the entire community, were also discussed. The participants included in the community dialogues were: local council (LC) members, members of child protection committees (CPC), village health teams (VHT), para social workers (PSW), family and protection officers, teachers, health workers, church leaders, opinion leaders, police officers, students and community members.

The main objective of community dialogues was to create a platform where communities could directly participate in identifying their problems and help proffer practical solutions to them. The dialogues provided access to information and encouraged open discussions on a wide range of issues affecting girls and how to address them. Through such discussions, the participants were empowered with relevant knowledge and skills necessary to address the problem of child marriage.

The project is ongoing but its prospects appear very positive. The following lessons have been identified to enhance the effectiveness of community dialogues: the local leaders should take the lead in using different platforms like burials, parties, village meetings and leaders' meetings to sensitise masses on early marriage.

Yemen is another example of a country where community dialogue has worked to delay child marriage. Through awareness creation interactions on child protection, 100,000 community members, community leaders and religious Imams gained improved knowledge of the benefits of delaying marriage and keeping girls in school during adolescence (Global Programme, 2017).

Erulkar, Medhin and Weissman (2017b) select five wards in Tabora region of Tanzania and implemented different interventions to prevent child marriage. The following interventions were implemented separately in three different wards: community sensitization, schooling promotion (support) and a conditional asset transfer. In the fourth ward, all three interventions were implemented at the same time while a fifth ward was used as a control. Using a quasi-experimental research design, the interventions were implemented for 28 months. Two separate surveys – one just before the intervention and the other immediately after were undertaken to measure the impacts of the interventions. At each round of survey, 2,500 girls between the ages of 12 years and 17 years were sampled. This consisted of 500 participants in each ward.

In the case of the community sensitization intervention, facilitator guides were initially designed to ensure that the messages on the need to keep girls in school and the negative impacts of child marriage were uniform. After this, community and religious leaders were trained as facilitators to lead community discussions during monthly village meetings and weekly religious services. The project staff complemented this by helping with dissemination of messages on market days.

Erulkar, Medhin and Weissman (2017a) tested four different interventions –namely; community dialogue, promotion of education, a conditional asset transfer and a comprehensive model including all the approaches – to delay early marriage in Burkina Faso. A quasi-experimental research design was used and the interventions were implemented in different geographical areas for a little over two years. There were both baseline and endline surveys involving 2,500 girls (500 per a study community) aged 12 to 17 years.

The Community dialogue intervention was implemented in two communities to specifically address social norms surrounding the practice of early marriage. Facilitators were recruited and trained on how to facilitate community dialogues using a facilitator’s manual. The following groups were engaged in the community discussion: community leaders, adult men and women as well as adolescent girls. Discussion groups met on a weekly basis for 16 weeks after which groups from other communities were also engaged. The result of this intervention was that girls aged 15 to 17 in the study community had two-thirds less risk (RR = 0.33) of being married compared to girls in the control site.

It is concluded based on the few examples presented above that community dialogue could effectively be used to promote school attendance while ensuring delays in marriage. Compared to the other interventions, community dialogue appears less costly.

Cost-Benefit Analysis

General parameters and target population

The intervention targets approximately 124,000 girls aged 15-17 who live in the northern regions of Ghana. Based on information in Erulkar, Medhin and Weissman (2017a) we assume a 69% uptake rate, with 63,164 girls exposed to the intervention.

Following Ghana Priorities assumptions, we adopt discount rates of 5%, 8% and 14%. All figures are denoted in 2018 GHS unless otherwise indicated.

Cost

The community dialogue will take place over a two-year period and lasts for 16 weeks in each community. Implementation costs include the cost of the dialogues, which includes the cost of recruiting facilitators and developing the facilitator’s guide. An amount of GHS 4.77 million will be needed each year for the dialogue during the project’s implementation period. Based on Erulkar et al. (2017), the cost of community dialogues in Burkina Faso, per marriage averted was US\$159, for a total of GHS 8.5 million. Additionally, an administrative cost estimated at 1% of the total cost of the project brings the total cost of the project to GHS 8.6 million, at 8%.

Benefits

The benefits are derived from the 6,131 avoided early marriages and include the averted health conditions associated with adolescent pregnancy, of which 4,108 are delayed by the intervention: pregnancy costs, maternal deaths (3), infant deaths (33), cesarean sections (526), abortions (665), and fistula (2). An additional benefit is the avoided productivity loss from intimate partner violence, to which child brides are more exposed, and which is valued at GHS 1.3 million. While it was anticipated that JHS completion would be among the expected benefits, the experiment appeared to have no impact on girls’ school retention for the 15-17 year old group; Erulkar et al (2017) report a risk ratio of 0.99 which we interpret as being statistically indistinguishable from no effect.

Table 3: Costs and Benefits, community dialogue to prevent child marriage in Ghana

	Benefits, % of total benefits	Costs, % of total costs
Maternal deaths averted	5.4	
Infant deaths averted	84.1	
Pregnancy costs avoided	2.3	
Abortion costs avoided	0.6	
Cesarean procedures avoided	3.4	
Avoided productivity loss of abuse victims	3.3	
Avoided obstetric fistula	0.7	
Income gain from JHS completion	--	
Cost of dialogues		99
Additional schooling		--
Opportunity cost of schooling		--
Administration		1

Note: Figures shown are discounted at 8%

Benefit cost analysis estimates (see Table 4) indicate that the project is feasible respectively at discount rates of 5%, 8% and 14% with BCRs between 3.6 and 4.0.

Table 4: Benefits and costs estimates for using community dialogue to prevent child marriage in Ghana, GHS millions

Discount Rate	5%	8%	14%
Discounted Benefits (B)	35.9	32.8	28.5
Discounted Costs (C)	8.9	8.6	7.9
B/C Ratio	4.0	3.8	3.6

Source: Authors' estimates based on assumptions on the Ghanaian economy

SECTION THREE: CONDITIONAL ASSET TRANSFER

Description of Intervention

Cash transfer programmes have, in the last couple of years, become an effective poverty reduction strategy in the developing world (Canelas & Niño-Zarazúa, 2018). In most of these countries, the strategy has been used to address health, nutritional and educational needs of the people – with a clear intention to develop their human capital to tackle intergenerational transmission of poverty (Levy & Schady, 2013).

Conditional cash transfers (CCTs)/Conditional asset transfers (CATs) is a type of social transfer programme that usually links transfers to poor households based on certain set conditions (Malokele, 2013). While in some studies cash is transferred to beneficiaries conditioned upon meeting certain health and nutritional practices, there is a strand of CCTs programmes that requires that children get enrolled and attend school regularly. In the latter example of CCTs programmes, children are monitored everyday as they attend school and subsequently receive their reward or benefits after a stipulated period of time.

Consistent with the literature, Canelas and Niño-Zarazúa (2018) note that conditional transfers impact positively on enrollment rates. This is especially the case when the school children are provided with monetary support after a proven record of school attendance. In other words, the school children in their bid to receive the cash transfer, would not miss a day from school for any reason. According to Bourguignon, Ferreira and Leite (2003), conditional cash transfers' effects on school attendance is particularly high if the children come from poor households. That is, the amount of money being transferred to the households should at least be considered,

in their estimation, as something substantial relative to the household's income. Therefore, conditional cash transfers work best if the poor households with low income are carefully targeted (Canelas & Niño-Zarazúa, 2018).

Literature Review

Conditional cash transfer has been used in some countries to reduce the incidence of child marriage. A conditional cash transfer intervention implemented in Malawi in 2010 significantly contributed to a decline in child marriage. Reporting on this intervention, Baird, Chirwa, Mcintosh and Ozler, (2010) indicate that a cash transfer of \$10 per month – which was conditioned on school attendance for adolescent girls in Malawi – led to a significant decline in early marriage and teenage pregnancy. However, Baird, Mcintosh and Ozler (2011) explained that cash transfer conditioned on school attendance works better than unconditional transfers.

Save the Children (2018) explains that while conditional transfers to incentivize school enrolment works better for younger adolescents, yearly provision of cooking oil for older adolescent girls has been effective in delaying marriage. This shows that provision of gifts to incentivize the girls to stay in school is very effective in addressing the problem of child marriage.

Erulkar et. al (2017b) implement a conditional asset/cash transfer intervention at a ward in Tabora region of Tanzania to prevent child marriage. The outcomes of the intervention are consistent with the research findings of a study by Hindin and Fatusi (2014) who also found out that cash/asset transfers could be used effectively to prevent child marriage. Erulkar et. al (2017b) conclude that the severe economic hardship in Tabora contributed to the success of the intervention. Therefore, conditional cash transfer is more likely to be effective in poor regions.

As reported by Erulkar et. al (2017a) an intervention implemented in Ethiopia on a pilot basis, dubbed the Berhane Hewan programme also offered a conditional asset transfer (a goat) to families as a condition to keep their unmarried girls in school. Two years after implementing the intervention, girls aged 10 to 14 in the study area were more likely to be in school and for that matter, less likely to marry.

Erulkar et. al (2017a) also employ a conditional asset transfer intervention to delay early marriage in Burkina Faso. A quasi-experimental research design was used and the interventions were implemented in different geographical areas for a little over two years. There were both

baseline and endline surveys involving 2,500 girls (500 per a study community) aged 12 to 17 years.

On the whole, conditional cash (or asset) transfers as an intervention, have proved to be effective in addressing child marriage in some African countries. This means that, the intervention, has a high degree of prospects in addressing child marriage in the five regions of northern Ghana.

Costs and Benefits Analysis

General parameters and target population

The key assumption of this intervention in Ghana is that the girls' parents will be enticed by the cash/asset transfer to keep their girl child in school. The intervention proposes to give an asset, for example a sheep, to the parents of the unmarried girl each year she remains in school. The value of the sheep is equivalent to about 3 percent of 2019 per capita income. Therefore, considering that households in the five regions are the poorest in the country, the intervention will help reduce chances of marrying-off a girl to address household poverty.

The intervention will be implemented for three years with the same cohort of girls. To ensure the effectiveness of the intervention, families will be required to register their interest in receiving the asset, and these assets are given to the family after every year of school. Access to this intervention is conditioned on the girls' attendance and academic performance. This is to ensure that girls not only go to school, but go regularly, and have the opportunity to study after school. Of the 123,946 girls estimated to be between the ages of 15 and 17 in the northern regions, the uptake rate is 63%, resulting in an exposure group of 57,661 girls.

Costs

The costs associated with this intervention include the provision of the asset to all those eligible for three years, provided the girls remain enrolled. The asset is valued at GHS 378.6 in 2019, and the total cost of offering the conditional asset to 57,661 girls is GHS 18.75 million. The costs of JHS schooling, for those who would otherwise have dropped out after getting married, as well as the opportunity cost of going to school are valued at GHS 9 million and 9.2 million, respectively. Administrative costs of running the programme are assumed to be 1% of the total cost of the intervention.

Benefits

The benefits are derived from the 6,821 avoided early marriages (risk ratio: 0.55) and include the averted health conditions associated with adolescent pregnancy, of which 4,570 are delayed by the intervention: pregnancy costs, valued at GHS 1.2 million, maternal deaths (3), infant deaths (37), cesarean sections (585), abortions (740), and fistula (2). Another benefit is the avoided productivity loss from intimate partner violence, to which child brides are more exposed, and which is valued at GHS 947,000. Finally, this intervention has the highest risk ratio associated with increased school enrolment (1.16). Thus, there are 4,551 girls, who remain in school, for which there is a marginal increase in their lifetime earnings (13%) valued at GHS 62.5 million.

Table 5: Benefits, CAT to prevent child marriage in Ghana

	Benefits, % of total benefits	Costs, % of total costs
Maternal deaths averted	2.3	
Infant deaths averted	35.3	
Pregnancy costs avoided	1.1	
Abortion costs avoided	0.3	
Cesarean procedures avoided	1.6	
Avoided productivity loss of abuse victims	0.9	
Avoided obstetric fistula	0.3	
Income gain from JHS completion	58.2	
Cost of CAT		46.7
Additional schooling		22.4
Opportunity cost of schooling		22.9
Administration		0.5

Note: Figures shown are discounted at 8%. In all, information provided in Table 4 indicates that the project is cost-beneficial at discount rates of 5%, 8% and 14% respectively with BCRs between 2 and 3.6.

Table 6: Benefits and costs estimates for using conditional cash transfer to prevent child marriage in Ghana, GHS millions

Discount Rate	5%	8%	14%
Discounted Benefits (B)	149.0	107.4	75.4
Discounted Costs	41.2	40.1	38.2
B/C Ratio	3.6	2.7	2.0

Source: Authors' estimates based on assumptions on the Ghanaian economy

SECTION FOUR: EDUCATION SUPPORT (FREE SCHOOL UNIFORMS)

Introduction

Ghana already implements a policy of free basic (pre-school, primary, junior and senior high) education for all children of school-going age. This means every Ghanaian child irrespective of location and sex has free access to up to high school education. In addition to the free basic education policy, the Free School Uniform Policy has been introduced to give every student one uniform for the duration of their basic education. However, one uniform for the entire duration in junior and senior high schools is not enough. There have been reported cases where girls from poor households have left school because the one school uniform they were given got worn out.

According to CSPS-UG (2017), low financial support from parents to cover the costs of school materials such as school bags, shoes and uniforms, have forced some girls out of school in Ghana. Save the Child (2018) mentioned lack of access to books and school uniforms, among other things, as possibly leading to drop-outs among girls. While early marriage itself is a factor of school drop-out, girls who dropped out of school not because of early marriage become predisposed to early marriage.

The aim of this intervention is to complement the Government's existing policy, which provides one free school uniform to each child during the entire period of three years, by providing an additional school uniform to each girl child in every academic year. This will obviously encourage many girls to stay in school instead of leaving school to be married off. Indeed, evidence from other parts of Africa (Erulkar et. al, 2017a & 2017b) show that provision of school materials to the girl child can help prevent child marriage.

Literature Review

Erulkar et. al (2017a) implemented a school support intervention in a ward in the Tabora region of Tanzania to address the harmful effects of child marriage. Girls between 12 and 17 years were registered for schooling promotion and they received school materials under an agreement from them and their families that they would remain unmarried and in-school for over two-year period of the project's implementation. The girls were either given school uniforms or school supplies, which included 12 exercise books, five pens, two pencils, and one

mathematical set. Registered girls received supplies once at the beginning of the school year. The results indicated that the intervention had a positive effect on school attendance – and by extension, reduced child marriage.

There is also evidence in Ethiopia to support the use of school support interventions to reduce child marriage. Erulkar et. al (2017b) mention an intervention called the Berhane Hewan programme which was implemented on a pilot basis in Ethiopia for two years. Girls were provided with school supplies to promote school attendance. At the end of the intervention, it was reported that girls in the study area were less likely to have gotten married compared to those in the control sites.

In two communities in Burkina Faso, Erulkar et. al (2017b) also tried to find out whether school material support could help reduce child marriage. Unmarried girls aged 12 to 17 registered for schooling promotion and received school materials and school fees with a promise from the girls and their families that they would remain unmarried and stay in school for the two-year period of the project’s implementation. The girls were each given about CFA 3,000 (US\$5) in school supplies (notebooks, pens, and pencils) and CFA 2,000 (US\$3.50) in school fees every year. Even though the impact of the project was not statistically significant – because of an error in selecting appropriate control sites – there were some increases in school attendance.

Costs Benefits Analysis

General parameters and target population

Complimenting the Free Education and the Free Uniform Policies in Ghana, this intervention aims at giving 123,946 girls an extra uniform at the start of each academic year for the same cohort of girls as they make their way through JHS. Although the free school uniform policy in Ghana provides a free uniform per child at the start of their education, an additional free uniform for these girls at the start of the academic year will reduce the cost to parents and increase the chances of the girls staying in school. The uptake rate for this intervention was the highest of the three, at 70%, resulting in an exposure group of 63,959 girls in the Northern region of Ghana.

Costs

The costs associated with this intervention include the cost of the uniform, GHS 75, for a total of GHS 4.12 million, discounted at 8%. The costs of JHS schooling, for those who would otherwise have dropped out after getting married, as well as the opportunity cost of going to

school are valued at GHS 6.8 million and 7.0 million, respectively. Administrative costs of running the programme are assumed to be 1% of the total cost of the intervention.

Benefits

The education support intervention is the least effective where it relates to reducing the risk of child marriage; the risk ratio being 0.92. The benefits are derived from the 1,330 avoided early marriages and include the averted health conditions associated with adolescent pregnancy, of which 891 are delayed by the intervention: pregnancy costs, valued at GHS 226,000, infant deaths (7), cesarean sections (114), and abortions (144). Another benefit is the avoided productivity loss from intimate partner violence, to which child brides are more exposed, and which is valued at GHS 184,000. Finally, with a risk ratio of 1.11, there are 3,471 girls, who remain in school, for which there is a marginal increase in their lifetime earnings valued at GHS 47.7 million.

Table 7: Benefits, Education Support (uniforms) to prevent child marriage in Ghana

	Benefits, % of total benefits	Costs, % of total costs
Maternal deaths averted	0.8	
Infant deaths averted	13.1	
Pregnancy costs avoided	0.4	
Abortion costs avoided	0.1	
Cesarean procedures avoided	0.6	
Avoided productivity loss of abuse victims	0.3	
Avoided obstetric fistula	0.1	
Income gain from JHS completion	84.6	
Cost of Uniforms		21.2
Additional schooling		35.2
Opportunity cost of schooling		36
Administration		0.2

Note: Figures shown are discounted at 8%

In all, the benefit-cost ratios (see Table 5) suggest that the project is cost-effective.

Table 8: Benefits and costs estimates for using free school uniforms to prevent child marriage in Ghana, GHS millions

Discount Rate	5%	8%	14%
Discounted Benefits (B)	87.6	56.4	32.5
Discounted Costs (C)	20.0	19.5	18.5
B/C Ratio	4.4	2.9	1.8

Source: Authors' estimates based on assumptions on the Ghanaian economy

SECTION FIVE: CONCLUSION

Child marriage has been described as inhibiting human resource development of the victims (Erulkar et. al (2017). In some cases, the child brides are found to suffer physical, intellectual, psychological and emotional abuse (UNICEF, 2005). Not only does child marriage affect the victims in several ways, the adverse consequences extend over the entire society.

Research has found child marriage to be very high in the five regions in the northern part of Ghana (Domfe and Oduro, 2018). However, while these regions are the poorest in Ghana, child marriage has been identified as a potential driver to sustain poverty among the households in the regions. It is for this reason that this paper is suggesting three non-monetary interventions to prevent the child marriage – with an ultimate objective of addressing poverty in the five regions.

The interventions are as follows:

1. Community dialogues
2. Conditional asset transfers
3. School support (Free school uniform)

The overall impacts of each intervention in terms of marriages avoided, pregnancies delayed, girls remaining in school, costs, benefits and BCRs are noted below in Table 9. A relatively low-cost intervention, the Community Dialogues intervention, has the highest BCR and is the most cost effective policy option in the fight against child marriage. The low cost is primarily because the intervention does not lead to any education impacts, which are very costly in terms of direct education expenses as well as opportunity costs. However, the Community Dialogues intervention does not have the highest overall impacts on the indicators measured: The highest number of marriages avoided, pregnancies delayed or girls who remain in school is attributable to the Conditional Asset Transfer (CAT) intervention. The Education Support intervention is

the least effective, where it relates to reducing the risk of child marriage, but makes a considerable impact on girls' school retention.

These results provide useful information to policy makers as to the likely magnitude of costs and benefits from each of these interventions. We do not strongly endorse one intervention over another, given the relative similarity of the BCRs and the uncertainty of the evidence (drawn from three African countries not including Ghana). We recommend the Ghanaian government, should they wish to implement these interventions, conduct initial pilots with a strong monitoring evaluation element to determine the extent to which the on-the-ground reality confirms to the modeling documented in this paper.

Table 9: Benefits summary, by number of beneficiaries

Benefits	Community dialogues	Conditional asset transfer	Education support (uniforms)
Marriages avoided	6,131	6,821	1,330
Pregnancies delayed	4,108	4,570	891
Girls remaining in school	0	4,551	3,471
Costs (millions, GHS)	8.6	40.1	19.5
Benefits (millions, GHS)	32.8	107.4	56.4
BCR	3.8	2.7	2.9

Note: Costs, benefits and BCR assume 8% discount rate

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Appendix: Education support in the form of the provision of sanitary napkins to adolescent girls

Summary

In January 2020, the Ghana Ministry of Gender asked the research team working on child marriage to undertake a cost-benefit analysis of the universal distribution of sanitary napkins to girls enrolled in school. The intervention modeled is the universal, annual distribution of sanitary napkins to all girls enrolled in Junior High School (JHS) for three years. The costs include the cost of the napkins, the administrative costs of their distribution and the costs (direct and opportunity costs) of additional schooling for those girls who do not drop out. The benefit is the marginal income realized with completion of JHS and health benefits associated with delayed adolescent pregnancy. The benefit-cost ratio is below one, 0.52, owing to the low effect that sanitary napkin distribution is anticipated to have on girls' retention against the cost of supplying all girls in JHS. Only 3% of girl absenteeism could be attributed to the lack of sanitary napkins, and evidence from two countries estimates chronic absenteeism to account for between 30-40 % of dropouts.

Introduction

Menstruation affects women's participation in many endeavours of their life in societies all over the world (Astrid & Holger, 2019). According to the NHS (2018) women experience about 480 menstrual cycles in their life-time and on average, each cycle lasts for 4 days. Unfortunately, menstruation normally comes with pain and some social and cultural discomforts. It is therefore important that women get access to required sanitary materials and some amount of social support to ensure a certain degree of comfort during the period of menstruation.

According Sommer and Sahin (2013) poor menstrual hygiene management (MHM) has adverse consequences on the performance of schoolgirls in low and middle income countries (LMIC). For instance, menstruation has been identified to cause Kenyan adolescent girls to lose an average of 3.5 million learning days per month (Arochi, 2018). As noted by Ameade and Majeed (2015), menstruation is one of the numerous factors that negatively affect the enrolment and progression of the girl child in school. While these studies appear to strongly indicate menstruation as a major cause of absenteeism, research evidence elsewhere suggests

that the impact of menstruation on school attendance is extremely small (Oster & Thornton , 2010).

Aware of the mixed findings on the potency of the provision of sanitary pads in providing the needed comfort and confidence for the girls to remain in school, the Government of Ghana in 2014 secured a World Bank loan to provide free sanitary pads to school going girls across the country. The Ministry of Education at the time, defended its position using the findings from a study by Scott, Dopson, Montgomery, Dolan, and Ryus (2009) in Ghana that identified menstruation as a potent barrier to school attendance among girls.

Even though materials such as ash, feather, soil, cotton wool, cloth, old pieces of mattresses, newspapers among others, have been used by women in various African societies to manage menstruation (Chebii , 2012), such materials do not provide the needed comfort for a girl child to be in school. Unfortunately, sanitary pads that provide comfort and confidence for girls to manage menstruation, appears to be financially beyond the reach of girls from poor households. The coping mechanism therefore for these girls has been initially absenting themselves from school when they have their menses. However, as this progresses with no help coming from anywhere, they eventually drop out of school – which mostly worsen their wellbeing as they grow up.

While the problem of absenteeism and dropouts among girls is a nationwide phenomenon, it is especially very high among those from poor households and mainly as a result of this and other reasons, inequality in Ghana keeps on widening (GSS, 2014). Therefore, any intervention with an ability to keep the girl child in school, could potentially help to reduce inequality to ensure a balanced socio-economic development of the country.

The proposed intervention is the free and universal distribution of sanitary napkins to all girls enrolled in Junior High School(JHS).

Literature Review

A literature review of the evidence surrounding the reasons for school absenteeism, the availability of sanitary napkins, and the effectiveness of sanitary napkin distribution on educational outcomes revealed the following observations:

1. Several studies do establish menstruation as one of the reasons for girls' absenteeism from school.

Mirro et al. (2018) concluded that menstruation was strongly associated with school attendance. In a survey of 352 girls, ages 14 - 17, they found that 69 girls (19.7%) reported missing at least 1 day of school, during their most recent period. Missing school during the most recent period was associated with physical symptoms (e.g. headache, stomach pain, back pain) and with changing protection 4 or more times per 24 h period. Forty (40) girls reported being absent from school on 28% of period-days, compared with 7% of non-period days (adjusted odds ratio = 5.99, 95%CI:4.4, 8.2; $p < 0.001$). Tegegne and Sisay (2014) for Ethiopia, Montgomery et al (2012) for Ghana, Hannegan et al (2016) for Uganda, and Davis et al. (2018) for Indonesia all establish, to varying degrees, that girls do not attend school due to factors associated with menstruating.

An experimental study in Uganda was conducted by Hennegan, Dolan, Steinfield and Montgomery in (2017) to assess the impact of reusable sanitary pads and/or puberty education provision on school attendance amongst girls in rural communities. The study described and compared school girls' experiences of menstruation in rural Uganda at the conclusion of a controlled trial of puberty education and sanitary pad provision to explain pathways of the effects in the interventions. The study found that girls receiving reusable pads experienced improvements in comfort and reliability – which translated into reduction in school absenteeism. It concluded that the provision of menstrual absorbents addresses one core barrier to menstrual health, but that interventions addressing broader needs such as privacy may improve effectiveness.

1. Though the reasons for missing school vary, and the dropout rates for girls are higher, there is no gender disparity in school absenteeism between boys and girls at JHS level.

Girls drop out of school at higher rates than boys in nearly every country in sub-Saharan Africa, and in 47 of the 54 countries in the region, girls have a less than 50% chance of completing primary school (Wolf et al, 2016). However, based on analyses of Psaki et al (2017), Demographic and Health Survey (DHS) data from 38 low-income countries, on a regional level, gender gaps in primary school completion were fully explained by gaps in enrollment rather than in grade progression. Between the years of 1990 and 2006, conditional on school enrollment, gender parity in primary school completion had been achieved in all regions studied, with an emerging female advantage .

Grant et al (2013) used the first round of the Malawi Schooling and Adolescent Survey (MSAS) to examine the individual- and school-level factors associated with menstruation-related school absenteeism. Although one-third of female students reported missing at least one day of school at their last menstrual period, menstruation appears to account for a small proportion of all female absenteeism and does not create a gender gap in absenteeism. They find no evidence for school-level variance in menstruation-related absenteeism, suggesting that absenteeism is not sensitive to school environments. Rather, co-residence with a grandmother and spending time on school work at home reduces the odds of absence during the last menstrual period.

In Ghana, there doesn't appear to be a considerable disparity in net attendance rates at either elementary or JHS levels. In fact, net attendance rates for girls are higher. According to the Ghana Multiple Indicator Cluster Survey (2017/18), girls' net attendance rates are marginally higher than boys' at primary (82% vs 80%) and JHS levels (43% vs. 37%).

1. The evidence of the impact of the distribution of sanitary napkins on educational outcomes is weak, with studies suffering from low power (insufficient observations) or a control group.

Tegegne and Sisay (2014) conducted a mixed-method research combining quantitative and qualitative methods in Northeast Ethiopia among 595 randomly selected adolescent school girls. Only a third of the girls used sanitary napkins as menstrual absorbent during their last menstruation. More than half of the girls reported to have been absent from school during their menstruation period. Those who did not use sanitary napkins were more likely to be absent from school (OR 5.37 at 95%). Fifty eight percent of girls reported that their school-performance had declined after they had menarche. In addition, the qualitative study indicated that school-dropout was common among girls, who experienced teasing and humiliation by classmates when their clothes were stained with blood as they do not use sanitary napkins.

The only study of Ghanaian schoolgirls that could be located was a non-randomized trial (Montgomery et al 2012) of a sample of 120 schoolgirls between the ages of 12 and 18 from four villages in Ghana. The trial had three levels of treatment: provision of pads with puberty education; puberty education alone; or control (no pads or education). The primary outcome was school attendance. Girls who had no access to sanitary pads reported missing 3–5 school days a month, which was corroborated by teachers and parents. In general, attendance rose in the Pads-with-Education groups by around 6 days per 65-day-term (or 9% of a girls' school year). At the Education-only site, girls received the same educational material as at the Pads-

with-Education sites except that they were not instructed on sanitary pad management. The effect of this minimal intervention was delayed but produced similar results to that of Pads-with-Education. The Pads-with-Education (peri-urban) arm was unable to verify the school attendance records of 18% of participants, which may explain why the percentage change in school attendance differed between the two Pads-with-Education arms: for peri urban areas it was 8.6%; for rural, 12.6%. But even accepting the rural result with confidence, by the end of the study, the intervention achieved the same result with the Education-only arm, 12.3%.

1. There is growing evidence that the distribution of sanitary napkins is insufficient to affect the prevalence of school absenteeism and/or dropout rates because the causes of the problem are more broadly linked to the unavailability of sanitary facilities at school and the broader issue of menstrual hygiene management.

Oster and Thornton (2011), in a randomized evaluation in Nepal, sought out to evaluate the claim that lack of sanitary products was a barrier to girls' schooling. They concluded that menstruation has a very small impact on school attendance; Nepalese girls missed a total of 0.4 days in a 180 day school year. Secondly, improved sanitary technology has no effect on reducing this (small) gap. Girls who randomly received sanitary products were no less likely to miss school during their period (at 1% significance).

In a randomized control pilot study of sanitary cups and napkin distribution in 30 primary schools in rural Kenya, 644 girls were followed-up for a median of 10.9 months. Neither cups nor pads reduced school dropout risk (control=8.0%, cups=11.2%, pads=10.2%), and self-reported absence was rarely reported and not assessable (Phillips-Howard et al, 2016).

In an analysis of survey data of 205 Ugandan schoolgirls, Hennegan et al (2016) found that less than 20% of girls stated that menstruation caused them to miss school, although over half reported not standing in class to answer questions. Only one aspect of MHM was associated with school attendance, with those changing three times a day or more having a higher attendance rate. Of the total sample, 90.5% had inadequate MHM, and this did not differ between those using reusable pads and those using other existing methods (71.3% cloth, 14.0% disposable sanitary pads, 14.7% other methods including toilet paper and underwear alone). Even when more relaxed criteria for what is considered good MHM (use of sanitary pad, AFRIPad, old or new cloth, that was changed two or more times per day, with absorbents washed with soap and dried hung outside or inside, absorbents never worn damp, and girls reporting they were not worried about being observed washing their absorbent), the prevalence

of poor MHM was 78.1% (95% CI 71.8% to 83.3%), and did not differ for those using reusable pads. The implication here is that education could play a greater role in both improving MHM and improving girls' participation in the classroom.

Davis et al, (2018) conducted a cross-sectional study of urban and rural school-going girls aged 12–19 years in four provinces in Indonesia to assess the prevalence of menstrual hygiene management (MHM) knowledge and practices among adolescent schoolgirls in Indonesia and to assess factors associated with poor MHM and school absenteeism due to menstruation. The study found that absenteeism is associated with living in rural areas, believing menstruation should be kept secret and experiencing serious menstrual pain. It was concluded that high prevalence of poor MHM and considerable school absenteeism due to menstruation among Indonesian girls highlight the need for improved interventions that reach girls at a young age and address knowledge, shame and secrecy. The results appear to suggest that provision of sanitary pads alone may not provide the needed results.

Costs and Benefits Analysis

The intervention modeled is the universal, free and annual distribution of sanitary napkins to all girls enrolled in Junior High School (JHS) for three years. Though the target population is 76,783, those girls between the ages of 15 and 17, the exposure group is considerably smaller because of the low net attendance ratio at JHS level, 40% (MICS 2017/18). All monetary figures are discounted at 8%.

Costs

Following from the assumption of implementing the programme for the same cohort of girls for three years, the costs of universal, free, and annual distribution of sanitary napkins to girls include the cost of the napkins, the direct and opportunity costs of continued schooling (for those who do not drop out as a result of the intervention) and an administration cost of the sanitary napkin programme, assumed to be 1% of total costs. The costs of the sanitary napkins for 30,713 girls amounts to GHS2.5 million. The Dreamers pack is priced at GHS3.5 per pack, and it is assumed that girls require 9 packs per academic year.

The cost of additional schooling for the 73 girls, who otherwise would have dropped out of school because of the inaccessibility of sanitary napkins is GHS 144,000. The opportunity cost is estimated at GHS 96,000, based on the assumption that the next best alternative to education

is represented by the percentage of minors engaged in child labour, the national average being 30% (MICS 2017/18).

Table 1 Intervention costs

	% of total costs
Sanitary napkins	0.97
Additional schooling	.06
Opportunity cost of schooling	.04

Total discounted (8%) costs are GHS 3 million.

Benefits

Of the approximately 30,713 girls, age 15-17, enrolled in JHS, 22% did not participate in social activities, school or work due to their last menstruation (MICS 2017/18). This equates to 6757 girls who suffer from chronic absenteeism. Menstruation-related absenteeism could be due to lack of sanitation facilities at school, headaches, cramps, nausea, etc., in addition to the lack of sanitary napkins. We have attributed the percentage of girls, who miss school, specifically because of the lack of sanitary napkins, at 3%, or 203 girls (Davis et al., 2018). The average number of days missed per month is assumed to be 3, (27 days per academic year) substantiated by several studies as noted above.

Students who are chronically absent have a 36% higher risk of dropping out. This risk ratio is the average taken from two studies in the Netherlands, 1.37 (Cabus and Dewitte, 2012) and the United States, 1.35 (Kirksey, 2019). Thus, we estimate that of the 203 girls, who are chronically absent due to the inaccessibility of sanitary napkins, 73 will drop out at some point in JHS.

The expected benefits associated with the implementation of the distribution sanitary napkins to adolescent girls enrolled in school include the marginal increase in lifetime income attributable to JHS completion and the health benefits derived from delayed pregnancy: maternal mortality, neonatal mortality and the costs of pregnancy, abortion, cesarean procedures, and avoided cases of obstetric fistula.

Based on a systematic review and meta-analysis of published and unpublished studies in Africa, Kassa et al. (2018) reveal, using the pooled data from ten articles, that adolescent girls, who are not attending school, are more than two times more likely to start childbearing than

those who are in school, OR = 2.49 (95%CI = 1.58, 3.92). This translates into a 99% increased probability of getting pregnant after dropping out, virtually all of the girls.

There is an increased maternal and child mortality (risk ratio 1.3) risks associated with adolescent births. Adolescent mothers are also more likely to have abortions (risk ratio 1.86), deliver by cesarean (risk ratio 1.8) and suffer from obstetric fistula (risk ratio 1.28).

Table 2 Intervention benefits

	% of total benefits
Maternal deaths averted	6.6
Child deaths averted	32.2
Avoided pregnancies	1.1
Avoided abortions	0.3
Avoided cesareans	1.6
Avoided obstetric fistula	0.2
Marginal income increase from JHS completion	57.9

Total discounted (8%) benefits are GHS 1.56 million.

Table 3: Benefits and costs estimates providing sanitary pads to promote school retention in Ghana, GHS million

Discount Rate	5%	8%	14%
Benefits (B)	2.1	1.56	1.1
Costs (C)	3.06	2.98	2.8
B/C Ratio	0.70	0.52	0.39

Assessment of the Quality of Evidence

The proposed intervention seeks to leverage on the results of several studies. Though the estimate of the number of girls who miss school is Ghana-specific, the assumption of the percentage that eventually dropout specifically due to inaccessibility of sanitary napkins is based on a rather large randomized evaluation from rural Indonesia. The probability of dropping out because of chronic absenteeism comes from two studies from the United States and the Netherlands. We rate the quality of the evidence to be ‘Medium’.

Given the unavailability of Ghana specific-data, the calculations undertaken here are speculative but nonetheless indicate that universal and free distribution of sanitary napkins is not the best way to tackle the problem of high dropout rates among adolescent girls. The literature does support the effectiveness of alternative interventions: the provision of menstrual hygiene education and the improvement of sanitary conditions at school, where the outcome indicator of interest is school retention.

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