

Shifting norms, expectations, and practices related to child marriage in southern Malawi

Evaluating the impact of ENGAGE



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Abbreviations

CI	Confidence interval
DEC	District Executive Committee
DID	Difference-in-differences
ENGAGE	Enabling Girls to Advance Gender Equity
FGD	Focus group discussion
GENET	Girls Empowerment Network of Malawi
GVH	Group Village Head
ICRW	International Center for Research on Women
IDI	In-depth interview
KII	Key informant interview
MCG	Millennium Consulting Group
PHI	Public Health Institute
SRHR	Sexual and reproductive health and rights
TA	Traditional Authority
YONECO	Youth Net and Counseling
YTH	Youth Tech Health

Executive summary

Background

Malawi has one of the world's highest rates of child marriage, to the detriment of girls' educational, economic, and health outcomes. Though the practice is legally banned, community knowledge of marriage laws has remained low, and the level of local enforcement remains unclear. Moreover, marriage of both girls and boys under the age of 18 remains driven by local norms, attitudes, and practices, including those related to adolescent sexual activity, as well as pragmatic reasons, including pregnancy and lack of educational and economic opportunity.

In 2016, a partnership led by Rise Up, based at the Public Health Institute (PHI), and including the Girls Empowerment Network of Malawi (GENET), ETR's Youth Tech Health (YTH) Initiative, Youth Net and Counseling (YONECO), and the International Center for Research on Women (ICRW), with funding from the Bill and Melinda Gates Foundation, launched the Enabling Girls to Advance Gender Equity (ENGAGE) initiative. ENGAGE aimed to combat child marriage in two districts in southern Malawi. The ENGAGE approach was two-pronged: partners 1) trained girls in leadership and advocacy on local and national laws and policies; and 2) invested in Civil Society Organization (CSO) leaders to strengthen leadership and advocacy capacity, and develop strategies for advocacy on local bylaws prohibiting harmful practices. As the research partner, ICRW conducted a mixed-methods evaluation over six years to understand and measure the program's impact on key outcomes related to attitudes and norms around child marriage, sexual and reproductive health and rights (SRHR), and other practices.

Methods

Our primary hypothesis was that both interventions would positively change community attitudes and norms around child marriage among adult decision-makers, and that the combination of the girls' empowerment intervention and the CSO intervention would have a greater effect on these outcomes than either intervention on its own. To test this, we developed a four-arm quasi-experimental study, in which arm 1 received the girls' empowerment intervention, arm 2 received the CSO intervention, arm 3 received both interventions together, and arm 4 acted as a comparison.

Quantitative research included baseline and endline cross-sectional household surveys with self-identified decision-makers for adolescent girls in all four arms. Qualitative research included in-depth interviews (IDIs) with girl participants in arms 1 and 3 and CSO participants in arms 2 and 3 at midline, halfway through the intervention, and at endline, after the completion of programming. We also conducted key informant interviews (KIIs) with local stakeholders in all four arms at midline and baseline and focus group discussions (FGDs) with adolescent girls and their identified reference groups in arm 3 at midline.

Our primary quantitative analysis examined the impact of ENGAGE on primary outcomes, SRHR, norms and practices using cluster-level difference-in differences (DID) analysis.

Results

Knowledge of child marriage laws: We observed that across all arms, knowledge of national laws related to child marriage increased dramatically between baseline and endline, from around 50 percent to around 90 percent. Because we do not observe any statistically significant differences between arms, and are therefore unable to attribute this change to the impact of ENGAGE, it suggests that other activities may be ongoing in the communities that improve community knowledge of these laws. We found in qualitative research that parents and other decision-makers had come to expect and fear legal retribution if their daughters married before the age of 18 and this was seen as preventative against girls getting married.

Norms around child marriage: Though the differences between arms were not statistically significant, we found that arms 1 and 3 (arms where the girls' intervention was taking place), experienced a greater reduction in both normative and empirical expectations that most girls in the community marry before the age of 18. We do find that there was a statistically significantly greater decrease in those arms in parents fearing community backlash and sanctions if their young daughters were not married.

SRHR norms and attitudes: Overall, in all arms, we found strongly negative attitudes toward unmarried adolescent girls' use of and access to contraception, and these remained largely negative between baseline and endline. While between 84 and 90 percent of participants in all arms responded at endline that married adolescent girls should have access to contraception, only between 33 and 41 percent said the same of unmarried adolescent girls, and between 83 and 87 percent said that access to contraception would promote promiscuity. Only about half reported that they would like contraception to be accessible to girls. We do observe statistically significant gains in arm 2 (CSO only) in participants reporting that it is acceptable for girls to have sex before marriage, though this remained very low — only 4 percent of participants responded this way in arm 2 at endline, up from 1.1 percent at baseline and compared to 1.6 percent in the control community.

Decision-making power: We observe statistically significant improvements in beliefs about girls' right to make decisions about whom and when to marry, particularly in arm 3 (both girls' and CSO intervention), compared to the control group. Interestingly, across all arms, the percentage of participants reporting that a girl should have a say in whom she marries dropped from over 90 percent at baseline to between 71 and 83 percent at endline, while the percentage reporting that a girl should have a say in when she marries dropped in the control arm and arm 1, but increased in arms 2 and 3. This suggests that other factors — likely the COVID-19 pandemic and related economic crisis — affected attitudes towards girls making that decision for themselves. However, it appears that the program was somewhat protective against this.

Attitudes around initiation camps: Beliefs around initiation camps were also positively affected by the program in arm 3, with the percentage of participants believing that camps are needed to prepare girls for marriage dropping from 42 percent to 34 percent between baseline and

endline in arm 3 and increasing from 25 percent to 33 percent in the control arm. The percentage reporting that a girl who has attended an initiation camp must have sex also dropped in arm 3 from 13 percent to 6 percent, but increased from 9 percent to 10 percent in the control arm.

Conclusion

Overall, norms at baseline around child marriage did not appear to be strongly held in these communities, and while child marriage was perceived as common, it appeared that girls primarily married out of pragmatic reasons, such as becoming pregnant or lacking economic options. However, we do observe some improvements in those norms between baseline and endline in arms 1 and 3, suggesting that the program may have contributed to ongoing change. We also observe statistically significant impacts in arms 2 and 3 related to girls' right to make or participate in marriage decisions for themselves, as well as improved attitudes toward initiation camps. We do note that COVID-19's impact on these communities and directly on our key outcomes must not be underestimated. Additionally, the long time period between the end of the program and the endline data collection — a result of delays caused by the pandemic — is likely influencing our ability to see statistically significant results.

Background

Forty-two percent of girls and nine percent of boys in Malawi are married before the age of 18, some of the highest rates in the world for both genders.¹ In spite of recent moves by the government of Malawi to end child marriage, including a 2015 law banning marriage before the age of 18 without parental consent and a 2017 amendment to remove the parental consent loophole,² the extent of local enforcement and community acceptance of the law has remained unclear.

Child marriage in southern Malawi is thought to be driven by a number of both normative and practical factors. The latter include poverty, harmful traditional practices, and pregnancy. Girls who cannot afford school fees may abandon their education and marry, or turn to transactional sexual relationships to obtain the necessary funds for school. Harmful traditional practices, including *kusasa fumbi*, or forced sexual initiation, exacerbate the health, education, social, and economic impacts of early marriage. *Kusasa fumbi* is a rite in which an adolescent girl is forced or encouraged to have sex — often with an older man — in order to “cleanse” her and prepare her for marriage.³ Both transactional sex and sexual initiation are closely linked to adolescent pregnancy, particularly when contraception and sexual and reproductive health and rights (SRHR) care for adolescents is limited. In turn, early pregnancy and childbirth drives many girls to marry.

Overview of ENGAGE

In 2016, Rise Up, based at the Public Health Institute (PHI), the Girls Empowerment Network of Malawi (GENET), ETR's Youth Tech Health (YTH) Initiative, Youth Net and Counseling (YONECO) and the International Center for Research on Women (ICRW), with funding from the Bill and Melinda Gates Foundation, launched the Enabling Girls to Advance Gender Equity (ENGAGE) program. ENGAGE trained girls in leadership and advocacy, and taught them about local and national laws and policies. The program also invested in leaders of Civil Society Organizations (CSOs) to strengthen their leadership and advocacy capacity and fund their strategies to advocate for local bylaws prohibiting harmful practices within their districts. The program aimed to reduce acceptance of child marriage and other harmful practices, delay marriage and childbearing, encourage and enable girls to stay in school, and increase access to family planning information and services. The theory of change is presented in Figure 1. Because the program was designed to be empowerment-based -participatory and iterative- some participants focused on slightly different aspects than initially planned, including SRHR, girls'

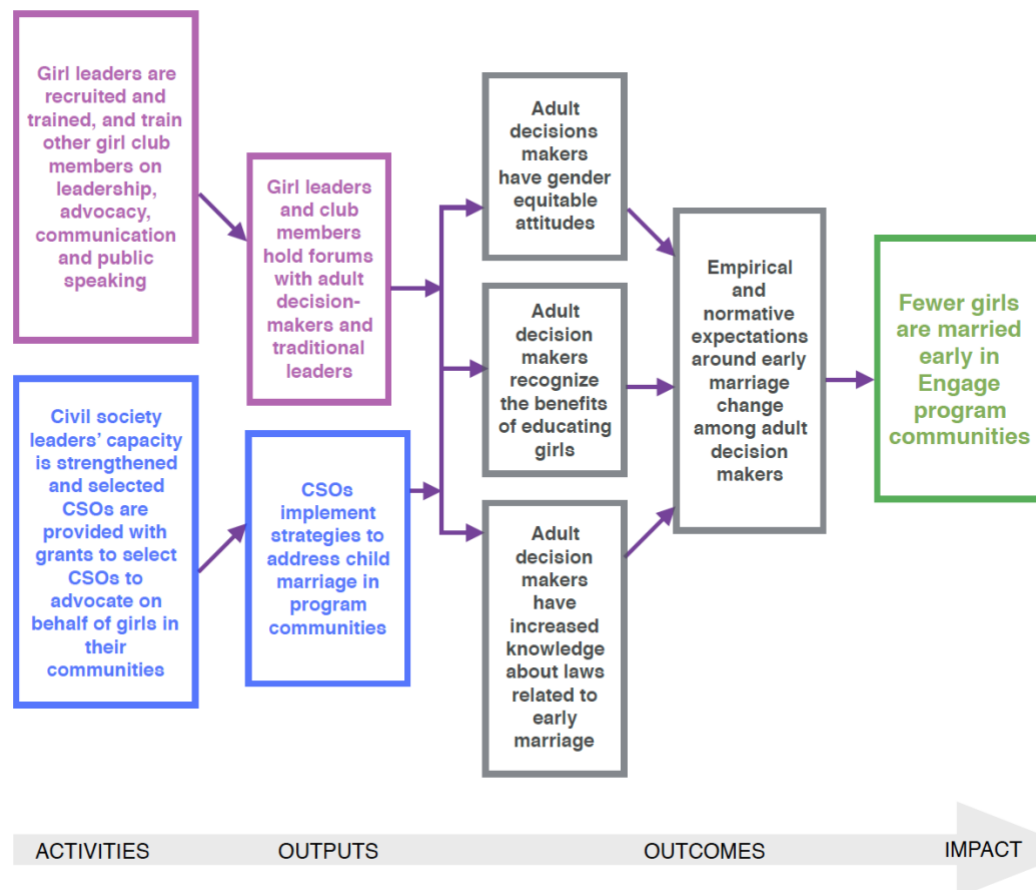
¹ Girls Not Brides. [Child Marriage around the World: Malawi](#) [Internet]. Girls Not Brides. [cited 2022 April 7].

² Ibid.

³ Munthali, A. C. & Zulu, E. M. (2007). The timing and role of initiation rites in preparing young people for adolescence and responsible sexual and reproductive behavior in Malawi. *African Journal of Reproductive Health*, 11(3): 150-167.

return to school following pregnancy and childbirth, and initiation camps. This has marginally changed some aspects of the theory of change.

Figure 1: ENGAGE Theory of Change



ENGAGE was implemented over three years (from 2018 to 2020) in Phalombe and Thyolo, two districts in Southern Malawi. The program sought to empower girls and CSO leaders to influence traditional, community, religious authority figures, and other duty-bearers to shift norms related to child marriage and increase gender equality. This would lead to an eventual decline in rates of child marriage and related harmful practices, thereby improving girls' access to education and SRHR. ENGAGE conducted the following interventions:

- Training and peer-based clubs for adolescent girls:** GENET worked with 773 girl leaders, aged 15-17, to take on a greater role in decisions pertaining to education, health, and autonomy. ENGAGE trained and worked with two cohorts of adolescent girls (approximately 400 girls per cohort), aiming to build advocacy, leadership, and public speaking skills. These girl leaders established clubs with other adolescent girls in their communities to discuss child marriage and related issues in their own communities and mobilize other girls to speak up for their rights with authority figures. They also engaged

with community members through awareness campaigns and other efforts focused on topics, such as child marriage. Approximately 200 clubs were formed with over 4,000 adolescent girls participating. *Training and engaging local CSO leaders:* Rise Up trained 36 leaders from 26 local CSOs (18 leaders each in two cohorts) in leadership and advocacy, and provided them with technical and financial support to implement eight advocacy projects. These leaders, and the communities engaged with their advocacy projects, continue to engage stakeholders, hold community leaders accountable to local bylaws, and conduct activities to create and maintain an enabling environment to end child marriage.

- *SMS/Radio campaign:* Together, YTH and YONECO implemented an SMS and radio campaign strategy to build community support to end child marriage. This campaign also aimed to enhance gender equity by engaging key target groups including men and boys, traditional and religious authorities, government officials, and girls themselves. YONECO aired a radio program called “Girls Corner,” which addressed various issues affecting girls. The program was aired nationally but its intended audience was people from Phalombe and Thyolo. Girls from impact areas were encouraged to listen to the program. Phones were distributed to the selected girl leaders, which YONECO used to send targeted messages related to the programming.

Methods

Overview and objectives

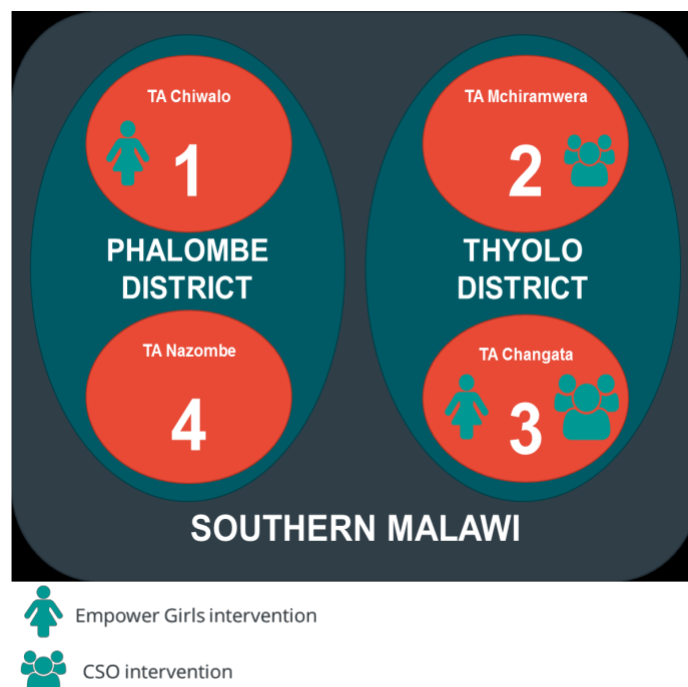
The evaluation of ENGAGE aimed to assess the effectiveness of a package of girl-focused interventions in two communities in Southern Malawi. The primary objective was to evaluate whether and how the different interventions were effective in changing attitudes and social norms around child marriage among adult decision-makers. We designed the evaluation to compare the effectiveness of the different interventions against an area where no intervention took place, as well as between the different interventions: empowering girls only; building the capacity of CSOs only; and the combination of both. The SMS campaign was not formally evaluated, as it was intended to be implemented in both districts (i.e., in all four arms, including the control).

The primary hypothesis was that both interventions would positively change community attitudes and norms around child marriage among adult decision-makers, and that the combination of the girls' empowerment intervention and the CSO intervention would have a greater effect on these outcomes than either intervention on its own. We designed a four-arm, quasi-experimental study, including quantitative data from two cross-sectional points in time. The ENGAGE evaluation consisted of four study arms, as shown in Figure 2. The girls'

intervention was implemented in arm 1, the CSO intervention was implemented in arm 2, and both interventions were implemented in arm 3. A fourth arm served as a comparison.

The full evaluation scope included quantitative and qualitative components. For the quantitative work, ICRW, and Millennium Consulting Group (henceforth: the research team) conducted baseline and endline cross-sectional surveys with adult male and female decision-makers of young girls. At baseline (mid-2017) the survey team implemented a questionnaire with these decision-makers focused on their attitudes towards child marriage, girls' education, gender norms, SRHR for adolescents, and the initiation camps that occur in southern Malawi. At

Figure 2: ENGAGE Study Arms



endline (end of 2021),⁴ the research team returned to the communities to administer a survey post-intervention to understand attitudes and perceptions related to these topics and assess change in some key attitudes over time.

The qualitative component occurred halfway through implementation of ENGAGE programming (midline; November 2019) and several months after implementation ended (qualitative endline; November 2020). At midline, we conducted in-depth interviews (IDI) and focus group discussions (FGD) with program participants to explore ways in which the program built adolescent girls' agency; focus groups with community members to understand social norms; and key informant interviews (KII) with key stakeholders. At endline we conducted IDIs and KIIs with the same groups, in order to shed light on the changes that had occurred in ENGAGE target communities since baseline, assess the current status of norms and practices around child marriage, initiation camps, education, SRHR services and adolescent pregnancy, and to evaluate the impact of ENGAGE activities on those norms, including the extent to which ENGAGE is responsible for perceived changes in the community.

In this report, results from the quantitative and qualitative work were used in a contribution analysis to understand the potential ways and degrees to which the interventions created change related to child marriage, girls' education, initiation camps, and other outcomes of interest in these communities.

Site selection and sampling

A full description of selection and sampling procedures is presented in Appendix 1.

The implementation team selected two districts in southern Malawi, Phalombe, and Thyolo, due to their high prevalence of child marriage as well as feasibility considerations. Data collected in 2014 suggested that Phalombe had the highest rate of child marriage (68 percent) and Thyolo had a rate of 57 percent, both higher than the national rate of 42 percent.⁵ In addition, both districts are relatively close to GENET's area of operations in Blantyre, and had fewer ongoing external interventions on similar issues compared to other districts in the region. Within each district, the team randomly selected two Traditional Authorities (TAs – these are the administrative divisions below districts) from a list of eligible TAs identified with support from the District Executive Committee (DEC). Each TA was randomly assigned to a study arm as illustrated in Figure 2, though arms 2 and 3, where the CSO intervention took place, were

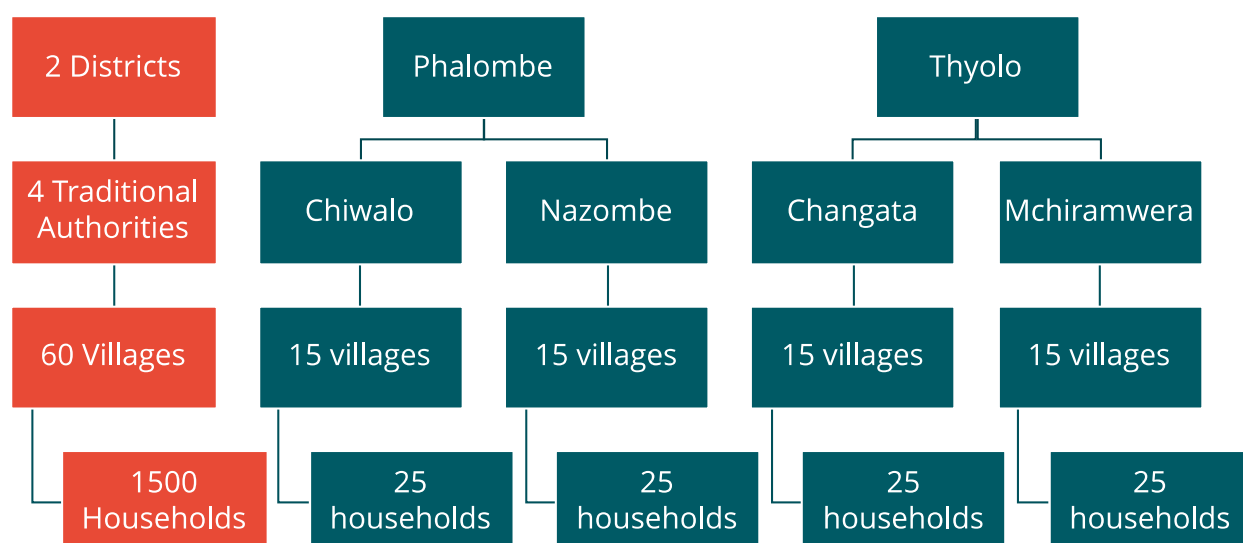
⁴ Both qualitative and quantitative endline data collection was expected to take place in March 2020. However, due to the COVID-19 pandemic and related travel restrictions, evaluation activities were postponed. As the situation continued and worsened, ICRW decided to conduct qualitative interviews over the phone in November 2020, and the household survey in December 2021, once it was safe to do so in-person.

⁵ UNICEF Malawi. (2019). Budget scoping on programmes and interventions to end child marriage in Malawi. UNICEF Malawi.

purposely assigned to TAs within the same district because it was expected that CSOs would be working across a given district.

At baseline, 15 villages were randomly selected within each TA to be included in the study. These same villages were included at endline. Finally, following a household mapping exercise at both baseline and endline, one eligible household member from each of 25 households per village was selected to participate in the study. This selection and sampling process is illustrated in Figure 3.

Figure 3: Selection and Sampling Process



At first, the team attempted to institute a gender quota to obtain equal numbers of male and female respondents. To do so, the randomly selected households were each assigned a target gender from which eligible respondents would be chosen. Only if there were no eligible respondents of that gender would the team pick a respondent of the opposite gender. In this case, the team member would report to the field supervisor so that another randomly chosen house would have the assigned gender changed to retain gender parity. However, in the first few days of data collection in TA Chiwalo (the first TA), the team discovered there was a greater number of eligible women than eligible men because many men spent long periods of time away from home for work, had multiple families in multiple villages (and even across the border in Mozambique), or had left their families through divorce or death. Despite attempting to purposefully return to villages later in the evening and on different days to gather more men, the team was not able to maintain the gender quota. As such, there were more female respondents than male overall.

Qualitative research included in-depth interviews (IDIs) with randomly selected girl participants in arms 1 and 3 and purposively selected CSO participants in arms 2 and 3 at midline, halfway through the intervention, and at endline, after the completion of programming. We also conducted key informant interviews (KIIs) with purposively selected local stakeholders in all

four arms at midline and baseline and FGDs with purposively selected adolescent girls and their identified reference groups in arm 3 at midline. Table 1 describes the number of participants for each data collection activity.

Table 1: Summary of research participants, by data collection activity

Data Collection Activity	Data Collection Round	Study Arm (Traditional Authority)	Number Of Participants
Quantitative Survey	Baseline	Arm 1 (Chiwalo)	375
		Arm 2 (Mchiramwera)	375
		Arm 3 (Changata)	372
		Control arm (Nazombe)	370
	Endline	Arm 1 (Chiwalo)	360
		Arm 2 (Mchiramwera)	373
		Arm 3 (Changata)	371
		Control arm (Nazombe)	373
IDIs with Girl Leaders	Midline	Arm 1 (Chiwalo)	10
		Arm 3 (Changata)	10
	Endline	Arm 1 (Chiwalo)	10
		Arm 3 (Changata)	10
IDIs with CSO Leaders	Midline	Arm 2 (Mchiramwera)	5
		Arm 3 (Changata)	5
	Endline	Arm 2 (Mchiramwera)	5
		Arm 3 (Changata)	5
FGDs	Midline	Arm 3 (Changata)	73 (8 groups)
KIIs	Midline	Arm 1 (Chiwalo)	4
		Arm 2 (Mchiramwera)	4
		Arm 3 (Changata)	4
		Control arm (Nazombe)	4
	Endline	Arm 1 (Chiwalo)	4
		Arm 2 (Mchiramwera)	4
		Arm 3 (Changata)	4
		Control arm (Nazombe)	4

Sample size

Initial power and sample size calculations were developed based on our original outcome variable, which was attitudes related to child marriage. At the time of random assignment of the intervention components to each TA, the prevalence of the primary study outcome was unknown (i.e., selected based on within-population variance at baseline), so a value of 50 percent was selected for the primary outcome to ensure a conservative estimate. We used the following assumptions: alpha at less than or equal to 0.05, power at 80 percent, a non-response rate (for our primary outcome questions) at 5 percent, and a design effect of 1.5 to account for intra-cluster correlation. Based on previous research we anticipated a decrease of at least 13 percentage points in the outcome variable. Finally, to ensure power to detect difference for cross-arm comparison, we multiplied the final number of participants by four (for the four arms) to get the total sample size. The total intended sample size across all four arms was rounded to 1,500 at each baseline and endline with 15 villages per arm (and 25 participants per village).

However, after reviewing the results of the baseline survey and recognizing that the main outcome of interest was homogenous (i.e., nearly all respondents said child marriage was wrong), we changed the main outcome of interest from attitudes to knowledge of laws, where we anticipated we could observe more improvement. At baseline, the prevalence of knowledge of national child marriage laws in Malawi was 50 percent. We calculated power to identify the minimum detectable effect using our sample size estimates from the initial power and sample size calculations: 15 villages (clusters) per arm with 25 participants per village, a design effect of 1.5 and intra-class correlation coefficient of 0.02. Our power calculations indicated that we had 80 percent and 99 percent power to detect a 13 percent and 20 percent, respectively, increase in the proportion of participants with knowledge of national child marriage laws.

Training and data collection procedures

The initial and all subsequent modified versions of this study were reviewed and approved by the ICRW Institutional Review Board, based in Washington, D.C. and from the Malawi Government's National Commission for Science and Technology through its National Committee on Research Ethics in the Social Sciences and Humanities, based in Lilongwe, Malawi.

ICRW led training of data collection staff before each data collection event. At least two ICRW staff members attended the training in person at baseline and midline. Due to the COVID-19 pandemic, training of data collection team members by the ICRW staff was remote for the endline quantitative and qualitative components. Regardless of training modality, each training lasted a minimum of five days and included sufficient time for study overview, ethical training and certification, review and practice with data collection tools and consent documents, and piloting.

All data collection events were conducted in Chichewa. Tablets were used for data collection of quantitative data, and audio recorders for qualitative. All interviews were held in private

locations within each individual's household, or outside at a distance from other family members. Because of the COVID-19 pandemic, qualitative data collection at endline was conducted over the phone. For these activities, the research team was trained to ensure privacy in several ways and during several key points during the interview.

All participants over the age of 18 provided informed consent to participate. Those under the age of 18 provided assent as well as parental consent.

Analysis

Quantitative

Community-level outcomes

We produced community (cluster)-level summaries for the following outcomes of interest: (a) primary outcome (knowledge of national child marriage laws in Malawi and empirical and normative expectations related to child marriage); (b) outcomes related to SRHR; and (c) other norms and practices. All variables were collapsed to community-level to reflect the proportion of individuals in each community that agree with relevant questions and statements.

Community-level sociodemographic variables

We produced community-level summaries for the following variables that reflect the sociodemographic structure of each community: (a) sex (% female); (b) age (% aged 34+ years); (c) marital status (% married); (d) education (% attained secondary or higher); (e) employment (% employed); and (f) ethnic group (% Lomwe).

Other community-level variables

Additional variables on norms and the impact of COVID-19 were assessed at endline. We produced community-level summaries for these variables to reflect the proportion of the participants in the community the agreed with the respective statements and questions.

Statistical methods

Community-level summaries: We generated summary statistics for each of the variables described above to examine variation within and between arms. We report the community-level range, mean, standard deviation, median, and inter-quartile range by arm and separately for baseline and endline.

Cluster-level difference-in-differences analysis: Our primary analysis examined the impact of ENGAGE on primary outcomes, SRHR, norms and practices using cluster-level difference-in-differences (DID) analysis. We opted to use cluster-level summaries for two reasons: (a) the unit of intervention was the community; and (b) responses were obtained from different participants at baseline and endline. We used linear regression with an interaction (DID

estimator) between the study arm and the timepoint (baseline versus endline), then reported the observed and predictive margins (means) for each study arm at baseline and endline to examine population-level differences over time. Both unadjusted and adjusted models were generated to determine the effect size and any statistically significant differences in changes between study arms. Unadjusted models included the interaction between arm and time. Adjusted models included age, education, ethnicity, and marital status, expressed as described above. For ease of interpretation, the DID estimator was converted into percent change using the formula $[\exp(\beta)-1] * 100$, where β is the regression coefficient obtained from the DID regression model. In sensitivity analysis, we grouped arms 2 (CSO – Mchiramwera) and 3 (Empower girls and CSO – Changata) together as there were indications of possible contamination in these two arms. Results are reported as percent change (%) with a 95 percent confidence interval (CI). All statistical analyses were carried out in Stata 15.1 (College Station, TX).

Qualitative

At midline and endline, once data collection was complete, the team transcribed each interview from the recording, translated them verbatim into English, and submitted the translated transcripts to ICRW, where the research team reviewed them for clarity and quality.

Transcripts were imported into NVivo 11 and coded by a team of ICRW researchers. Codes were developed based on the guides and key objectives of the qualitative research – namely, changes in the community and impacts of ENGAGE, particularly around child marriage, education, and SRH norms. Intercoder reliability was conducted on approximately 15 percent of transcripts of each type. Once sufficient agreement between coders was reached, the remainder of the transcripts were coded. Code reports were reviewed by the research team, who then developed code summaries for each report. Finally, the research team reviewed all code summaries to identify common themes.

Results

In total, 1,492 respondents participated in the quantitative survey at baseline, and 1,477 participated at endline. While we attempted to ensure men and women participated equally, this was not feasible, as discussed in Methods. Therefore, the sample was about 73 percent female at baseline and about 74 percent female at endline.

Sociodemographic characteristics

At baseline, participants in the control arm (Nazombe) were more likely to be female, with a lower proportion of participants aged 34+ years, a higher proportion of participants being married, and a lower proportion employed compared to arms 2 (CSO – Mchiramwera) and 3 (Empower girls and CSO – Changata). A higher proportion were Lomwe in the control arm compared to the other three arms. Arm 1 (Empower girls – Chiwalo) had a lower proportion of women, aged 34+ years and older, and employed compared to the other three arms (see Table 2).

Table 2: Summary statistics of community-level sociodemographic characteristics, by arm at baseline

	CONTROL (NAZOMBE) N=370	ARM 1: EMPOWER GIRLS (CHIWALO) N=375	ARM 2: CSO (MCHIRAMWERA) N=375	ARM 3: EMPOWER GIRLS + CSO (CHANGATA) N=372
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Female (%)	68.2 (11.8)	64.5 (7.7)	84.3 (6.8)	72.9 (7.7)
34+ years (%)	61.2 (9.6)	51.6 (6.4)	62.4 (10.9)	69.3 (9.4)
Married (%)	72.9 (10.0)	72.3 (5.7)	62.2 (9.1)	65.0 (6.9)
Secondary or higher (%)	63.3 (12.0)	65.1 (7.0)	66.1 (9.6)	60.7 (10.4)
Employed, (%)	57.2 (11.9)	55.9 (16.6)	69.8 (8.8)	63.7 (13.8)
Ethnicity, Lomwe (%)	94.5 (5.5)	87.4 (7.4)	75.9 (14.5)	73.9 (11.8)

For all summary statistics at baseline, see Table A 1.

At endline, participants in the control arm were somewhat younger and more likely to be married and have attained at least secondary school than in the other three arms. Arm 3 included the smallest proportion of respondents who were employed, and the control arm and arm 1 were more likely than arms 2 and 3 to be Lomwe (see Table 2).

Table 3: Summary statistics of community-level sociodemographic characteristics, by arm at endline

	CONTROL (NAZOMBE) N=373	ARM 1: EMPOWER GIRLS (CHIWALO) N=360	ARM 2: CSO (MCHIRAMWERA) N=373	ARM 3: EMPOWER GIRLS + CSO (CHANGATA) N=371
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Female (%)	73.6 (9.7)	73.6 (10.3)	73.9 (10.6)	73.0 (9.7)
34+ years (%)	62.9 (8.8)	68.1 (10.6)	65.6 (13.2)	66.7 (12.3)
Married (%)	71.9 (10.2)	65.1 (10.1)	65.9 (14.4)	60.1 (10.6)
Secondary or higher (%)	74.4 (9.4)	65.6 (8.5)	66.9 (13.5)	67.7 (12.3)
Employed, (%)	61.5 (14.2)	63.3 (11.7)	62.1 (11.9)	46.3 (11.0)
Ethnicity, Lomwe (%)	91.1 (4.9)	93.5 (6.4)	76.7 (12.5)	68.8 (11.8)

For all summary statistics at endline, see Table A 2.

Community-level summary statistics, baseline

For all summary statistics at baseline, see Table A 1. For all summary statistics at endline, see Table A 2.

Knowledge of child marriage laws, empirical and normal expectations

At baseline, the proportion of participants with knowledge of national child marriage laws was similarly low across all arms, approximately 50 percent. Though the majority of participants (over 80 percent) in all communities believed that most girls would marry before the age of 18, there was not strong evidence of normative expectations for girls to marry, nor of sanctions against families and decision-makers whose daughters and nieces did not get married before adulthood. A higher proportion of participants agreed with the statement that “*Most girls in this community marry before the age of 18*” in arms 2 and 3 compared to the control arm and arm 1. A higher proportion agreed with the statement “*Most people in this community expect girls to marry before the age of 18*” in arm 3 compared to the other three arms. A higher proportion agreed with the statement “*If I don’t ensure my daughters and/or nieces are married early, my family will not be respected in the community*” in arm 1 compared to the other three arms (see Table 4).

Table 4: Summary statistics of community-level characteristics of primary outcomes, by arm at baseline

	CONTROL (NAZOMBE) N=370	ARM 1: EMPOWER GIRLS (CHIWALO) N=375	ARM 2: CSO (MCHIRAMWERA) N=375	ARM 3: EMPOWER GIRLS + CSO (CHANGATA) N=372
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Knowledge of national laws, yes (%)	51.4 (7.6)	50.5 (21.1)	48.3 (12.5)	50.6 (13.9)
Most girls in this community marry before the age of 18, agree (%)	82.8 (10.2)	84.9 (9.8)	94.1 (6.7)	95.1 (7.1)
Most people in this community expect girls to marry before the age of 18, agree (%)	48.1 (10.4)	53.7 (16.5)	48.5 (9.7)	62.7 (13.0)
My family will not be respected in the community, agree (%)	23.9 (11.5)	54.1 (15.6)	31.1 (9.4)	36.7 (9.8)

Sexual and reproductive health and rights

At baseline, we found a strong belief across arms that contraception and family planning should not be accessed by unmarried girls but should be available to married girls, and that both girls and boys should abstain from sex until marriage. Over 90 percent of participants agreed with the statements that *"Married adolescent girls should have access to contraception/family planning services"* and that *"Unmarried girls who get pregnant are naughty."* In all arms, less than 10 percent of participants agreed with the statements that *"it is acceptable for girls to have sex before marriage"* and *"It is acceptable for boys to have sex before marriage."* A smaller proportion of participants agreed with the statements that *"Unmarried adolescent girls should have access to contraception/family planning services"* in the control arm and arm 2 compared to arm 1 and arm 3. A higher proportion of participants agreed with the statements that *"Giving unmarried girls access to contraceptives makes them promiscuous"* in the control arm and arm 1 compared to arms 2 and 3. There were minor variations in responses to the other statements between arms (see Table 5).

Table 5: Summary statistics of community-level characteristics of SRHR outcomes, by arm at baseline

	CONTROL (NAZOMBE) N=370	ARM 1: EMPOWER GIRLS (CHIWALO) N=375	ARM 2: CSO (MCHIRAMWERA) N=375	ARM 3: EMPOWER GIRLS + CSO (CHANGATA) N=372
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Unmarried adolescent girls should have access to contraception/family planning services, agree (%)	35.0 (12.3)	39.2 (12.9)	32.6 (9.3)	44.6 (12.5)
Married adolescent girls should have access to contraception/family planning services, agree (%)	96.4 (5.4)	95.9 (4.8)	94.6 (4.5)	91.4 (10.2)
Giving unmarried girls access to contraceptives makes them promiscuous, agree (%)	82.8 (6.9)	84.6 (7.9)	76.7 (8.0)	74.6 (8.6)
Unmarried girls who get pregnant are naughty, agree (%)	93.1 (5.0)	95.4 (4.0)	90.7 (3.6)	91.6 (4.8)
It is acceptable for girls to have sex before marriage, agree (%)	3.0 (2.8)	4.0 (4.3)	1.1 (1.8)	7.0 (5.1)
It is acceptable for boys to have sex before marriage, agree (%)	2.7 (2.5)	4.8 (4.6)	1.6 (2.0)	7.2 (5.3)
I would like contraceptives/family planning services to be available to girls in my community, agree (%)	40.3 (11.8)	39.1 (11.0)	37.5 (8.3)	41.3 (12.2)
All girls have a right to access contraceptives/family planning services, agree (%)	48.6 (13.5)	43.4 (14.1)	39.0 (11.3)	47.2 (10.3)
Aware of any family planning services available to unmarried adolescent girls in your community, yes (%)	62.2 (10.9)	61.7 (9.2)	66.4 (11.1)	70.1 (13.2)

Other norms and practices

At baseline, in all arms, less than 12 percent of participants agreed with the statement that “A girl who has no money for school fees should marry,” and over 85 percent agreed with the statements that “It is wrong to marry a girl before the age of 18,” “A girl should have a say in whom she marries,” and “A girl should have a say in when she marries.” Between 22 percent and 30 percent agreed with the statement that “A girl who gets pregnant should marry,” with the control arm having the lowest proportion (see Table 6).

Between 8 percent and 14 percent agreed with the statement that “Once a girl has attended an initiation camp, she must have sex,” with the control arm having the lowest proportion of

respondents agreeing. Between 25 percent and 42 percent agreed with the statement that *“Initiation camps are necessary to prepare girls for marriage,”* with the control arm having the lowest proportion. The proportion of participants who agreed with the statement that *“If a girl does not attend an initiation camp, she is unfit to marry”* was much higher in arms 2 and 3 compared to the control arm and arm 1 (see Table 6).

Table 6: Summary statistics of community-level characteristics of norms and practices, by arm at baseline

	CONTROL (NAZOMBE) N=370	ARM 1: EMPOWER GIRLS (CHIWALO) N=375	ARM 2: CSO (MCHIRAMWERA) N=375	ARM 3: EMPOWER GIRLS + CSO (CHANGATA) N=372
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
A girl who has no money for school fees should marry, agree (%)	7.8 (6.9)	9.7 (8.2)	4.5 (4.7)	11.9 (6.1)
A girl who gets pregnant should marry, agree (%)	22.3 (14.1)	26.5 (13.1)	23.7 (11.6)	29.7 (9.0)
It is wrong to marry a girl before the age of 18, agree (%)	94.6 (4.2)	91.6 (6.4)	93.9 (4.8)	89.0 (8.3)
A girl should have a say in whom she marries, agree (%)	97.8 (2.6)	95.2 (4.1)	95.7 (3.6)	92.3 (5.9)
A girl should have a say in when she marries, agree (%)	93.7 (6.1)	90.6 (6.8)	87.2 (5.0)	87.8 (6.7)
Initiation camps are necessary to prepare girls for marriage, agree (%)	25.1 (9.2)	35.4 (12.7)	33.8 (11.2)	42.3 (7.6)
Once a girl has attended an initiation camp, she must have sex, agree (%)	8.7 (6.9)	13.9 (9.2)	10.3 (9.7)	12.7 (7.0)
If a girl does not attend an initiation camp, she is unfit to marry, agree (%)	20.9 (8.1)	21.3 (8.1)	46.7 (15.0)	54.3 (11.1)

It is important to note that interpretation related to initiation camps is complicated because participants were aware of two different types of camps: one run by religious institutions, with key messaging around good manners, menstrual hygiene, and the importance of education; and the other run by traditional counselors, where girls learn sexual behavior and may undergo forced sexual initiation. At endline, we asked participants to clarify which type of camp they were referring to, but this was not done at baseline. We are therefore able to report changes between baseline and endline related to *all types* of initiation camps, but not changes specific to traditional sexual initiation camps, which were the target of this intervention.

Difference-in-differences analysis

Knowledge of child marriage laws, empirical and normal expectations

In our primary analysis we found that ENGAGE did not have a statistically significant impact on increasing knowledge of national child marriage laws. In fact, we observed that the proportion of people with knowledge on national laws increased substantially across all arms, from around 50 percent at baseline to approximately 90 percent at endline. We also found no evidence of significant impact on two of the three empirical and normative expectations outcomes: (1) agreement with the statement *“Most girls in this community marry before the age of 18;”* and (2) agreement with the statement *“Most people in this community expect girls to marry before the age of 18;”* though we did see a trend by which arms 1 and 3 improved to a somewhat greater extent than the control arm and arm 2. We did find a statistically significant impact of ENGAGE on the agreement with the statement *“If I don’t ensure my daughters and/or nieces are married early, my family will not be respected in the community.”* Specifically, we found a significant reduction in arm 1 (-25.5%; 95% CI -34.3% to -15.5%) and arm 3 (-17.2%; 95% CI -26.4% to -6.9%) compared to the control arm (see Table 7).

Table 7: Cluster-level DID analysis on primary outcomes

	BASELINE	ENDLINE	DIFFERENCE (BASELINE)	DIFFERENCE (ENDLINE)	ADJUSTED¹ DID ESTIMATOR
	Mean (%)	Mean (%)	%	%	% (95% CI)
KNOWLEDGE OF NATIONAL LAWS					
Control (Nazombe)	51.4	89.5	-	-	-
Arm 1: Empower Girls (Chiwalo)	50.5	91.2	-0.9	1.7	5.4 (-5.6-17.5)
Arm 2: CSO (Mchiramwera)	48.3	89.8	-3.1	0.3	4.1 (-6.2-15.5)
Arm 3: Empower Girls + CSO (Changata)	50.6	81.5	-0.8	-8	-6.0 (-15.1-4.1)
MOST GIRLS IN THIS COMMUNITY MARRY BEFORE THE AGE OF 18, AGREE (%)					
Control (Nazombe)	82.8	80.7	-	-	-
Arm 1: Empower Girls (Chiwalo)	84.9	76.3	2.1	-4.4	-6.2 (-14.8-3.3)
Arm 2: CSO (Mchiramwera)	94.1	93.3	11.3	12.6	1.4 (-7.5-11.2)
Arm 3: Empower Girls + CSO (Changata)	95.1	89.2	12.3	8.5	-2.8 (-11.2-6.4)
MOST PEOPLE IN THIS COMMUNITY EXPECT GIRLS TO MARRY BEFORE THE AGE OF 18, AGREE (%)					
Control (Nazombe)	48.1	42.2	-	-	-
Arm 1: Empower Girls (Chiwalo)	53.7	35.6	5.6	-6.6	-10.5 (-22.3-3.1)
Arm 2: CSO (Mchiramwera)	48.5	47	0.4	4.8	4.8 (-8.4-20.0)
Arm 3: Empower Girls + CSO (Changata)	62.7	47.4	14.6	5.2	-9.1 (-20.4-3.8)
IF I DON'T ENSURE MY DAUGHTERS AND/OR NIECES ARE MARRIED EARLY, MY FAMILY WILL NOT BE RESPECTED IN THE COMMUNITY, AGREE (%)					
Control (Nazombe)	23.9	27.1	-	-	-
Arm 1: Empower Girls (Chiwalo)	54.1	26.8	30.2	-0.3	-25.5* (-34.3 to - 15.5)
Arm 2: CSO (Mchiramwera)	31.1	29.3	7.2	2.2	-2.4 (-13.4-10.0)
Arm 3: Empower Girls + CSO (Changata)	36.7	21.5	12.8	-5.6	-17.2* (-26.4 to - 6.9)

¹ Models adjusted for age, education, ethnicity, and marital status

* statistically significant at $p < 0.05$

For all cluster-level DID results on SRHR outcomes, see Table A 3.

In sensitivity analysis, we found that both arms 1 (-26.2%, 95% CI: -35.1% to -16.1%) and arms 2 and 3 combined (-10.4%, 95% CI: -19.3% to -0.5%) experienced a significant reduction in agreement with the statement "If I don't ensure my daughters and/or nieces are married early, my family will not be respected in the community," compared to the control arm (see Table S 3).

In qualitative interviews at endline, girls, CSOs, and local stakeholders all mentioned that parents had begun to feel “afraid” to have their daughters marry before the age of 18. In the past, girls married young because their parents, uncles, and sometimes initiation counselors, forced them to, but the newfound awareness of laws against child marriage had instilled fear of punishment and sanctions imposed by the chiefs. As a result, fewer marriages were initiated by family members, pointing to girls’ increased power over their own marriage decisions.

In addition, ENGAGE participants reported that specific changes to bylaws, sanctions, and enforcement structures in their communities — along with the community’s recognition of these protective mechanisms — lessened adults’ ability and desire to facilitate marriages. Extensive socialization activities by ENGAGE participants educated community members about the reporting structures, bylaws, and sanctions surrounding the behavior.

However, practical reasons for girls to marry — specifically poverty and pregnancy — were still in play in the communities where qualitative research was conducted. As a result, while normative expectations around girls marrying before adulthood have declined, empirical expectations and real practices remain high.

Sexual and reproductive health and rights

In adjusted analyses, we found positive statistically significant impacts at endline on only one of nine statements related to SRHR. At endline, a higher proportion of participants agreed to the statement “*It is acceptable for girls to have sex before marriage*” in arm 2 (4.8%, 95% CI: 0.6% - 9.1%) compared to the control. We found a significantly lower proportion of participants at endline agreeing to the statement “*I am aware of any family planning services available to unmarried adolescent girls in my community*” in arm 3 (-14.0%, 95% CI: -23.7% to -3.0%) compared to the control, though in all arms this had improved since baseline (see Table 7). Other indicators did not exhibit statistically significant results, and in several cases, attitudes toward adolescent SRHR worsened between baseline and endline in some or all arms (see Table A 4 for results on all assessed SRHR indicators). This may be the result of COVID-19 and other external factors influencing the availability and acceptability of SRHR services for unmarried adolescent girls.

Table 8: Cluster-level DID analysis on select SRHR outcomes

	BASELINE	ENDLINE	DIFFERENCE (BASELINE)	DIFFERENCE (ENDLINE)	ADJUSTED ¹ DID ESTIMATOR
	Mean (%)	Mean (%)	%	%	% (95% CI)
IT IS ACCEPTABLE FOR GIRLS TO HAVE SEX BEFORE MARRIAGE, AGREE (%)					
Control (Nazombe)	3	1.6	-	-	-
Arm 1: Empower Girls (Chiwalo)	4	2.9	1.1	1.3	1.1 (-3.1-5.5)
Arm 2: CSO (Mchiramwera)	1.1	4	-1.8	2.4	4.8* (0.6-9.1)
Arm 3: Empower Girls + CSO (Changata)	7	5.4	4.1	3.8	-0.4 (-4.3-3.6)
AWARE OF ANY FAMILY PLANNING SERVICES AVAILABLE TO UNMARRIED ADOLESCENT GIRLS IN YOUR COMMUNITY, YES (%)					
Control (Nazombe)	62.2	78.4	-	-	-
Arm 1: Empower Girls (Chiwalo)	61.7	78.9	-0.5	0.5	-1.3 (-13.2-12.2)
Arm 2: CSO (Mchiramwera)	66.4	80.2	4.2	1.8	-2.9 (-14.1-9.8)
Arm 3: Empower Girls + CSO (Changata)	70.1	71.1	7.9	-7.3	-14.0* (-23.7 - -3.0)

¹ Models adjusted for age, education, ethnicity, and marital status

* statistically significant at $p < 0.05$

In sensitivity analysis, we found no evidence of an impact of ENGAGE on SRHR outcomes (see Table S 4).

Qualitative results suggest that acceptability of sexual relationships is still very low. Several respondents — both girls and adults — described the importance of being a “good” girl, by which they meant abstaining from sex and avoiding sexual and romantic relationships. Occasionally, in some interviews this was tied to agency: girls felt empowered to avoid sexual relationships they did not want. More often, however, we noted a strong preference for abstinence in general. Even where contraception for unmarried adolescents was thought to be acceptable, it was described as a “second choice” for girls who could not abstain from sex.

Qualitative results also suggest that ENGAGE programming had improved girls’ knowledge about SRHR and where to access care. This somewhat contradicts quantitative findings, which suggest only a small increase in knowledge about contraceptive access in arm 3, though notably this had improved in all arms.

Other norms and practices

In adjusted analyses, we found a statistically significant impact on ENGAGE on five of eight statements related to norms and practices. A significantly smaller proportion of participants at endline agreed to the statements: “A girl who has no money for school fees should marry” (-6.6%, 95% CI: -12.2% to -0.6%), “The initiation camps are necessary to prepare girls for marriage” (-15.4%, 95% CI: -24.4% to -5.3%) and “Once a girl has attended an initiation camp, she must have sex” (-

7.5%, 95% CI: -14.2% to -0.2%) in arm 3 compared to the control. We found a significantly higher proportion of participants agreeing to the statements *"A girl should have a say in whom she marries"* (arm 2: 8.2%, 95% CI: 0.1% to 17.0%; arm 3: 13.7%, 95% CI: 5.3% to 22.7%) and *"A girl should have a say in when she marries"* (arm 2: 11.8%, 95% CI: 4.0% to 20.3%; arm 3: 11.7%, 95% CI: 4.0% to 20.0%) compared to the control (see Table 8). However, it is notable that the proportion of participants agreeing to the statement *"A girl should have a say in whom she marries"* reduced substantially from over 92 percent across all arms at baseline to between 71 percent and 84 percent at endline (see Table 8). Again, this suggests that influences such as COVID-19 and resultant economic stress reduced girls' agency in making marriage decisions, across studied communities. In all arms, a smaller proportion at endline also agreed that *"A girl who gets pregnant should marry"* compared to baseline (for cluster-level DID results on all assessed other norms and practices, see Table A 5). At baseline, most participants agreed it was wrong to marry a girl younger than 18, and that a girl should have a say in whom and when she marries. This attitude had decreased in all arms except arm 3 by endline, but remained high in all arms, again indicating a lack of normative expectations for girls to marry (see Table A 5).

Table 9: Cluster-level DID analysis on select other norms and practices

	BASELINE	ENDLINE	DIFFERENCE (BASELINE)	DIFFERENCE (ENDLINE)	ADJUSTED¹ DID ESTIMATOR
	Mean (%)	Mean (%)	%	%	% (95% CI)
A GIRL WHO HAS NO MONEY FOR SCHOOL FEES SHOULD MARRY, AGREE (%)					
Control (Nazombe)	7.8	8.1	-	-	-
Arm 1: Empower Girls (Chiwalo)	9.7	8.6	1.9	0.5	0.6 (-5.9-7.5)
Arm 2: CSO (Mchiramwera)	4.5	4.1	-3.3	-4	-0.2 (-6.3-6.3)
Arm 3: Empower Girls + CSO (Changata)	11.9	5.7	4.1	-2.4	-6.6 (-12.2 - -0.6)
A GIRL SHOULD HAVE A SAY IN WHOM SHE MARRIES, AGREE (%)					
Control (Nazombe)	97.8	76.7	-	-	-
Arm 1: Empower Girls (Chiwalo)	95.2	71.1	-2.6	-5.6	-4.3 (-11.8-3.9)
Arm 2: CSO (Mchiramwera)	95.7	82.9	-2.1	6.2	8.2 (0.1-17.0)
Arm 3: Empower Girls + CSO (Changata)	92.3	84.2	-5.5	7.5	13.7 (5.3-22.7)
A GIRL SHOULD HAVE A SAY IN WHEN SHE MARRIES, AGREE (%)					
Control (Nazombe)	93.7	87.8	-	-	-
Arm 1: Empower Girls (Chiwalo)	90.6	83.8	-3.1	-4	-0.7 (-8.0-7.2)
Arm 2: CSO (Mchiramwera)	87.2	92.5	-6.5	4.7	11.8 (4.0-20.3)
Arm 3: Empower Girls + CSO (Changata)	87.8	92.9	-5.9	5.1	11.7 (4.0-20.0)
INITIATION CAMPS ARE NECESSARY TO PREPARE GIRLS FOR MARRIAGE, AGREE (%)					
Control (Nazombe)	25.1	32.5	-	-	-
Arm 1: Empower Girls (Chiwalo)	35.4	31.9	10.3	-0.6	-10.6 (-20.7-0.9)
Arm 2: CSO (Mchiramwera)	36	34.3	10.9	1.8	-8.5 (-18.4-2.7)
Arm 3: Empower Girls + CSO (Changata)	42.3	33.7	17.2	1.2	-15.4 (-24.4 - -5.3)
ONCE A GIRL HAS ATTENDED AN INITIATION CAMP, SHE MUST HAVE SEX, AGREE (%)					
Control (Nazombe)	8.7	9.6	-	-	-
Arm 1: Empower Girls (Chiwalo)	13.9	9.9	5.2	0.3	-2.3 (-9.9-6.0)
Arm 2: CSO (Mchiramwera)	10.3	6.8	1.6	-2.8	-4.8 (-11.9-2.8)
Arm 3: Empower Girls + CSO (Changata)	12.7	6.4	4	-3.2	-7.5 (-14.2 - -0.2)

¹Models adjusted for age, education, ethnicity, and marital status

* statistically significant at $p < 0.05$

In sensitivity analysis, we found similar significant effects for the statements *"A girl should have a say in whom she marries," "A girl should have a say in when she marries,"* and *"The initiation camps are necessary to prepare girls for marriage"* (see Table S 5).

In qualitative interviews, there was a strong focus on programming and messaging for supporting girls' education, including as an alternative to marriage. Participants expressed support — personally and from others in their community — for adolescent mothers to return to school after giving birth and cited new bylaws that made this possible.

Girls who participated in qualitative interviews also reported feeling more agency in deciding whom and when to marry. They pointed specifically to empowerment training under ENGAGE that instilled a stronger sense that they could make these important decisions. It is interesting, therefore, that we found similar quantitative impacts between arms 2 and 3, which suggests once again that there may have been contamination between these arms, with CSOs in arm 2 engaging girls as part of their programming, recognizing the importance of such activities.

Qualitative interviews also shed more light on initiation camps and practices, and participants indicated that while some form of initiation is still quite common and viewed as important for girls' preparation for adulthood and marriage, the practice has changed significantly in the past few decades, including over the course of the ENGAGE program, with the writing and implementation of new, more age-appropriate curricula and the focus on education and menstrual hygiene.

KIs in Nazombe provided evidence of similar norm change, especially related to marriage and education, and revealed that programming with similar goals by other actors is taking place there, which may explain why some quantitative results did not reach statistical significance.

Impacts of COVID-19

In all arms, more than half of participants responded that life had worsened as a result of the COVID-19 pandemic, with arm 2 most likely to report this as true. Across arms, the majority of participants reported that as a result of COVID-19, fewer girls participated in initiation camps and fewer girls accessed education. A little under half of participants reported that fewer girls accessed contraception as a result of pandemic (see Table 9).

Table 10: Summary statistics of community-level characteristics of COVID-19 impacts, by arm at endline

	CONTROL (NAZOMBE) N=370	ARM 1: EMPOWER GIRLS (CHIWALO) N=375	ARM 2: CSO (MCHIRAMWERA) N=375	ARM 3: EMPOWER GIRLS + CSO (CHANGATA) N=372
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Daily life for me and my family changed to worse during the COVID-19 global pandemic (%)	54.6 (11.6)	56.1 (9.9)	60.2 (14.4)	50.2 (14.3)
Fewer girls participate in initiation camps in this community due to COVID-19 pandemic (%)	78.2 (11.6)	76.8 (19.2)	62.3 (16.4)	32.6 (10.0)
Fewer girls access education in this community due to COVID-19 pandemic (%)	71.7 (18.6)	72.0 (14.9)	83.5 (11.7)	76.0 (9.2)
Fewer girls access and use contraceptive services in this community due to COVID-19 pandemic (%)	42.4 (15.4)	48.3 (18.0)	42.8 (11.5)	34.3 (9.8)

For all cluster-level results on COVID-19 impacts, (see Table A 2).

Qualitative evidence highlighted school closures as a major impact of COVID-19 on ENGAGE outcomes. Girls who were out of school as a result of the pandemic became engaged in romantic relationships, became pregnant and even married, according to participants. One girl leader said: *“Some of the girls I was chatting with, they are now married. They are married not because they wanted to get married, but rather because they are pregnant due to this COVID-19 holiday”* (Girl leader, age 19, Changata).

Similarly, many girls lost access to SRHR, especially contraceptive services, both because the mask mandate in health facilities served as a deterrent, and because resources were diverted elsewhere.

Discussion and conclusions

Summary of key findings

At baseline, the proportion of participants with knowledge on national child marriage laws was similar across all arms, approximately 50 percent. By endline, this had increased substantially across all arms, suggesting that there may have been contamination between arms, or that other activities with similar goals in these communities were successful in building awareness of these laws. As evidenced in qualitative results, awareness of laws and repercussions on parents whose daughters marry as children are likely to have had a strong influence on normative expectations about child marriage, and perhaps reversed the fear of sanctions — from a fear of community backlash if girls were not married, to a fear of punishment for

breaking laws against child marriage, and therefore potentially contributing to a reduction in the practice. That knowledge about child marriage laws increased even in the control group between baseline and endline suggests potential contamination between arms and/or the existence of similar awareness-building programming in Nazombe.

At endline, we found that arms 1 and 3 had improved relative to the control group on both empirical and normative expectations, though these changes did not reach statistical significance. We did find statistically significant impacts of the program on decreasing sanctions against decision-makers whose girls did not marry as children, with the strongest impacts in arms 1 and 3, suggesting the importance of engaging girl leaders to achieve these outcomes. However, engaging chiefs and local leaders were also seen as a critical factor in shifting norms and practices related to child marriage. They were seen as essential gatekeepers — where chiefs were supportive, and especially where bylaws were changed, the rates of child marriage decreased. We observed a statistically significant impact of ENGAGE on attitudes towards girls' agency to control marriage decisions, specifically whom and when to marry. The importance of empowerment training for girl leaders was noted in qualitative research.

Norms and attitudes related to SRHR were more difficult to shift and remained relatively low in all arms at endline. At both time points, there was a strong belief that unmarried girls and boys should remain abstinent and not access or use contraception. By endline, most of these attitudes remained firmly in place, and some had even worsened in some arms. Though SRHR was not the primary focus of ENGAGE's programming, it is important to address because pregnancy remains a major driver of marriage and school drop-out, and qualitative results, in particular, suggest that practical reasons, such as becoming pregnant, still lead many girls to marry as children. On the other hand, attitudes towards these practical reasons to marry, specifically pregnancy and the inability to pay school fees, have improved in all treatment arms, particularly in arm 3, though statistical significance was only attained on the indicator related to school fees. While changes in practices may be slower to follow attitudes, it does appear that these are trending more positive, with more support for girls to return to school after giving birth — this may prevent pregnant adolescents from feeling that they have no choice but to marry.

At baseline, about one-third of participants across arms believed that initiation camps were necessary to prepare girls for marriage and that a girl who had not been initiated was unfit for marriage. However, a far smaller proportion believed that girls who had been initiated must have sex, suggesting that even at baseline attitudes toward initiation ceremonies had already begun to shift. By endline, these attitudes had improved significantly in arm 3, suggesting a statistically significant impact of the programming with both girls and CSOs on attitudes towards these ceremonies and practices.

Finally, COVID-19 had a meaningful impact on these communities, including related to our main outcomes. The pandemic kept girls out of school and drove them to drop out permanently. In some cases, this encouraged them to engage in sexual relationships, which in some cases led to unintended pregnancy and marriage. This was exacerbated by a decrease in the availability of SRHR care and contraception. At the same time, we hypothesize that the economic stress

resulting from the pandemic, through business closures and reduced international trade, may have increased the burden on girls to marry out of financial need.

Limitations

Implementation challenges

ENGAGE was intended to be an empowerment intervention, in which both the girls' and CSOs' component was not prescriptive but rather organic and designed to adapt to preferences, needs, and requests from within the communities. Meanwhile, local authorities in each district were heavily involved in the program and research design, which was key to getting their buy-in but did dictate the TAs in which we were able to work. These presented challenges for the evaluation, because we did not have control over the intervention activities, which varied significantly within and across arms. Likewise, in arm 2, which was designed to be distinguished from arm 3 by the absence of girls' empowerment activities. However, in that arm, CSOs discovered the importance of girls' engagement and started girls' group programming, so that, in reality, arms 2 and 3 were more similar than intended. For this reason, we have included sensitivity analyses in this report in which arms 2 and 3 are considered the same (see Appendix 6).

Contamination and other programming

Although we took steps to eliminate contamination to the extent possible, true randomization was not feasible, due to limits set by local authorities. In addition, TAs were geographically close to each other. Arms in the same district (arms 1 and 4; and arms 2 and 3) were particularly at risk for contamination across arms. CSOs worked across districts, in both arms 2 and 3, so contamination between those two arms was especially problematic, as described above. In fact, in qualitative interviews, some CSOs mentioned that seeing the importance of girls' clubs in Changata, they adopted similar activities in Mchiramwera.

Apart from ENGAGE programming, there are a number of NGOs and advocacy-focused organizations working on the same issues in the same communities, including in Nazombe. We observed improvements in Nazombe on several key quantitative outcomes, and in KIIs, stakeholders there described similar norm change to that in treatment arms. This limits our ability to observe statistically significant program impacts, because we see gains made across all arms.

COVID-19

As a result of the COVID-19 pandemic, we were forced to delay qualitative endline data collection by nearly a year, and quantitative data collection by nearly two years. This long delay between programming and data collection may be affecting our outcomes through regression to the mean and attenuation of the impact that we may have observed immediately following the program. It is likely that immediately following the end of the program, we would have

observed greater gains in several of our key outcome variables. After two years, however, we hypothesize that we may have lost some impact.

Meanwhile, we know from both qualitative and quantitative results that COVID-19 had a direct impact on many of our key outcomes, driving more girls to drop out of school and get married, and limiting the availability of SRHR care. As a result, some impacts of the program may have been lost to the circumstances of the pandemic.

Data and research limitations

There were challenges with several questions and scales included in the quantitative survey. At baseline, our main outcome and several key supporting variables related to norms around child marriage were already very high in all arms, leaving little room for improvement. We therefore adjusted our primary analysis, as described above, but even so, at endline saw little variability on outcomes such as laws about child marriage laws.

At baseline, we had included a module in which participants were asked to consider their behavior around a specific girl about whom they had decision-making power. We intended to track practices and behaviors related to child marriage over time. However, this module did not work well at baseline and so it was removed from the endline survey; as a result, we are not able to report quantitative changes in behaviors.

Questions at endline related to exposure, which were intended to evaluate participants' awareness and perception of the program did not work well, because we used the name ENGAGE to ask if people had heard of the work. We later learned that people more often referred to the program as "GENET" or "the work done by GENET." As a result, many people responded that they had not heard of ENGAGE, which led to them skipping the remainder of the exposure and experience module.

In addition, because by design the SMS and radio campaign was carried out in all TAs, including the control community, we were not able to formally evaluate the impact of those activities. They are therefore not included in this quantitative evaluation.

Finally, although we intended to equally sample men and women for the quantitative study, men were often found not at home. As a result, our sample skewed strongly female, which may have impacted results. It is possible that women hold less favorable norms toward child marriage than men, which could impact the results presented here, though the trend is similar across all arms. To combat this possibility, we have adjusted DID analyses to account for differences by sex.

Appendices

Appendix 1: Additional methodological information

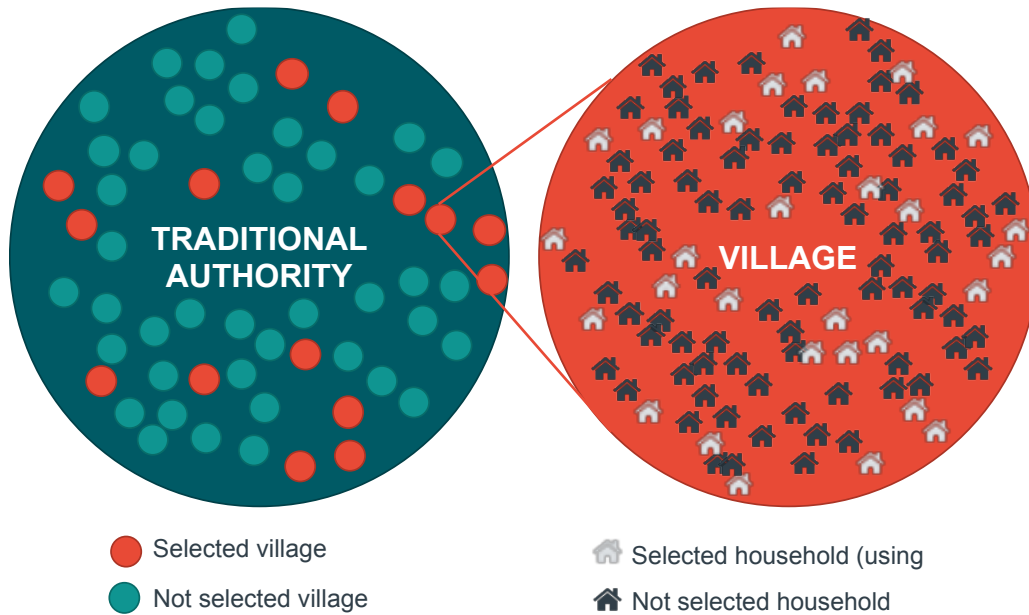
Sampling approach

The selection of ENGAGE sites was a collaborative process that involved the donor, implementation partners, local and regional stakeholders, and our research team. There were several steps, starting with the selection of (1) districts for the ENGAGE project; followed by the selection of (2) traditional authorities (TAs - the next geographic unit after the district); (3) group village heads (GVHs) and villages; and finally (4) the household and individuals for the study.

1. **Selection of ENGAGE districts:** Implementation partners chose Phalombe and Thyolo districts for ENGAGE for several reasons. One of the major reasons was the high prevalence of child marriage in these southern districts. Other reasons included proximity to Blantyre (from which GENET operates), feasibility of implementation in these districts, and lack of significant influx of current interventions on similar issues for young people. Originally, a third district (Nsanje) was under consideration but after visiting several stakeholders and gathering district-level data, we determined it was not similar enough to Phalombe and Thyolo to be included.
2. **Selection of Traditional Authorities (TA):** Within each district, there are between seven and 15 TAs. Based on the number of girls needed to be reached in each district, and knowing the rough population estimates of the TAs, the ENGAGE team believed that two TAs would be needed per district for implementation of the girls and the CSOs interventions. To reduce bias, the process of selecting the TAs was as random as possible. The larger ENGAGE team first met with the District Executive Committee (DEC) to confirm the number of existing TAs in each district (as geographic boundaries are prone to change in these districts), and certain characteristics that may make certain TAs less amenable to intervention and research. With the DEC, the research and implementation team created criteria on which to judge whether a TA was eligible for possible inclusion in ENGAGE. The main purpose was to have a list of eligible TAs that were similar in characteristics. The list of criteria included characteristics such as similarities in wealth, ethnicity, prevalence of child marriage, etc. Once the final list of eligible TAs was proposed within each district, the DEC randomly selected two TAs. Once the two TAs were randomly selected, the team randomly assigned an arm to that TA. The two arms where the CSO intervention was implemented were purposefully selected to be in the same district due to the high likelihood that some CSOs would be working across the district.
3. **Selection of villages:** At baseline, the remaining sampling procedures were conducted following the same procedure in each of the four TAs. First, population estimates for each village in the TA were obtained. Then, 15 villages were randomly selected in each TA using probability proportional to size, which accounts for the variation in the number of households and allows for self-weighted sampling. Figure 4 provides a visual

representation of this sampling process. At endline, the 60 villages that participated in the baseline were the sampling unit.

Figure 4: Sampling Process



4. **Selection of households and individuals:** The research team conducted an extensive household mapping/listing exercise before baseline data collection to identify all the households in study villages where the study population resides. At baseline, this exercise was conducted with the assistance of the group village headmen and village chiefs, who are aware of the approximate location of all households under their jurisdiction. In consultation with the village chief, the team visited all households and ascertained general interest in the study and eligibility of various household members. At endline, the team conducted a re-mapping exercise to determine whether new villages had been created or if others had moved out. Once the team visited all the households in the study community, the study team created a list of eligible households. Eligible households were those households that include at least one eligible respondent (see below). We randomly numbered the listed households, and the study team began with the first household on the list and worked their way down until they recruited the number of targeted participants in that study area. In each of the 15 selected villages, 30 households were randomly selected to participate in the study, with the goal of completing 25 surveys in each village, for a total of 375 surveys per arm. At baseline, when there was more than one eligible respondent in a household, the data collection team assigned each eligible household member a number, wrote down the numbers, and picked one at random from a bag to select the interviewee. At endline, an eligible respondent was selected using the KISH Grid technique.

Participant eligibility and recruitment

- **Quantitative survey (baseline and endline):** We aimed to conduct 375 household surveys in each arm at each time point, for a total of 1500 surveys per time point. Eligibility criteria depended on the data collection approach. For the quantitative sample, the idea was that the program would diffuse widely into the communities, we recruited adult (18 and older) decision-makers of girls who were of marriageable age (10-17). To be included in this study, adults had to have lived in the community for at least one year (at baseline) and at least three years (at endline).
- **IDIs with girl leaders (midline and endline):** We recruited 20 girl leaders who had participated in the ENGAGE program in Changata and Chiwalo. These were between the ages of 15 and 17 at midline and over the age of 15 at endline. When possible, the same girls who had participated at midline were interviewed again at endline, though eight girls who had participated at midline could not be reached or declined to participate at endline. These girls were replaced by girls from the second trained cohort, since they had been underrepresented at midline.
- **IDIs with CSO leaders (midline and endline):** We also recruited CSO leaders from Mchiramwera and Changata for participation in IDIs. At midline, eight CSO leaders who had been trained in Cohort 1 participated, as did two randomly selected leaders from Cohort 2. At endline, we purposively selected 10 CSO leaders to ensure that each focus area of CSO initiative (e.g., SRH services, initiation camp curricula, child protection) was represented in both locations. In cases where more than one CSO leader in a location was focused on one topic, one leader was randomly selected.
- **FGDs (midline only):** At midline, eight FGDs were conducted, with a total of 73 participants. Though we had planned to conduct FGDs at endline as well, this was not feasible due to the COVID-19 pandemic. Identification of FGD participants at midline was iterative and purposive. In Changata, girls were first identified who were between the ages of 15 and 17 and who were *not* ENGAGE girl leaders. At the beginning of the two initial FGDs, participating girls identified and ranked in order of influence the major decision-makers for girls' marriage (reference groups). The top reference group was then chosen as the group of participants for the next FGD. Identified reference groups included mothers and fathers, uncles, and peer boys. Since there was not approval for another FGD with children under 18, young men aged 18 to 24 were sampled in place of peer boys. For all further FGDs, community stakeholders helped to identify and recruit relevant participants.
- **KIIs (midline and endline).** The GENET and Rise Up implementation teams suggested individuals who were familiar with the ENGAGE work in three of the four study sites. In Nazombe (control arm), GENET and Rise Up identified community leaders who were knowledgeable about issues related to adolescents in their community. We conducted 16 KIIs at midline and 16 at endline.

Appendix 2: Summary statistics of community-level characteristics, norms and practices, by arm at baseline

Table A 1: Summary statistics of community-level characteristics, norms and practices, by arm baseline

	Control arm (Nazombe)			Empower girls (Chiwalo)			CSO (Mchiramwera)			Empower girls and CSO (Changata)		
Variable	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)
Sociodemographic characteristics												
Female (%)	40.0 - 88.0	68.2 (11.8)	72.0 (64.0 - 76.0)	48.0 - 76.0	64.5 (7.7)	64.0 (60.0 - 72.0)	68.0 - 96.0	84.3 (6.8)	84.0 (80.0 - 88.5)	64.0 - 87.5	72.9 (7.7)	72.0 (68.0 - 76.0)
34+ years (%)	45.5 - 80.0	61.2 (9.6)	64.0 (54.2 - 68.0)	44.0 - 68.0	51.6 (6.4)	52.0 (45.8 - 56.0)	36.0 - 76.0	62.4 (10.9)	64.0 (57.7 - 72.0)	54.2 - 84.0	69.3 (9.4)	72.0 (58.3 - 76.0)
Married (%)	54.2 - 84.0	72.9 (10.0)	72.7 (66.7 - 84.0)	60.0 - 84.0	72.3 (5.7)	72.0 (69.2 - 76.0)	44.0 - 75.0	62.2 (9.1)	61.5 (56.0 - 72.0)	52.0 - 72.0	65.0 (6.9)	64.0 (60.0 - 72.0)
Secondary or higher (%)	31.8 - 76.0	63.3 (12.0)	68.0 (56.0 - 72.0)	56.0 - 76.0	65.1 (7.0)	64.0 (60.0 - 72.0)	52.0 - 88.0	66.1 (9.6)	64.0 (60.0 - 72.0)	40.0 - 76.0	60.7 (10.4)	60.0 (54.2 - 72.0)
Employment, yes (%)	36.0 - 81.8	57.2 (11.9)	60.0 (50.0 - 64.0)	36.0 - 88.0	55.9 (16.6)	52.0 (40.0 - 68.0)	56.0 - 88.0	69.8 (8.8)	72.0 (60.0 - 76.0)	40.0 - 84.0	63.7 (13.8)	64.0 (50.0 - 75.0)
Ethnic group, Lomwe (%)	81.8 - 100.0	94.5 (5.5)	96.0 (92.0 - 100.0)	68.0 - 100.0	87.4 (7.4)	88.0 (84.0 - 92.0)	52.0 - 96.0	75.9 (14.5)	76.0 (64.0 - 92.3)	56.0 - 96.0	73.9 (11.8)	75.0 (64.0 - 84.0)
Primary outcome												
Knowledge of national laws, yes (%)	40.0 - 64.0	51.4 (7.6)	52.0 (44.0 - 56.0)	26.9 - 70.8	50.5 (12.1)	52.0 (44.0 - 60.0)	28.0 - 70.8	48.3 (12.5)	44.0 (40.0 - 60.0)	20.0 - 70.8	50.6 (13.9)	52.0 (48.0 - 60.0)
Knowledge of national laws (sensitivity), yes (%)	40.0 - 64.0	51.2 (7.9)	52.0 (44.0 - 56.0)	26.9 - 70.8	49.4 (11.9)	50.0 (44.0 - 56.0)	28.0 - 70.8	48.3 (12.5)	44.0 (40.0 - 60.0)	20.0 - 70.8	50.6 (13.9)	52.0 (48.0 - 60.0)
Knowledge of national law(s) - Score	1.60 - 2.88	2.16 (0.41)	2.04 (1.84 - 2.40)	1.04 - 3.08	1.83 (0.50)	1.76 (1.44 - 2.12)	1.32 - 3.04	2.13 (0.52)	2.04 (1.76 - 2.48)	0.88 - 3.04	2.12 (0.59)	2.24 (1.96 - 2.48)
Empirical and normative expectations												
Most girls in this community marry before the age of 18, agree (%)	68.0 - 100.0	82.8 (10.2)	84.0 (75.0 - 92.0)	62.5 - 100.0	84.9 (9.8)	88.0 (80.0 - 91.7)	79.2 - 100.0	94.1 (6.7)	96.0 (92.0 - 100.0)	72.0 - 100.0	95.1 (7.1)	96.0 (92.0 - 100.0)
Most people in this community expect girls to marry before the age of 18, agree (%)	32.0 - 68.0	48.1 (10.4)	48.0 (40.0 - 56.0)	25.0 - 76.0	53.7 (16.5)	53.8 (40.0 - 72.0)	24.0 - 64.0	48.5 (9.7)	52.0 (42.3 - 52.0)	45.8 - 91.3	62.7 (13.0)	60.0 (56.0 - 72.0)
My family will not be respected in the community, agree (%)	4.0 - 40.0	23.9 (11.5)	26.1 (16.0 - 33.3)	32.0 - 80.0	54.1 (15.6)	54.2 (40.0 - 68.0)	16.0 - 52.0	31.1 (9.4)	32.0 (25.0 - 37.5)	25.0 - 64.0	36.7 (9.8)	36.0 (29.2 - 40.0)
Score of expectations and sanctions (Mean)	5.29 - 9.64	7.43 (1.19)	7.71 (6.52 - 8.0)	3.13 - 9.13	5.44 (1.82)	5.29 (3.48 - 6.83)	5.28 - 8.52	6.35 (0.92)	6.21 (5.58 - 6.80)	2.84 - 6.88	5.44 (1.06)	5.48 (4.75 - 6.44)
SRH secondary outcomes												
Unmarried adolescent girls should have access to contraception/FP services, agree (%)	13.6 - 52.0	35.0 (12.3)	36.0 (24.0 - 41.7)	12.0 - 64.0	39.2 (12.9)	40.0 (29.2 - 50.0)	16.0 - 48.0	32.6 (9.3)	32.0 (24.0 - 40.0)	24.0 - 64.0	44.6 (12.5)	40.0 (36.0 - 56.0)
Married ado girls should have access to contraception/FP services, agree (%)	84.0 - 100.0	96.4 (5.4)	100.0 (91.7 - 100.0)	82.6 - 100.0	95.9 (4.8)	96.0 (92.0 - 100.0)	84.0 - 100.0	94.6 (4.5)	96.0 (92.0 - 96.0)	60.0 - 100.0	91.4 (10.2)	92.0 (87.5 - 100.0)
Giving unmarried girls access to contraceptives	66.7 - 92.0	82.8 (6.9)	83.3 (80.0 - 88.0)	68.0 - 96.0	84.6 (7.9)	84.0 (79.2 - 92.0)	64.0 - 88.5	76.7 (8.0)	76.0 (68.0 - 84.0)	58.3 - 88.0	74.6 (8.6)	72.0 (68.0 - 83.3)

	Control arm (Nazombe)			Empower girls (Chiwalo)			CSO (Mchiramwera)			Empower girls and CSO (Changata)		
Variable	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)
makes them promiscuous, agree (%)												
Unmarried girls who get pregnant are naughty, agree (%)	81.0 - 100.0	93.1 (5.0)	95.8 (92.0 - 96.0)	87.5 - 100.0	95.4 (4.0)	96.0 (92.0 - 100.0)	84.0 - 96.0	90.7 (3.6)	91.7 (88.0 - 92.0)	83.3 - 100.0	91.6 (4.8)	92.0 (88.0 - 96.0)
It is acceptable for girls to have sex before marriage, agree (%)	0.0 - 8.0	3.0 (2.8)	4.0 (0.0 - 4.2)	0.0 - 16.0	4.0 (4.3)	4.0 (0.0 - 4.2)	0.0 - 4.0	1.1 (1.8)	0.0 (0.0 - 4.0)	0.0 - 16.0	7.0 (5.1)	8.0 (4.0 - 12.0)
It is acceptable for boys to have sex before marriage, agree (%)	0.0 - 8.0	2.7 (2.5)	4.0 (0.0 - 4.0)	0.0 - 16.0	4.8 (4.6)	4.0 (0.0 - 8.0)	0.0 - 4.0	1.6 (2.0)	0.0 (0.0 - 4.0)	0.0 - 16.0	7.2 (5.3)	8.0 (4.0 - 12.0)
I would like contraceptives/family planning services to be available to girls in my community, agree (%)	16.7 - 60.0	40.3 (11.8)	40.0 (29.2 - 50.0)	20.8 - 58.3	39.1 (11.0)	38.5 (29.2 - 45.8)	23.1 - 50.0	37.5 (8.3)	37.5 (32.0 - 44.0)	16.0 - 58.3	41.3 (12.2)	44.0 (32.0 - 50.0)
All girls have a right to access contraceptives/family planning services, agree (%)	20.0 - 64.0	48.6 (13.5)	54.2 (38.1 - 60.0)	20.0 - 70.8	43.4 (14.1)	40.0 (33.3 - 56.0)	20.0 - 52.2	39.0 (11.3)	37.5 (28.0 - 48.0)	24.0 - 56.0	47.2 (10.3)	50.0 (40.0 - 56.0)
Aware of any family planning services available to unmarried adolescent girls in your community, yes (%)	40.0 - 80.0	62.2 (10.9)	64.0 (56.0 - 70.8)	42.3 - 72.0	61.7 (9.2)	66.7 (56.0 - 69.2)	48.0 - 84.0	66.4 (11.1)	64.0 (56.0 - 80.0)	40.0 - 92.0	70.1 (13.2)	70.8 (64.0 - 84.0)
Norms												
A girl who has no money for school fees should marry, agree (%)	0.0 - 20.0	7.8 (6.9)	4.3 (4.0 - 16.0)	0.0 - 24.0	9.7 (8.2)	12.0 (0.0 - 16.0)	0.0 - 16.0	4.5 (4.7)	4.0 (0.0 - 8.0)	4.0 - 24.0	11.9 (6.1)	8.0 (8.0 - 16.7)
A girl who gets pregnant should marry, agree (%)	8.0 - 58.3	22.3 (14.1)	20.0 (8.3 - 32.0)	9.1 - 48.0	26.5 (13.1)	26.9 (12.5 - 34.8)	8.0 - 48.0	23.7 (11.6)	20.0 (15.4 - 32.0)	16.0 - 41.7	29.7 (9.0)	28.0 (24.0 - 37.5)
It is wrong to marry a girl before the age of 18, agree (%)	88.0 - 100.0	94.6 (4.2)	95.8 (92.0 - 96.0)	80.8 - 100.0	91.6 (6.4)	96.0 (84.0 - 96.0)	84.0 - 100.0	93.9 (4.8)	96.0 (92.0 - 96.2)	72.0 - 100.0	89.0 (8.3)	92.0 (80.0 - 96.0)
A girl should have a say in who she marries, agree (%)	92.0 - 100.0	97.8 (2.6)	100.0 (96.0 - 100.0)	88.0 - 100.0	95.2 (4.1)	96.0 (92.0 - 100.0)	91.7 - 100.0	95.7 (3.6)	96.0 (92.0 - 100.0)	79.2 - 100.0	92.3 (5.9)	92.0 (87.5 - 96.0)
A girl should have a say in when she marries, agree (%)	80.0 - 100.0	93.7 (6.1)	95.8 (90.5 - 100.0)	75.0 - 100.0	90.6 (6.8)	92.0 (88.0 - 95.8)	76.0 - 95.8	87.2 (5.0)	88.0 (87.5 - 88.5)	76.0 - 100.0	87.8 (6.7)	87.5 (84.0 - 92.0)
Practices												
The initiation camps are necessary to prepare girls for marriage, agree (%)	8.3 - 41.7	25.1 (9.2)	25.0 (16.7 - 32.0)	13.6 - 66.7	35.4 (12.7)	34.8 (26.1 - 41.7)	16.0 - 56.0	33.8 (11.2)	36.0 (24.0 - 41.7)	28.0 - 56.0	42.3 (7.6)	41.7 (37.5 - 48.0)

	Control arm (Nazombe)			Empower girls (Chiwalo)			CSO (Mchiramwera)			Empower girls and CSO (Changata)		
Variable	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)
Once a girl has attended an initiation camp, she must have sex, agree (%)	0.0 - 20.8	8.7 (6.9)	8.7 (4.2 - 16.0)	4.2 - 41.7	13.9 (9.2)	9.1 (8.7 - 18.2)	0.0 - 32.0	10.3 (9.7)	8.3 (4.2 - 16.0)	4.0 - 28.0	12.7 (7.0)	12.0 (8.0 - 20.0)
If a girl does not attend an initiation camp, she is unfit to marry, agree (%)	8.3 - 40.0	20.9 (8.1)	21.7 (16.0 - 25.0)	4.3 - 38.1	21.3 (8.1)	21.7 (16.7 - 25.0)	12.0 - 66.7	46.7 (15.0)	54.2 (33.3 - 58.3)	32.0 - 75.0	54.3 (11.1)	56.0 (48.0 - 60.0)

Appendix 3: Summary statistics of community-level characteristics, norms and practices, by arm at endline

Table A 2: Summary statistics of community level characteristics, norms and practices, by arm at endline

Variable	Control arm (Nazombe)			Empower girls (Chiwalo)			CSO (Mchiramwera)			Empower girls and CSO (Changata)		
	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)
Sociodemographic characteristics												
Female (%)	50.0 - 87.5	73.6 (9.7)	76.0 (68.0 - 80.0)	56.0 - 88.0	73.6 (10.3)	73.9 (64.0 - 84.0)	50.0 - 92.0	73.9 (10.6)	76.0 (68.0 - 80.0)	58.3 - 92.0	73.0 (9.7)	72.0 (64.0 - 80.0)
34+ years (%)	45.8 - 80.0	62.9 (8.8)	64.0 (56.0 - 68.0)	52.0 - 88.0	68.1 (10.6)	70.8 (60.0 - 76.0)	40.0 - 84.0	65.6 (13.2)	68.0 (60.0 - 76.0)	40.0 - 84.0	66.7 (12.3)	66.7 (60.0 - 79.2)
Married (%)	52.0 - 91.7	71.9 (10.2)	72.0 (64.0 - 76.0)	44.0 - 83.3	65.1 (10.1)	66.7 (60.0 - 72.0)	28.0 - 84.0	65.9 (14.4)	66.7 (62.5 - 76.0)	44.0 - 76.0	60.1 (10.6)	62.5 (48.0 - 68.0)
Secondary or higher (%)	56.0 - 88.0	74.4 (9.4)	75.0 (68.0 - 80.0)	52.0 - 84.0	65.6 (8.5)	64.0 (60.0 - 72.0)	40.0 - 88.0	66.9 (13.5)	68.0 (56.0 - 76.0)	44.0 - 88.0	67.7 (12.3)	66.7 (56.0 - 79.2)
Employment, yes (%)	29.2 - 83.3	61.5 (14.2)	60.0 (56.0 - 72.0)	41.7 - 80.0	63.3 (11.7)	64.0 (56.0 - 72.0)	40.0 - 80.0	62.1 (11.9)	62.5 (52.0 - 72.0)	29.2 - 64.0	46.3 (11.0)	45.8 (36.0 - 56.0)
Ethnic group, Lomwe (%)	83.3 - 100.0	91.1 (4.9)	92.0 (88.0 - 92.0)	79.2 - 100.0	93.5 (6.4)	96.0 (88.0 - 100.0)	52.0 - 92.0	76.7 (12.5)	76.0 (68.0 - 91.7)	52.0 - 92.0	68.8 (11.8)	68.0 (60.0 - 79.2)
Primary outcome												
Knowledge of national laws, yes (%)	75.0 - 100.0	89.5 (7.2)	92.0 (88.0 - 92.0)	79.2 - 100.0	91.2 (5.2)	91.7 (88.0 - 96.0)	72.0 - 96.0	89.8 (7.1)	92.0 (87.5 - 96.0)	56.0 - 95.8	81.5 (10.4)	80.0 (76.0 - 91.7)
Knowledge of national laws (sensitivity), yes (%)	75.0 - 100.0	89.2 (6.8)	91.7 (88.0 - 92.0)	79.2 - 100.0	91.2 (5.2)	91.7 (88.0 - 96.0)	72.0 - 96.0	89.8 (7.1)	92.0 (87.5 - 96.0)	56.0 - 95.8	81.0 (10.8)	80.0 (76.0 - 91.7)
Knowledge of national law(s) - Score	2.75 - 4.52	3.97 (0.48)	4.08 (3.80 - 4.33)	3.58 - 5.25	4.04 (0.40)	3.96 (3.76 - 4.16)	3.40 - 5.12	4.35 (0.50)	4.40 (3.92 - 4.76)	2.80 - 4.58	3.82 (0.49)	3.92 (3.36 - 4.12)
Empirical and normative expectations												
Most girls in this community marry before the age of 18, agree (%)	72.0 - 88.0	80.7 (6.0)	80.0 (76.0 - 88.0)	40.0 - 92.0	76.3 (13.6)	80.0 (69.6 - 80.0)	87.5 - 100.0	93.3 (4.2)	92.0 (88.0 - 96.0)	66.7 - 100.0	89.2 (8.8)	92.0 (83.3 - 95.8)
Most people in this community expect girls to marry before the age of 18, agree (%)	0.0 - 68.0	42.2 (15.6)	40.0 (40.0 - 48.0)	16.0 - 60.0	35.6 (13.2)	36.0 (25.0 - 47.8)	32.0 - 76.0	47.0 (12.1)	44.0 (40.0 - 52.0)	33.3 - 60.0	47.4 (9.0)	52.0 (40.0 - 56.0)
My family will not be respected in the community, agree (%)	0.0 - 48.0	27.1 (13.2)	28.0 (24.0 - 33.3)	12.5 - 47.8	26.8 (11.5)	20.0 (16.7 - 40.0)	16.0 - 56.0	29.3 (10.4)	28.0 (20.0 - 36.0)	12.0 - 36.0	21.5 (8.2)	20.0 (12.5 - 28.0)
Score of expectations and sanctions (Mean)	4.56 - 10.16	6.74 (1.26)	6.60 (6.16 - 7.20)	5.12 - 10.36	7.38 (1.39)	7.08 (6.30 - 8.00)	3.48 - 7.28	5.92 (0.89)	6.13 (5.52 - 6.28)	5.08 - 8.29	6.26 (0.90)	6.12 (5.41 - 6.60)
SRH secondary outcomes												
Unmarried adolescent girls should have access to contraception/FP services, agree (%)	28.0 - 58.3	40.9 (9.8)	40.0 (32.0 - 52.0)	16.0 - 66.7	40.2 (17.4)	40.0 (24.0 - 60.0)	12.0 - 52.0	33.4 (11.3)	36.0 (24.0 - 40.0)	16.7 - 60.0	38.4 (13.9)	40.0 (28.0 - 48.0)
Married ado girls should have access to contraception/FP services, agree (%)	72.0 - 100.0	90.0 (8.0)	88.0 (84.0 - 100.0)	60.0 - 100.0	85.4 (9.4)	84.0 (84.0 - 92.0)	72.0 - 100.0	89.2 (7.9)	88.0 (83.3 - 96.0)	66.7 - 95.8	83.6 (7.9)	84.0 (80.0 - 88.0)

Variable	Control arm (Nazombe)			Empower girls (Chiwalo)			CSO (Mchiramwera)			Empower girls and CSO (Changata)		
	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)
Giving unmarried girls access to contraceptives makes them promiscuous, agree (%)	76.0 - 96.0	87.1 (6.3)	88.0 (83.3 - 92.0)	68.0 - 96.0	82.8 (9.2)	84.0 (76.0 - 92.0)	68.0 - 92.0	82.8 (7.3)	83.3 (76.0 - 88.0)	72.0 - 96.0	87.3 (6.8)	88.0 (84.0 - 92.0)
Unmarried girls who get pregnant are naughty, agree (%)	87.5 - 100.0	93.8 (4.0)	95.8 (91.7 - 96.0)	91.3 - 100.0	95.2 (2.7)	96.0 (92.0 - 96.0)	84.0 - 100.0	94.4 (5.4)	96.0 (92.0 - 100.0)	84.0 - 100.0	94.1 (5.2)	95.8 (88.0 - 100.0)
It is acceptable for girls to have sex before marriage, agree (%)	0.0 - 8.0	1.6 (2.5)	0.0 (0.0 - 4.0)	0.0 - 12.0	2.9 (3.8)	0.0 (0.0 - 4.0)	0.0 - 12.0	4.0 (4.0)	4.0 (0.0 - 8.0)	0.0 - 16.0	5.4 (4.7)	4.2 (0.0 - 8.0)
It is acceptable for boys to have sex before marriage, agree (%)	0.0 - 8.0	2.4 (3.3)	0.0 (0.0 - 4.2)	0.0 - 12.0	3.2 (4.1)	0.0 (0.0 - 8.0)	0.0 - 12.0	4.3 (4.2)	4.0 (0.0 - 8.3)	0.0 - 16.0	6.2 (5.0)	4.2 (4.0 - 12.0)
I would like contraceptives/family planning services to be available to girls in my community, agree (%)	25.0 - 72.0	49.9 (13.8)	52.0 (40.0 - 60.0)	26.1 - 72.0	50.6 (13.0)	50.0 (40.0 - 64.0)	16.0 - 70.8	48.5 (16.1)	56.0 (40.0 - 60.0)	24.0 - 72.0	48.1 (14.3)	45.8 (37.5 - 60.0)
All girls have a right to access contraceptives/family planning services, agree (%)	40.0 - 76.0	54.8 (10.2)	56.0 (45.8 - 64.0)	16.0 - 72.0	51.7 (16.0)	53.3 (44.0 - 62.5)	32.0 - 68.0	49.8 (12.5)	48.0 (40.0 - 62.5)	24.0 - 80.0	55.2 (14.4)	56.0 (44.0 - 62.5)
Aware of any family planning services available to unmarried adolescent girls in your community, yes (%)	54.2 - 96.0	78.4 (11.0)	76.0 (72.0 - 88.0)	52.0 - 100.0	78.9 (13.5)	80.0 (65.2 - 90.9)	60.0 - 100.0	80.2 (10.6)	82.6 (72.0 - 88.0)	44.0 - 91.7	71.1 (12.4)	68.2 (62.5 - 84.0)
Norms												
A girl who has no money for school fees should marry, agree (%)	0.0 - 24.0	8.1 (6.4)	8.0 (4.0 - 12.0)	0.0 - 16.0	8.6 (4.0)	8.0 (6.7 - 12.0)	0.0 - 20.0	4.1 (5.5)	4.0 (0.0 - 8.0)	0.0 - 12.5	5.7 (5.0)	4.0 (0.0 - 12.0)
A girl who gets pregnant should marry, agree (%)	0.0 - 32.0	12.5 (7.6)	12.0 (8.0 - 16.7)	0.0 - 26.7	14.1 (7.3)	16.0 (8.0 - 16.7)	0.0 - 33.3	14.4 (9.1)	12.5 (8.0 - 20.0)	8.0 - 36.0	20.0 (9.2)	16.7 (12.0 - 26.1)
It is wrong to marry a girl before the age of 18, agree (%)	75.0 - 100.0	90.5 (8.4)	92.0 (84.0 - 96.0)	66.7 - 100.0	88.3 (10.8)	88.0 (84.0 - 100.0)	76.0 - 100.0	90.6 (7.5)	92.0 (87.5 - 96.0)	80.0 - 100.0	89.5 (6.6)	88.0 (84.0 - 95.8)
A girl should have a say in who she marries, agree (%)	45.8 - 88.0	76.7 (11.4)	80.0 (72.0 - 87.0)	48.0 - 88.0	71.1 (9.6)	70.8 (66.7 - 76.0)	75.0 - 100.0	82.9 (7.6)	80.0 (76.0 - 88.0)	70.8 - 100.0	84.2 (9.0)	88.0 (75.0 - 90.9)
A girl should have a say in when she marries, agree (%)	62.5 - 100.0	87.8 (10.2)	88.0 (83.3 - 95.8)	73.3 - 96.0	83.8 (6.5)	84.0 (78.3 - 88.0)	80.0 - 100.0	92.5 (6.5)	95.7 (88.0 - 96.0)	79.2 - 100.0	92.9 (5.7)	95.8 (92.0 - 96.0)

Variable	Control arm (Nazombe)			Empower girls (Chiwalo)			CSO (Mchiramwera)			Empower girls and CSO (Changata)		
	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)
Acceptable for a girl to drop out of school if pregnant, yes (%) (Endline only)	12.0 - 72.0	28.2 (15.7)	29.2 (16.0 - 36.0)	0.0 - 56.0	27.0 (15.0)	32.0 (16.0 - 36.0)	12.0 - 72.0	39.8 (16.9)	40.0 (25.0 - 50.0)	20.0 - 72.0	40.7 (13.2)	37.5 (32.0 - 44.0)
Acceptable for a girl to drop out of school if needs to support family, yes (%) (Endline only)	0.0 - 12.0	2.7 (4.2)	0.0 (0.0 - 4.0)	0.0 - 12.5	4.1 (3.8)	4.0 (0.0 - 8.0)	0.0 - 16.0	5.1 (5.5)	4.0 (0.0 - 8.0)	0.0 - 32.0	4.3 (8.5)	0.0 (0.0 - 4.2)
Acceptable for a girl to drop out of school if gets married, yes (%) (Endline only)	0.0 - 32.0	12.9 (11.2)	12.0 (4.0 - 20.8)	0.0 - 40.0	18.1 (9.6)	16.0 (12.0 - 24.0)	0.0 - 28.0	14.0 (9.0)	12.0 (8.0 - 24.0)	0.0 - 29.2	11.9 (8.8)	8.0 (4.0 - 16.7)
Practices												
The initiation camps are necessary to prepare girls for marriage, agree (%)	10.0 - 50.0	32.5 (11.6)	31.8 (24.0 - 42.1)	16.0 - 56.5	31.9 (11.4)	28.6 (21.7 - 38.5)	12.5 - 64.0	34.3 (12.5)	33.3 (26.1 - 41.7)	12.0 - 50.0	33.7 (10.9)	36.0 (23.8 - 43.5)
Once a girl has attended an initiation camp, she must have sex, agree (%)	0.0 - 26.1	9.6 (7.3)	8.7 (4.2 - 16.0)	0.0 - 23.1	9.9 (9.3)	8.0 (0.0 - 21.7)	0.0 - 16.0	6.8 (5.4)	4.3 (4.0 - 12.0)	0.0 - 16.0	6.4 (4.0)	8.0 (4.0 - 8.3)
If a girl does not attend an initiation camp, she is unfit to marry, agree (%)	8.7 - 59.1	27.3 (12.8)	28.0 (16.7 - 35.0)	8.3 - 40.9	20.8 (9.9)	18.2 (13.0 - 28.0)	26.1 - 92.0	56.7 (15.3)	54.2 (52.2 - 66.7)	36.0 - 81.8	55.2 (14.2)	48.0 (44.0 - 62.5)
Impact of COVID												
Daily life for me and my family changed to better during the COVID-19 global pandemic (%)	0.0 - 12.0	0.8 (3.1)	0.0 (0.0 - 0.0)	0.0 - 8.3	1.9 (3.0)	0.0 (0.0 - 4.0)	0.0 - 4.0	0.5 (1.4)	0.0 (0.0 - 0.0)	0.0 - 8.3	1.1 (2.4)	0.0 (0.0 - 0.0)
Daily life for me and my family did not change during the COVID-19 global pandemic (%)	16.0 - 56.0	31.9 (13.0)	28.0 (24.0 - 40.0)	4.0 - 56.0	27.5 (15.0)	28.0 (12.5 - 40.0)	8.0 - 58.3	26.1 (12.8)	24.0 (16.7 - 29.2)	8.0 - 56.0	29.6 (14.7)	28.0 (20.0 - 40.0)
Daily life for me and my family changed to worse during the COVID-19 global pandemic (%)	36.0 - 68.0	54.6 (11.6)	60.0 (40.0 - 64.0)	40.0 - 72.0	56.1 (9.9)	56.0 (52.0 - 64.0)	33.3 - 92.0	60.2 (14.4)	60.0 (52.0 - 68.0)	24.0 - 72.0	50.2 (14.3)	52.0 (40.0 - 64.0)
Fewer girls participate in initiation camps in this community due to COVID-19 pandemic (%)	60.0 - 100.0	78.2 (11.6)	76.0 (68.0 - 88.0)	45.8 - 100.0	76.8 (19.2)	79.2 (60.0 - 92.0)	32.0 - 92.0	62.3 (16.4)	58.3 (50.0 - 80.0)	16.0 - 56.0	32.6 (10.0)	29.2 (28.0 - 40.0)

Variable	Control arm (Nazombe)			Empower girls (Chiwalo)			CSO (Mchiramwera)			Empower girls and CSO (Changata)		
	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)
More girls participate in initiation camps in this community due to COVID-19 pandemic (%)	0.0 - 8.3	5.4 (2.5)	4.0 (4.0 - 8.0)	0.0 - 8.3	2.6 (2.8)	4.0 (0.0 - 4.2)	0.0 - 33.3	13.8 (9.2)	12.0 (8.0 - 20.8)	4.0 - 44.0	24.2 (13.3)	25.0 (12.0 - 36.0)
The same number of girls participate in initiation camps in this community due to COVID-19 pandemic (%)	0.0 - 36.0	14.8 (10.3)	16.0 (4.0 - 20.8)	0.0 - 44.0	16.8 (16.9)	12.5 (0.0 - 36.0)	0.0 - 56.0	23.3 (15.5)	20.0 (12.5 - 28.0)	16.0 - 68.0	42.4 (15.7)	37.5 (36.0 - 56.0)
Fewer girls access education in this community due to COVID-19 pandemic (%)	48.0 - 96.0	71.7 (18.6)	70.8 (52.0 - 92.0)	36.0 - 92.0	72.0 (14.9)	75.0 (64.0 - 84.0)	58.3 - 100.0	83.5 (11.7)	84.0 (80.0 - 92.0)	62.5 - 92.0	76.0 (9.2)	76.0 (68.0 - 80.0)
More girls access education in this community due to COVID-19 pandemic (%)	0.0 - 40.0	19.9 (13.6)	20.0 (8.0 - 32.0)	4.3 - 44.0	19.9 (10.0)	20.0 (12.0 - 28.0)	0.0 - 25.0	8.9 (7.5)	8.0 (4.0 - 16.0)	0.0 - 29.2	10.5 (9.1)	12.0 (0.0 - 16.0)
The same number of girls access education in this community due to COVID-19 pandemic (%)	0.0 - 25.0	8.4 (7.9)	8.0 (4.0 - 12.0)	0.0 - 36.0	8.1 (9.6)	4.0 (0.0 - 12.5)	0.0 - 16.7	7.3 (5.4)	8.0 (4.0 - 12.0)	4.0 - 24.0	12.9 (5.3)	12.0 (8.3 - 16.0)
Fewer girls access to and use of contraceptive services in your community due to COVID-19 pandemic (%)	16.0 - 72.0	42.4 (15.4)	44.0 (29.2 - 52.0)	20.0 - 76.0	48.3 (18.0)	52.0 (29.2 - 64.0)	28.0 - 72.0	42.8 (11.5)	40.0 (32.0 - 45.8)	16.0 - 52.0	34.3 (9.8)	36.0 (25.0 - 41.7)
More girls access to and use of contraceptive services in your community due to COVID-19 pandemic (%)	0.0 - 48.0	22.4 (14.3)	25.0 (8.0 - 33.3)	4.0 - 44.0	18.6 (12.5)	24.0 (8.0 - 26.7)	0.0 - 36.0	15.6 (11.6)	16.0 (4.0 - 25.0)	4.0 - 28.0	14.5 (8.5)	12.0 (8.0 - 24.0)
The same number of girls access to and use of contraceptive services in your community due to COVID-19 pandemic (%)	8.0 - 52.0	31.2 (14.1)	29.2 (20.0 - 44.0)	6.7 - 52.0	28.5 (12.6)	26.1 (20.0 - 37.5)	12.0 - 60.0	39.0 (13.9)	44.0 (24.0 - 52.0)	24.0 - 68.0	44.0 (12.8)	40.0 (36.0 - 56.0)
Have you experienced any of the following - Other (Illness) (%)	0.0 - 0.0	0.0 (0.0)	0.0 (0.0 - 0.0)	0.0 - 0.0	0.0 (0.0)	0.0 (0.0 - 0.0)	0.0 - 0.0	0.0 (0.0)	0.0 (0.0 - 0.0)	0.0 - 4.0	0.5 (1.4)	0.0 (0.0 - 0.0)
Have you experienced any of the following - None (Illness) (%)	40.0 - 80.0	64.0 (10.2)	64.0 (60.0 - 70.8)	33.3 - 72.0	52.5 (10.2)	53.3 (44.0 - 60.0)	41.7 - 84.0	62.6 (12.0)	62.5 (56.0 - 68.0)	37.5 - 83.3	59.5 (12.1)	60.0 (52.0 - 64.0)
Have you experienced any of the following -	16.0 - 56.0	30.6 (11.1)	29.2 (20.0 - 36.0)	20.0 - 56.0	42.4 (8.7)	41.7 (40.0 - 50.0)	16.0 - 56.0	33.6 (10.9)	32.0 (28.0 - 40.0)	16.0 - 50.0	32.9 (11.1)	32.0 (24.0 - 40.0)

Variable	Control arm (Nazombe)			Empower girls (Chiwalo)			CSO (Mchiramwera)			Empower girls and CSO (Changata)		
	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)
Inability to get health services (%)												
Have you experienced any of the following - Illness in family (%)	0.0 - 16.0	6.4 (5.2)	8.0 (0.0 - 12.0)	0.0 - 28.0	13.7 (8.1)	12.5 (8.0 - 20.8)	0.0 - 16.0	5.9 (5.8)	8.0 (0.0 - 8.3)	0.0 - 20.8	8.7 (6.0)	8.0 (4.0 - 12.5)
Have you experienced any of the following - Illness in self (%)	0.0 - 16.0	7.2 (5.1)	8.0 (4.0 - 12.0)	0.0 - 25.0	11.3 (7.1)	12.0 (6.7 - 16.7)	0.0 - 16.0	5.4 (4.5)	4.2 (0.0 - 8.0)	0.0 - 20.0	8.7 (6.2)	8.0 (4.0 - 12.5)
Have you experienced any of the following - Felt lonely (%)	29.2 - 72.0	51.8 (11.8)	50.0 (44.0 - 64.0)	36.0 - 73.3	51.1 (10.5)	48.0 (45.8 - 60.0)	32.0 - 72.0	45.6 (10.6)	44.0 (37.5 - 52.0)	24.0 - 54.2	38.9 (9.9)	40.0 (32.0 - 48.0)
Have you experienced any of the following - Lost friendships (%)	4.0 - 64.0	36.7 (18.8)	33.3 (20.0 - 56.0)	8.0 - 56.0	38.6 (13.4)	40.0 (28.0 - 48.0)	24.0 - 64.0	36.8 (11.5)	36.0 (28.0 - 44.0)	8.0 - 52.0	33.0 (14.4)	32.0 (16.7 - 50.0)
Have you experienced any of the following - Had a child delayed in school (%)	79.2 - 100.0	95.1 (7.6)	100.0 (88.0 - 100.0)	83.3 - 100.0	95.6 (5.9)	100.0 (88.0 - 100.0)	88.0 - 100.0	95.2 (3.8)	96.0 (92.0 - 96.0)	68.0 - 100.0	92.7 (8.6)	96.0 (91.7 - 100.0)
Have you experienced any of the following - Refused (%)	0.0 - 0.0	0.0 (0.0)	0.0 (0.0 - 0.0)	0.0 - 0.0	0.0 (0.0)	0.0 (0.0 - 0.0)	0.0 - 0.0	0.0 (0.0)	0.0 (0.0 - 0.0)	0.0 - 4.0	0.3 (1.0)	0.0 (0.0 - 0.0)
Have you experienced any of the following - Other (Personal) (%)	0.0 - 4.0	0.3 (1.0)	0.0 (0.0 - 0.0)	0.0 - 0.0	0.0 (0.0)	0.0 (0.0 - 0.0)	0.0 - 0.0	0.0 (0.0)	0.0 (0.0 - 0.0)	0.0 - 4.0	0.3 (1.0)	0.0 (0.0 - 0.0)
Have you experienced any of the following - None (Personal) (%)	0.0 - 41.7	18.9 (11.7)	16.0 (8.0 - 29.2)	0.0 - 24.0	9.9 (7.4)	8.0 (4.0 - 16.0)	0.0 - 40.0	19.4 (10.5)	20.0 (12.0 - 28.0)	8.0 - 32.0	20.7 (7.6)	24.0 (16.0 - 25.0)
Have you experienced any of the following - Someone in family felt ill (%)	0.0 - 28.0	11.3 (9.1)	12.0 (0.0 - 16.0)	0.0 - 24.0	8.2 (7.0)	8.0 (4.0 - 16.0)	0.0 - 32.0	10.7 (7.9)	8.0 (8.0 - 16.0)	0.0 - 24.0	10.3 (7.6)	8.0 (4.0 - 16.7)
Have you experienced any of the following - Difficulties in eating and sleeping (%)	28.0 - 72.0	49.1 (13.6)	52.0 (33.3 - 60.0)	20.0 - 72.0	52.0 (13.4)	56.0 (45.8 - 60.0)	8.3 - 64.0	37.8 (15.4)	36.0 (24.0 - 48.0)	12.0 - 48.0	31.6 (10.4)	32.0 (24.0 - 41.7)
Have you experienced any of the following - Felt stressed losing income (%)	44.0 - 87.5	68.0 (13.7)	70.8 (56.0 - 80.0)	50.0 - 92.0	72.1 (10.5)	73.9 (64.0 - 80.0)	44.0 - 84.0	69.4 (13.2)	72.0 (64.0 - 80.0)	40.0 - 79.2	59.9 (11.7)	56.0 (52.0 - 75.0)
Have you experienced any of the following - Felt stressed (%)	33.3 - 92.0	69.3 (15.2)	72.0 (60.0 - 83.3)	64.0 - 96.0	80.9 (8.7)	80.0 (75.0 - 88.0)	48.0 - 80.0	66.2 (9.8)	68.0 (60.0 - 75.0)	48.0 - 83.3	66.1 (8.5)	68.0 (60.0 - 70.8)

Variable	Control arm (Nazombe)			Empower girls (Chiwalo)			CSO (Mchiramwera)			Empower girls and CSO (Changata)		
	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)
Have you experienced any of the following - Had a sick friend (%)	0.0 - 16.0	9.4 (5.4)	8.3 (4.0 - 16.0)	0.0 - 20.0	7.2 (7.5)	6.7 (0.0 - 12.5)	0.0 - 20.0	9.1 (6.3)	8.3 (4.0 - 12.0)	0.0 - 20.0	8.6 (6.3)	8.0 (4.0 - 16.0)
Have you experienced any of the following - Lost family (%)	0.0 - 28.0	14.0 (8.0)	16.0 (8.3 - 16.7)	0.0 - 44.0	14.5 (12.0)	12.5 (4.0 - 24.0)	0.0 - 36.0	19.4 (9.6)	20.0 (16.0 - 24.0)	8.0 - 28.0	18.6 (5.9)	20.0 (16.0 - 24.0)
Have you experienced any of the following - Other (Finance) (%)	0.0 - 0.0	0.0 (0.0)	0.0 (0.0 - 0.0)	0.0 - 4.0	0.3 (1.0)	0.0 (0.0 - 0.0)	0.0 - 4.0	0.3 (1.0)	0.0 (0.0 - 0.0)	0.0 - 4.0	1.1 (1.8)	0.0 (0.0 - 4.0)
Have you experienced any of the following - Financial hardship (%)	84.0 - 100.0	96.5 (6.1)	100.0 (88.0 - 100.0)	84.0 - 100.0	95.9 (5.5)	100.0 (91.7 - 100.0)	80.0 - 100.0	94.6 (5.8)	96.0 (91.7 - 100.0)	80.0 - 100.0	91.1 (5.3)	92.0 (88.0 - 95.8)
Have you experienced any of the following - Lost job or business (%)	16.0 - 68.0	35.9 (18.2)	25.0 (20.0 - 52.0)	4.0 - 64.0	28.1 (19.9)	25.0 (8.0 - 44.0)	32.0 - 88.0	50.8 (16.6)	52.0 (36.0 - 60.0)	12.0 - 44.0	28.9 (9.7)	29.2 (20.0 - 36.0)
Have you experienced any of the following - Increases in food prices (%)	70.8 - 100.0	91.6 (10.2)	96.0 (92.0 - 100.0)	80.0 - 100.0	93.5 (7.4)	96.0 (87.5 - 100.0)	76.0 - 100.0	89.2 (8.2)	92.0 (80.0 - 96.0)	68.0 - 100.0	85.4 (10.6)	87.5 (75.0 - 92.0)
Have you experienced any of the following - Travel expenses (%)	68.0 - 96.0	83.5 (9.9)	84.0 (75.0 - 92.0)	62.5 - 100.0	82.2 (12.8)	88.0 (68.0 - 92.0)	72.0 - 100.0	90.0 (9.8)	88.0 (83.3 - 100.0)	56.0 - 88.0	72.5 (8.1)	72.0 (68.0 - 76.0)
Have you experienced any of the following - Increased prices (%)	48.0 - 96.0	74.6 (17.8)	72.0 (56.0 - 92.0)	48.0 - 92.0	71.7 (13.7)	68.0 (62.5 - 88.0)	68.0 - 100.0	90.0 (10.7)	92.0 (79.2 - 100.0)	60.0 - 100.0	82.0 (12.5)	79.2 (72.0 - 95.8)

Appendix 4: Cluster-level DiD analysis, looking at the impact of ENGAGE on primary outcomes

Table A 3: Cluster-level DiD analysis, looking at the impact of ENGAGE on primary outcomes

Variable	Baseline (Mean %)	Endline (Mean %)	Difference at baseline (%)	Difference at endline (%)	Unadjusted DiD estimator (%*) (95% CI)	Adjusted** DiD estimator (%*) (95% CI)
Knowledge of national laws						
Control - Nazombe	51.4	89.5				
Arm 1 (Empower girls) - Chiwalo	50.5	91.2	-0.9	1.7	2.7 (-7.2-13.7)	5.4 (-5.6-17.5)
Arm 2 (CSO) - Mchiramwera	48.3	89.8	-3.1	0.3	3.4 (-6.6-14.5)	4.1 (-6.2-15.5)
Arm 3 (Empower girls and CSO) - Changata	50.6	81.5	-0.8	-8	-6.9 (-15.9-3.0)	-6.0 (-15.1-4.1)
Most girls in this community marry before the age of 18, agree (%)						
Control - Nazombe	82.8	80.7				
Arm 1 (Empower girls) - Chiwalo	84.9	76.3	2.1	-4.4	-6.3 (-14.3-2.5)	-6.2 (-14.8-3.3)
Arm 2 (CSO) - Mchiramwera	94.1	93.3	11.3	12.6	1.3 (-7.3-10.8)	1.4 (-7.5-11.2)
Arm 3 (Empower girls and CSO) - Changata	95.1	89.2	12.3	8.5	-3.7 (-12.0-5.3)	-2.8 (-11.2-6.4)
Most people in this community expect girls to marry before the age of 18, agree (%)						
Control - Nazombe	48.1	42.2				
Arm 1 (Empower girls) - Chiwalo	53.7	35.6	5.6	-6.6	-11.4 (-22.2-0.9)	-10.5 (-22.3-3.1)
Arm 2 (CSO) - Mchiramwera	48.5	47	0.4	4.8	4.6 (-8.1-19.1)	4.8 (-8.4-20.0)
Arm 3 (Empower girls and CSO) - Changata	62.7	47.4	14.6	5.2	-8.9 (-20.0-3.7)	-9.1 (-20.4-3.8)
If I don't ensure my daughters and/or nieces are married early, my family will not be respected in the community, agree (%)						
Control - Nazombe	23.9	27.1				
Arm 1 (Empower girls) - Chiwalo	54.1	26.8	30.2	-0.3	-26.3 (-34.4 - -17.1)	-25.5 (-34.3 - -15.5)
Arm 2 (CSO) - Mchiramwera	31.1	29.3	7.2	2.2	-4.9 (-15.4-6.9)	-2.4 (-13.4-10.0)
Arm 3 (Empower girls and CSO) - Changata	36.7	21.5	12.8	-5.6	-16.8 (-26.0 - -6.5)	-17.2 (-26.4 - -6.9)

CSO: Civil society organization.

*DiD estimator was converted into percent change using the formula $[\exp(\theta)-1] * 100$, where θ is the regression coefficient obtained from the DiD regression model.

**Models adjusted for age, education, ethnicity, and marital status.

Appendix 5: Cluster-level DiD analysis, looking at the impact of ENGAGE on SRHR outcomes

Table A 4: Cluster-level DiD analysis, looking at the impact of ENGAGE on SRHR outcomes

Variable	Baseline (Mean %)	Endline (Mean %)	Difference at baseline (%)	Difference at endline (%)	Unadjusted DiD estimator (%*) (95% CI)	Adjusted** DiD estimator (%*) (95% CI)
Unmarried adolescent girls should have access to contraception/FP services, agree (%)						
Control - Nazombe	35	40.9				
Arm 1 (Empower girls) - Chiwalo	39.2	40.2	4.2	-0.7	-4.8 (-16.3-8.4)	0.1 (-12.8-15.0)
Arm 2 (CSO) - Mchiramwera	32.6	33.4	-2.4	-7.5	-5.0 (-16.5-8.2)	-4.4 (-16.2-9.2)
Arm 3 (Empower girls and CSO) - Changata	44.6	38.4	9.6	-2.5	-11.4 (-22.1-0.9)	-11.1 (-21.9-1.2)
Married adolescent girls should have access to contraception/FP services, agree (%)						
Control - Nazombe	96.4	90				
Arm 1 (Empower girls) - Chiwalo	95.9	85.4	-0.5	-4.6	-4.0 (-11.2-3.7)	-5.7 (-13.0-2.2)
Arm 2 (CSO) - Mchiramwera	94.6	89.2	-1.8	-0.8	0.9 (-6.6-9.1)	2.3 (-5.2-10.4)
Arm 3 (Empower girls and CSO) - Changata	91.4	83.6	-5	-6.4	-1.5 (-8.8-6.5)	-0.5 (-7.7-7.2)
Giving unmarried girls access to contraceptives makes them promiscuous, agree (%)						
Control - Nazombe	82.8	87.1				
Arm 1 (Empower girls) - Chiwalo	84.6	82.8	1.8	-4.3	-6.1 (-13.2-1.6)	-5.7 (-13.4-2.7)
Arm 2 (CSO) - Mchiramwera	76.7	82.8	-6.1	-4.3	1.7 (-6.0-10.0)	0.9 (-7.0-9.5)
Arm 3 (Empower girls and CSO) - Changata	74.6	87.3	-8.2	0.2	8.7 (0.5-17.6)	8.3 (-0.0-17.3)
Unmarried girls who get pregnant are naughty, agree (%)						
Control - Nazombe	93.1	93.8				
Arm 1 (Empower girls) - Chiwalo	95.4	95.2	2.3	1.4	-1.0 (-5.3-3.6)	-1.3 (-5.9-3.5)
Arm 2 (CSO) - Mchiramwera	90.7	94.4	-2.4	0.6	3.0 (-1.5-7.8)	4.0 (-0.7-8.8)
Arm 3 (Empower girls and CSO) - Changata	91.6	94.1	-1.5	0.3	1.8 (-2.7-6.5)	2.2 (-2.3-6.9)

Variable	Baseline (Mean %)	Endline (Mean %)	Difference at baseline (%)	Difference at endline (%)	Unadjusted DiD estimator (%*) (95% CI)	Adjusted** DiD estimator (%*) (95% CI)
It is acceptable for girls to have sex before marriage, agree (%)						
Control - Nazombe	3	1.6				
Arm 1 (Empower girls) - Chiwalo	4	2.9	1.1	1.3	0.3 (-3.5-4.3)	1.1 (-3.1-5.5)
Arm 2 (CSO) - Mchiramwera	1.1	4	-1.8	2.4	4.4 (0.4-8.6)	4.8 (0.6-9.1)
Arm 3 (Empower girls and CSO) - Changata	7	5.4	4.1	3.8	-0.2 (-4.0-3.7)	-0.4 (-4.3-3.6)
It is acceptable for boys to have sex before marriage, agree (%)						
Control - Nazombe	2.7	2.4				
Arm 1 (Empower girls) - Chiwalo	4.8	3.2	2.1	0.8	-1.3 (-5.3-2.9)	-1.1 (-5.4-3.4)
Arm 2 (CSO) - Mchiramwera	1.6	4.3	-1.1	1.9	3.0 (-1.1-7.4)	2.8 (-1.5-7.2)
Arm 3 (Empower girls and CSO) - Changata	7.2	6.2	4.5	3.8	-0.8 (-4.8-3.4)	-1.1 (-5.1-3.1)
I would like contraceptives/family planning services to be available to girls in my community, agree (%)						
Control - Nazombe	40.3	49.9				
Arm 1 (Empower girls) - Chiwalo	39.1	50.6	-1.2	0.7	2.0 (-10.4-16.2)	6.7 (-7.4-22.8)
Arm 2 (CSO) - Mchiramwera	37.5	48.5	-2.8	-1.4	1.4 (-11.0-15.5)	3.1 (-9.9-17.9)
Arm 3 (Empower girls and CSO) - Changata	41.3	48.1	1	-1.8	-2.7 (-14.6-10.8)	-3.5 (-15.4-10.0)
All girls have a right to access contraceptives/family planning services, agree (%)						
Control - Nazombe	48.6	54.8				
Arm 1 (Empower girls) - Chiwalo	43.4	51.7	-5.2	-3.1	2.2 (-10.5-16.6)	4.0 (-10.0-20.1)
Arm 2 (CSO) - Mchiramwera	39	49.8	-9.6	-5	4.8 (-8.2-19.7)	4.8 (-8.7-20.3)
Arm 3 (Empower girls and CSO) - Changata	47.2	55.2	-1.4	0.4	1.9 (-10.8-16.3)	2.1 (-10.8-16.8)

Variable	Baseline (Mean %)	Endline (Mean %)	Difference at baseline (%)	Difference at endline (%)	Unadjusted DiD estimator (%*) (95% CI)	Adjusted** DiD estimator (%*) (95% CI)
Aware of any family planning services available to unmarried adolescent girls in your community, yes (%)						
Control - Nazombe	62.2	78.4				
Arm 1 (Empower girls) - Chiwalo	61.7	78.9	-0.5	0.5	1.0 (-10.3-13.7)	-1.3 (-13.2-12.2)
Arm 2 (CSO) - Mchiramwera	66.4	80.2	4.2	1.8	-2.4 (-13.3-9.8)	-2.9 (-14.1-9.8)
Arm 3 (Empower girls and CSO) - Changata	70.1	71.1	7.9	-7.3	-14.2 (-23.8 - -3.4)	-14.0 (-23.7 - -3.0)

CSO: Civil society organization.

*DiD estimator was converted into percent change using the formula $[\exp(\theta)-1] * 100$, where θ is the regression coefficient obtained from the DiD regression model.

**Models adjusted for age, education, ethnicity, and marital status.

Appendix 6: Cluster-level DID analysis, looking at the impact of ENGAGE on other norms and practices

Table A 5: Cluster-level DID analysis, looking at the impact of ENGAGE on other norms and practices

Variable	Baseline (Mean %)	Endline (Mean %)	Difference at baseline (%)	Difference at endline (%)	Unadjusted DiD estimator (%*) (95% CI)	Adjusted** DiD estimator (%*) (95% CI)
A girl who has no money for school fees should marry, agree (%)						
Control - Nazombe	7.8	8.1				
Arm 1 (Empower girls) - Chiwalo	9.7	8.6	1.9	0.5	-1.4 (-7.2-4.9)	0.6 (-5.9-7.5)
Arm 2 (CSO) - Mchiramwera	4.5	4.1	-3.3	-4	-0.7 (-6.6-5.6)	-0.2 (-6.3-6.3)
Arm 3 (Empower girls and CSO) - Changata	11.9	5.7	4.1	-2.4	-6.3 (-11.9 - -0.4)	-6.6 (-12.2 - -0.6)
A girl who gets pregnant should marry, agree (%)						
Control - Nazombe	22.3	12.5				
Arm 1 (Empower girls) - Chiwalo	26.5	14.1	4.2	1.6	-2.7 (-12.5-8.2)	0.1 (-10.7-12.1)
Arm 2 (CSO) - Mchiramwera	23.7	14.4	1.4	1.9	0.5 (-9.7-11.7)	1.0 (-9.4-12.6)
Arm 3 (Empower girls and CSO) - Changata	29.7	20	7.4	7.5	0.1 (-10.0-11.3)	-0.5 (-10.5-10.7)
It is wrong to marry a girl before the age of 18, agree (%)						
Control - Nazombe	94.6	90.5				
Arm 1 (Empower girls) - Chiwalo	91.6	88.3	-3	-2.2	0.8 (-6.6-8.7)	-3.0 (-10.5-5.1)
Arm 2 (CSO) - Mchiramwera	93.9	90.6	-0.7	0.1	0.8 (-6.5-8.7)	-0.3 (-7.7-7.6)
Arm 3 (Empower girls and CSO) - Changata	89	89.5	-5.6	-1	4.7 (-2.9-12.9)	4.7 (-2.9-12.8)
A girl should have a say in whom she marries, agree (%)						
Control - Nazombe	97.8	76.7				
Arm 1 (Empower girls) - Chiwalo	95.2	71.1	-2.6	-5.6	-3.0 (-10.0-4.6)	-4.3 (-11.8-3.9)
Arm 2 (CSO) - Mchiramwera	95.7	82.9	-2.1	6.2	8.7 (0.8-17.2)	8.2 (0.1-17.0)
Arm 3 (Empower girls and CSO) - Changata	92.3	84.2	-5.5	7.5	13.9 (5.7-22.8)	13.7 (5.3-22.7)

Variable	Baseline (Mean %)	Endline (Mean %)	Difference at baseline (%)	Difference at endline (%)	Unadjusted DiD estimator (%*) (95% CI)	Adjusted** DiD estimator (%*) (95% CI)
A girl should have a say in when she marries, agree (%)						
Control - Nazombe	93.7	87.8				
Arm 1 (Empower girls) - Chiwalo	90.6	83.8	-3.1	-4	-0.9 (-7.6-6.3)	-0.7 (-8.0-7.2)
Arm 2 (CSO) - Mchiramwera	87.2	92.5	-6.5	4.7	11.9 (4.3-20.0)	11.8 (4.0-20.3)
Arm 3 (Empower girls and CSO) - Changata	87.8	92.9	-5.9	5.1	11.7 (4.1-19.8)	11.7 (4.0-20.0)
The initiation camps are necessary to prepare girls for marriage, agree (%)						
Control - Nazombe	25.1	32.5				
Arm 1 (Empower girls) - Chiwalo	35.4	31.9	10.3	-0.6	-10.3 (-19.9-0.3)	-10.6 (-20.7-0.9)
Arm 2 (CSO) - Mchiramwera	36	34.3	10.9	1.8	-6.6 (-16.6-4.5)	-8.5 (-18.4-2.7)
Arm 3 (Empower girls and CSO) - Changata	42.3	33.7	17.2	1.2	-14.8 (-23.9 - -4.7)	-15.4 (-24.4 - -5.3)
Once a girl has attended an initiation camp, she must have sex, agree (%)						
Control - Nazombe	8.7	9.6				
Arm 1 (Empower girls) - Chiwalo	13.9	9.9	5.2	0.3	-4.8 (-11.9-2.9)	-2.3 (-9.9-6.0)
Arm 2 (CSO) - Mchiramwera	10.3	6.8	1.6	-2.8	-4.3 (-11.4-3.4)	-4.8 (-11.9-2.8)
Arm 3 (Empower girls and CSO) - Changata	12.7	6.4	4	-3.2	-7.1 (-14.0-0.4)	-7.5 (-14.2 - -0.2)
If a girl does not attend an initiation camp, she is unfit to marry, agree (%)						
Control - Nazombe	20.9	27.3				
Arm 1 (Empower girls) - Chiwalo	21.3	20.8	0.4	-6.5	-6.7 (-17.6-5.7)	-2.3 (-14.2-11.3)
Arm 2 (CSO) - Mchiramwera	46.7	56.7	25.8	29.4	3.6 (-8.5-17.3)	6.2 (-6.2-20.2)
Arm 3 (Empower girls and CSO) - Changata	54.3	55.2	33.4	27.9	-5.4 (-16.4-7.1)	-5.2 (-16.1-7.1)

CSO: Civil society organization.

*DiD estimator was converted into percent change using the formula $[\exp(\theta)-1] * 100$, where θ is the regression coefficient obtained from the DiD regression model.

**Models adjusted for age, education, ethnicity and marital status.

Appendix 7: Sensitivity analyses (arms 2 and 3 combined)

Table S 1: Summary statistics of community level characteristics, norms and practices by arm (with arms 2 and 3 combined), baseline

Variable	Control arm (Nazombe)			Empower girls (Chiwalo)			Empower girls and CSO (Mchiramwera and Changata)		
	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)
Sociodemographic characteristics									
Female (%)	40.0 - 88.0	68.2 (11.8)	72.0 (64.0 - 76.0)	48.0 - 76.0	64.5 (7.7)	64.0 (60.0 - 72.0)	64.0 - 96.0	78.6 (9.2)	80.0 (70.8 - 87.5)
34+ years (%)	45.5 - 80.0	61.2 (9.6)	64.0 (54.2 - 68.0)	44.0 - 68.0	51.6 (6.4)	52.0 (45.8 - 56.0)	36.0 - 84.0	65.9 (10.6)	68.0 (58.3 - 72.0)
Married (%)	54.2 - 84.0	72.9 (10.0)	72.7 (66.7 - 84.0)	60.0 - 84.0	72.3 (5.7)	72.0 (69.2 - 76.0)	44.0 - 75.0	63.6 (8.0)	63.2 (58.3 - 72.0)
Secondary or higher (%)	31.8 - 76.0	63.3 (12.0)	68.0 (56.0 - 72.0)	56.0 - 76.0	65.1 (7.0)	64.0 (60.0 - 72.0)	40.0 - 88.0	63.4 (10.2)	62.5 (60.0 - 72.0)
Employment, yes (%)	36.0 - 81.8	57.2 (11.9)	60.0 (50.0 - 64.0)	36.0 - 88.0	55.9 (16.6)	52.0 (40.0 - 68.0)	40.0 - 88.0	66.8 (11.8)	68.0 (60.0 - 76.0)
Ethnic group, Lomwe (%)	81.8 - 100.0	94.5 (5.5)	96.0 (92.0 - 100.0)	68.0 - 100.0	87.4 (7.4)	88.0 (84.0 - 92.0)	52.0 - 96.0	74.9 (13.0)	75.5 (64.0 - 84.0)
Primary outcome									
Knowledge of national laws, yes (%)	40.0 - 64.0	51.4 (7.6)	52.0 (44.0 - 56.0)	26.9 - 70.8	50.5 (12.1)	52.0 (44.0 - 60.0)	20.0 - 70.8	49.5 (13.0)	52.0 (40.0 - 60.0)
Knowledge of national laws (sensitivity), yes (%)	40.0 - 64.0	51.2 (7.9)	52.0 (44.0 - 56.0)	26.9 - 70.8	49.4 (11.9)	50.0 (44.0 - 56.0)	20.0 - 70.8	49.5 (13.0)	52.0 (40.0 - 60.0)
Knowledge of national law(s) - Score	1.6 - 2.9	2.2 (0.4)	2.0 (1.8 - 2.4)	1.0 - 3.1	1.8 (0.5)	1.8 (1.4 - 2.1)	0.9 - 3.0	2.1 (0.5)	2.2 (1.9 - 2.5)
Empirical and normative expectations									
Most girls in this community marry before the age of 18, agree (%)	68.0 - 100.0	82.8 (10.2)	84.0 (75.0 - 92.0)	62.5 - 100.0	84.9 (9.8)	88.0 (80.0 - 91.7)	72.0 - 100.0	94.6 (6.8)	96.0 (92.0 - 100.0)
Most people in this community expect girls to marry before the age of 18, agree	32.0 - 68.0	48.1 (10.4)	48.0 (40.0 - 56.0)	25.0 - 76.0	53.7 (16.5)	53.8 (40.0 - 72.0)	24.0 - 91.3	55.6 (13.4)	54.0 (45.8 - 60.0)
My family will not be respected in the community, agree (%)	4.0 - 40.0	23.9 (11.5)	26.1 (16.0 - 33.3)	32.0 - 80.0	54.1 (15.6)	54.2 (40.0 - 68.0)	16.0 - 64.0	33.9 (9.9)	32.7 (28.0 - 39.1)
Score of expectations and sanctions (Mean)	5.3 - 9.6	7.4 (1.2)	7.7 (6.5 - 8.0)	3.1 - 9.1	5.4 (1.8)	5.3 (3.5 - 6.8)	2.8 - 8.5	5.9 (1.1)	5.9 (5.3 - 6.6)

Variable	Control arm (Nazombe)			Empower girls (Chiwalo)			Empower girls and CSO (Mchiramwera and Changata)		
	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)
SRH secondary outcomes									
Unmarried adolescent girls should have access to contraception/FP services, agree (%)	13.6 - 52.0	35.0 (12.3)	36.0 (24.0 - 41.7)	12.0 - 64.0	39.2 (12.9)	40.0 (29.2 - 50.0)	16.0 - 64.0	38.6 (12.4)	37.5 (28.0 - 48.0)
Married ado girls should have access to contraception/FP services, agree (%)	84.0 - 100.0	96.4 (5.4)	100.0 (91.7 - 100.0)	82.6 - 100.0	95.9 (4.8)	96.0 (92.0 - 100.0)	60.0 - 100.0	93.0 (8.0)	96.0 (91.7 - 96.0)
Giving unmarried girls access to contraceptives makes them promiscuous, agree (%)	66.7 - 92.0	82.8 (6.9)	83.3 (80.0 - 88.0)	68.0 - 96.0	84.6 (7.9)	84.0 (79.2 - 92.0)	58.3 - 88.5	75.6 (8.2)	76.0 (68.0 - 83.3)
Unmarried girls who get pregnant are naughty, agree (%)	81.0 - 100.0	93.1 (5.0)	95.8 (92.0 - 96.0)	87.5 - 100.0	95.4 (4.0)	96.0 (92.0 - 100.0)	83.3 - 100.0	91.2 (4.2)	92.0 (88.0 - 96.0)
It is acceptable for girls to have sex before marriage, agree (%)	0.0 - 8.0	3.0 (2.8)	4.0 (0.0 - 4.2)	0.0 - 16.0	4.0 (4.3)	4.0 (0.0 - 4.2)	0.0 - 16.0	4.0 (4.8)	4.0 (0.0 - 8.0)
It is acceptable for boys to have sex before marriage, agree (%)	0.0 - 8.0	2.7 (2.5)	4.0 (0.0 - 4.0)	0.0 - 16.0	4.8 (4.6)	4.0 (0.0 - 8.0)	0.0 - 16.0	4.4 (4.9)	4.0 (0.0 - 8.0)
I would like contraceptives/family planning services to be available to girls in my community, agree (%)	16.7 - 60.0	40.3 (11.8)	40.0 (29.2 - 50.0)	20.8 - 58.3	39.1 (11.0)	38.5 (29.2 - 45.8)	16.0 - 58.3	39.4 (10.4)	42.8 (32.0 - 48.0)
All girls have a right to access contraceptives/family planning services, agree (%)	20.0 - 64.0	48.6 (13.5)	54.2 (38.1 - 60.0)	20.0 - 70.8	43.4 (14.1)	40.0 (33.3 - 56.0)	20.0 - 56.0	43.1 (11.4)	48.0 (36.0 - 52.0)
Aware of any family planning services available to unmarried adolescent girls in your community, yes (%)	40.0 - 80.0	62.2 (10.9)	64.0 (56.0 - 70.8)	42.3 - 72.0	61.7 (9.2)	66.7 (56.0 - 69.2)	40.0 - 92.0	68.3 (12.1)	66.0 (60.0 - 80.0)
Norms									
A girl who has no money for school fees should marry, agree (%)	0.0 - 20.0	7.8 (6.9)	4.3 (4.0 - 16.0)	0.0 - 24.0	9.7 (8.2)	12.0 (0.0 - 16.0)	0.0 - 24.0	8.2 (6.6)	8.0 (4.0 - 12.0)
A girl who gets pregnant should marry, agree (%)	8.0 - 58.3	22.3 (14.1)	20.0 (8.3 - 32.0)	9.1 - 48.0	26.5 (13.1)	26.9 (12.5 - 34.8)	8.0 - 48.0	26.7 (10.6)	26.0 (20.0 - 36.0)

Variable	Control arm (Nazombe)			Empower girls (Chiwalo)			Empower girls and CSO (Mchiramwera and Changata)		
	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)
It is wrong to marry a girl before the age of 18, agree (%)	88.0 - 100.0	94.6 (4.2)	95.8 (92.0 - 96.0)	80.8 - 100.0	91.6 (6.4)	96.0 (84.0 - 96.0)	72.0 - 100.0	91.4 (7.1)	92.0 (88.0 - 96.0)
A girl should have a say in who she marries, agree (%)	92.0 - 100.0	97.8 (2.6)	100.0 (96.0 - 100.0)	88.0 - 100.0	95.2 (4.1)	96.0 (92.0 - 100.0)	79.2 - 100.0	94.0 (5.1)	95.9 (92.0 - 96.0)
A girl should have a say in when she marries, agree (%)	80.0 - 100.0	93.7 (6.1)	95.8 (90.5 - 100.0)	75.0 - 100.0	90.6 (6.8)	92.0 (88.0 - 95.8)	76.0 - 100.0	87.5 (5.9)	88.0 (84.0 - 92.0)
Practices									
The initiation camps are necessary to prepare girls for marriage, agree (%)	8.3 - 41.7	25.1 (9.2)	25.0 (16.7 - 32.0)	13.6 - 66.7	35.4 (12.7)	34.8 (26.1 - 41.7)	16.0 - 56.0	38.0 (10.3)	40.0 (32.0 - 44.0)
Once a girl has attended an initiation camp, she must have sex, agree (%)	0.0 - 20.8	8.7 (6.9)	8.7 (4.2 - 16.0)	4.2 - 41.7	13.9 (9.2)	9.1 (8.7 - 18.2)	0.0 - 32.0	11.5 (8.4)	8.5 (4.2 - 16.7)
If a girl does not attend an initiation camp, she is unfit to marry, agree (%)	8.3 - 40.0	20.9 (8.1)	21.7 (16.0 - 25.0)	4.3 - 38.1	21.3 (8.1)	21.7 (16.7 - 25.0)	12.0 - 75.0	50.5 (13.5)	55.1 (41.7 - 60.0)

Table S 2: Summary statistics of community level characteristics, norms and practices by arm (with arms 2 and 3 combined), endline

Variable	Control arm (Nazombe)			Empower girls (Chiwalo)			Empower girls and CSO (Mchiramwera and Changata)		
	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)
Sociodemographic characteristics									
Female (%)	50.0 - 87.5	73.6 (9.7)	76.0 (68.0 - 80.0)	56.0 - 88.0	73.6 (10.3)	73.9 (64.0 - 84.0)	50.0 - 92.0	73.5 (10.0)	75.0 (66.7 - 80.0)
34+ years (%)	45.8 - 80.0	62.9 (8.8)	64.0 (56.0 - 68.0)	52.0 - 88.0	68.1 (10.6)	70.8 (60.0 - 76.0)	40.0 - 84.0	66.1 (12.5)	67.3 (60.0 - 76.0)
Married (%)	52.0 - 91.7	71.9 (10.2)	72.0 (64.0 - 76.0)	44.0 - 83.3	65.1 (10.1)	66.7 (60.0 - 72.0)	28.0 - 84.0	63.0 (12.7)	64.0 (56.0 - 70.8)
Secondary or higher (%)	56.0 - 88.0	74.4 (9.4)	75.0 (68.0 - 80.0)	52.0 - 84.0	65.6 (8.5)	64.0 (60.0 - 72.0)	40.0 - 88.0	67.3 (12.7)	67.3 (56.0 - 76.0)
Employment, yes (%)	29.2 - 83.3	61.5 (14.2)	60.0 (56.0 - 72.0)	41.7 - 80.0	63.3 (11.7)	64.0 (56.0 - 72.0)	29.2 - 80.0	54.2 (13.8)	54.0 (44.0 - 64.0)
Lomwe (%)	83.3 - 100.0	91.1 (4.9)	92.0 (88.0 - 92.0)	79.2 - 100.0	93.5 (6.4)	96.0 (88.0 - 100.0)	52.0 - 92.0	72.7 (12.6)	73.5 (64.0 - 80.0)
Primary outcome									
Knowledge of national laws, yes (%)	75.0 - 100.0	89.5 (7.2)	92.0 (88.0 - 92.0)	79.2 - 100.0	91.2 (5.2)	91.7 (88.0 - 96.0)	56.0 - 96.0	85.6 (9.7)	88.0 (80.0 - 92.0)
Knowledge of national laws (sensitivity), yes (%)	75.0 - 100.0	89.2 (6.8)	91.7 (88.0 - 92.0)	79.2 - 100.0	91.2 (5.2)	91.7 (88.0 - 96.0)	56.0 - 96.0	85.4 (10.0)	88.0 (80.0 - 92.0)
Knowledge of national law(s) - Score	2.8 - 4.5	4.0 (0.5)	4.1 (3.8 - 4.3)	3.6 - 5.3	4.0 (0.4)	4.0 (3.8 - 4.2)	2.8 - 5.1	4.1 (0.6)	4.1 (3.8 - 4.6)
Empirical and normative expectations									
Most girls in this community marry before the age of 18, agree (%)	72.0 - 88.0	80.7 (6.0)	80.0 (76.0 - 88.0)	40.0 - 92.0	76.3 (13.6)	80.0 (69.6 - 80.0)	66.7 - 100.0	91.2 (7.1)	92.0 (88.0 - 96.0)
Most people in this community expect girls to marry before the age of 18, agree (%)	0.0 - 68.0	42.2 (15.6)	40.0 (40.0 - 48.0)	16.0 - 60.0	35.6 (13.2)	36.0 (25.0 - 47.8)	32.0 - 76.0	47.2 (10.5)	46.9 (40.0 - 54.2)
My family will not be respected in the community, agree (%)	0.0 - 48.0	27.1 (13.2)	28.0 (24.0 - 33.3)	12.5 - 47.8	26.8 (11.5)	20.0 (16.7 - 40.0)	12.0 - 56.0	25.4 (10.0)	26.5 (16.7 - 32.0)
Score of expectations and sanctions (Mean)	4.6 - 10.2	6.7 (1.3)	6.6 (6.2 - 7.2)	5.1 - 10.4	7.4 (1.4)	7.1 (6.3 - 8.0)	3.5 - 8.3	6.1 (0.9)	6.1 (5.5 - 6.5)
SRH secondary outcomes									

Variable	Control arm (Nazombe)			Empower girls (Chiwalo)			Empower girls and CSO (Mchiramwera and Changata)		
	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)
Unmarried adolescent girls should have access to contraception/FP services, agree (%)	28.0 - 58.3	40.9 (9.8)	40.0 (32.0 - 52.0)	16.0 - 66.7	40.2 (17.4)	40.0 (24.0 - 60.0)	12.0 - 60.0	35.9 (12.7)	36.0 (28.0 - 45.8)
Married ado girls should have access to contraception/FP services, agree (%)	72.0 - 100.0	90.0 (8.0)	88.0 (84.0 - 100.0)	60.0 - 100.0	85.4 (9.4)	84.0 (84.0 - 92.0)	66.7 - 100.0	86.4 (8.3)	87.7 (80.0 - 92.0)
Giving unmarried girls access to contraceptives makes them promiscuous, agree (%)	76.0 - 96.0	87.1 (6.3)	88.0 (83.3 - 92.0)	68.0 - 96.0	82.8 (9.2)	84.0 (76.0 - 92.0)	68.0 - 96.0	85.0 (7.3)	87.5 (80.0 - 92.0)
Unmarried girls who get pregnant are naughty, agree (%)	87.5 - 100.0	93.8 (4.0)	95.8 (91.7 - 96.0)	91.3 - 100.0	95.2 (2.7)	96.0 (92.0 - 96.0)	84.0 - 100.0	94.2 (5.2)	95.9 (92.0 - 100.0)
It is acceptable for girls to have sex before marriage, agree (%)	0.0 - 8.0	1.6 (2.5)	0.0 (0.0 - 4.0)	0.0 - 12.0	2.9 (3.8)	0.0 (0.0 - 4.0)	0.0 - 16.0	4.7 (4.4)	4.0 (0.0 - 8.0)
It is acceptable for boys to have sex before marriage, agree (%)	0.0 - 8.0	2.4 (3.3)	0.0 (0.0 - 4.2)	0.0 - 12.0	3.2 (4.1)	0.0 (0.0 - 8.0)	0.0 - 16.0	5.2 (4.6)	4.0 (0.0 - 8.3)
I would like contraceptives/family planning services to be available to girls in my community, agree (%)	25.0 - 72.0	49.9 (13.8)	52.0 (40.0 - 60.0)	26.1 - 72.0	50.6 (13.0)	50.0 (40.0 - 64.0)	16.0 - 72.0	48.3 (14.9)	48.0 (40.0 - 60.0)
All girls have a right to access contraceptives/family planning services, agree (%)	40.0 - 76.0	54.8 (10.2)	56.0 (45.8 - 64.0)	16.0 - 72.0	51.7 (16.0)	53.3 (44.0 - 62.5)	24.0 - 80.0	52.5 (13.5)	52.0 (41.7 - 62.5)
Aware of any family planning services available to unmarried adolescent girls in your community, yes (%)	54.2 - 96.0	78.4 (11.0)	76.0 (72.0 - 88.0)	52.0 - 100.0	78.9 (13.5)	80.0 (65.2 - 90.9)	44.0 - 100.0	75.6 (12.3)	75.5 (65.2 - 84.0)
Norms									
A girl who has no money for school fees should marry, agree (%)	0.0 - 24.0	8.1 (6.4)	8.0 (4.0 - 12.0)	0.0 - 16.0	8.6 (4.0)	8.0 (6.7 - 12.0)	0.0 - 20.0	4.9 (5.2)	4.0 (0.0 - 8.0)
A girl who gets pregnant should marry, agree (%)	0.0 - 32.0	12.5 (7.6)	12.0 (8.0 - 16.7)	0.0 - 26.7	14.1 (7.3)	16.0 (8.0 - 16.7)	0.0 - 36.0	17.2 (9.4)	16.7 (12.0 - 24.0)
It is wrong to marry a girl before the age of 18, agree (%)	75.0 - 100.0	90.5 (8.4)	92.0 (84.0 - 96.0)	66.7 - 100.0	88.3 (10.8)	88.0 (84.0 - 100.0)	76.0 - 100.0	90.0 (7.0)	90.0 (84.0 - 96.0)

Variable	Control arm (Nazombe)			Empower girls (Chiwalo)			Empower girls and CSO (Mchiramwera and Changata)		
	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)
A girl should have a say in who she marries, agree (%)	45.8 - 88.0	76.7 (11.4)	80.0 (72.0 - 87.0)	48.0 - 88.0	71.1 (9.6)	70.8 (66.7 - 76.0)	70.8 - 100.0	83.6 (8.2)	81.3 (76.0 - 88.0)
A girl should have a say in when she marries, agree (%)	62.5 - 100.0	87.8 (10.2)	88.0 (83.3 - 95.8)	73.3 - 96.0	83.8 (6.5)	84.0 (78.3 - 88.0)	79.2 - 100.0	92.7 (6.0)	95.7 (88.0 - 96.0)
Acceptable for a girl to drop out of school if pregnant, yes (%)	12.0 - 72.0	28.2 (15.7)	29.2 (16.0 - 36.0)	0.0 - 56.0	27.0 (15.0)	32.0 (16.0 - 36.0)	12.0 - 72.0	40.2 (14.9)	38.8 (32.0 - 44.0)
Acceptable for a girl to drop out of school if needs to support family, yes (%)	0.0 - 12.0	2.7 (4.2)	0.0 (0.0 - 4.0)	0.0 - 12.5	4.1 (3.8)	4.0 (0.0 - 8.0)	0.0 - 32.0	4.7 (7.1)	4.0 (0.0 - 4.2)
Acceptable for a girl to drop out of school if gets married, yes (%)	0.0 - 32.0	12.9 (11.2)	12.0 (4.0 - 20.8)	0.0 - 40.0	18.1 (9.6)	16.0 (12.0 - 24.0)	0.0 - 29.2	13.0 (8.8)	12.0 (4.2 - 20.0)
Practices									
The initiation camps are necessary to prepare girls for marriage, agree (%)	10.0 - 50.0	32.5 (11.6)	31.8 (24.0 - 42.1)	16.0 - 56.5	31.9 (11.4)	28.6 (21.7 - 38.5)	12.0 - 64.0	34.0 (11.5)	34.1 (26.1 - 41.7)
Once a girl has attended an initiation camp, she must have sex, agree (%)	0.0 - 26.1	9.6 (7.3)	8.7 (4.2 - 16.0)	0.0 - 23.1	9.9 (9.3)	8.0 (0.0 - 21.7)	0.0 - 16.0	6.6 (4.7)	6.4 (4.0 - 8.3)
If a girl does not attend an initiation camp, she is unfit to marry, agree (%)	8.7 - 59.1	27.3 (12.8)	28.0 (16.7 - 35.0)	8.3 - 40.9	20.8 (9.9)	18.2 (13.0 - 28.0)	26.1 - 92.0	56.0 (14.6)	54.2 (47.8 - 65.2)
Impact of COVID									
Fewer girls participate in initiation camps in this community due to COVID-19 pandemic (%)	60.0 - 100.0	78.2 (11.6)	76.0 (68.0 - 88.0)	45.8 - 100.0	76.8 (19.2)	79.2 (60.0 - 92.0)	32.0 - 92.0	62.3 (16.4)	58.3 (50.0 - 80.0)
More girls participate in initiation camps in this community due to COVID-19 pandemic (%)	0.0 - 8.3	5.4 (2.5)	4.0 (4.0 - 8.0)	0.0 - 8.3	2.6 (2.8)	4.0 (0.0 - 4.2)	0.0 - 33.3	13.8 (9.2)	12.0 (8.0 - 20.8)
The same number of girls participate in initiation camps in this community due to COVID-19 pandemic (%)	0.0 - 36.0	14.8 (10.3)	16.0 (4.0 - 20.8)	0.0 - 44.0	16.8 (16.9)	12.5 (0.0 - 36.0)	0.0 - 56.0	23.3 (15.5)	20.0 (12.5 - 28.0)

Variable	Control arm (Nazombe)			Empower girls (Chiwalo)			Empower girls and CSO (Mchiramwera and Changata)		
	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)
Fewer girls access education in this community due to COVID-19 pandemic (%)	48.0 - 96.0	71.7 (18.6)	70.8 (52.0 - 92.0)	36.0 - 92.0	72.0 (14.9)	75.0 (64.0 - 84.0)	58.3 - 100.0	83.5 (11.7)	84.0 (80.0 - 92.0)
More girls access education in this community due to COVID-19 pandemic (%)	0.0 - 40.0	19.9 (13.6)	20.0 (8.0 - 32.0)	4.3 - 44.0	19.9 (10.0)	20.0 (12.0 - 28.0)	0.0 - 25.0	8.9 (7.5)	8.0 (4.0 - 16.0)
The same number of girls access education in this community due to COVID-19 pandemic (%)	0.0 - 25.0	8.4 (7.9)	8.0 (4.0 - 12.0)	0.0 - 36.0	8.1 (9.6)	4.0 (0.0 - 12.5)	0.0 - 16.7	7.3 (5.4)	8.0 (4.0 - 12.0)
Fewer girls access to and use of contraceptive services in your community due to COVID-19 pandemic (%)	16.0 - 72.0	42.4 (15.4)	44.0 (29.2 - 52.0)	20.0 - 76.0	48.3 (18.0)	52.0 (29.2 - 64.0)	28.0 - 72.0	42.8 (11.5)	40.0 (32.0 - 45.8)
More girls access to and use of contraceptive services in your community due to COVID-19 pandemic (%)	0.0 - 48.0	22.4 (14.3)	25.0 (8.0 - 33.3)	4.0 - 44.0	18.6 (12.5)	24.0 (8.0 - 26.7)	0.0 - 36.0	15.6 (11.6)	16.0 (4.0 - 25.0)
The same number of girls access to and use of contraceptive services in your community due to COVID-19 pandemic (%)	8.0 - 52.0	31.2 (14.1)	29.2 (20.0 - 44.0)	6.7 - 52.0	28.5 (12.6)	26.1 (20.0 - 37.5)	12.0 - 60.0	39.0 (13.9)	44.0 (24.0 - 52.0)
Daily life for me and my family changed to better during the COVID-19 global pandemic (%)	0.0 - 12.0	0.8 (3.1)	0.0 (0.0 - 0.0)	0.0 - 8.3	1.9 (3.0)	0.0 (0.0 - 4.0)	0.0 - 4.0	0.5 (1.4)	0.0 (0.0 - 0.0)
Daily life for me and my family did not change during the COVID-19 global pandemic (%)	16.0 - 56.0	31.9 (13.0)	28.0 (24.0 - 40.0)	4.0 - 56.0	27.5 (15.0)	28.0 (12.5 - 40.0)	8.0 - 58.3	26.1 (12.8)	24.0 (16.7 - 29.2)
Daily life for me and my family changed to worse during the COVID-19 global pandemic (%)	36.0 - 68.0	54.6 (11.6)	60.0 (40.0 - 64.0)	40.0 - 72.0	56.1 (9.9)	56.0 (52.0 - 64.0)	33.3 - 92.0	60.2 (14.4)	60.0 (52.0 - 68.0)
Have you experienced any of the following - Other (Illness) (%)	0.0 - 0.0	0.0 (0.0)	0.0 (0.0 - 0.0)	0.0 - 0.0	0.0 (0.0)	0.0 (0.0 - 0.0)	0.0 - 0.0	0.0 (0.0)	0.0 (0.0 - 0.0)
Have you experienced any of the following - None (Illness) (%)	40.0 - 80.0	64.0 (10.2)	64.0 (60.0 - 70.8)	33.3 - 72.0	52.5 (10.2)	53.3 (44.0 - 60.0)	41.7 - 84.0	62.6 (12.0)	62.5 (56.0 - 68.0)

Variable	Control arm (Nazombe)			Empower girls (Chiwalo)			Empower girls and CSO (Mchiramwera and Changata)		
	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)
Have you experienced any of the following - Inability to get health services (%)	16.0 - 56.0	30.6 (11.1)	29.2 (20.0 - 36.0)	20.0 - 56.0	42.4 (8.7)	41.7 (40.0 - 50.0)	16.0 - 56.0	33.6 (10.9)	32.0 (28.0 - 40.0)
Have you experienced any of the following - Illness in family (%)	0.0 - 16.0	6.4 (5.2)	8.0 (0.0 - 12.0)	0.0 - 28.0	13.7 (8.1)	12.5 (8.0 - 20.8)	0.0 - 16.0	5.9 (5.8)	8.0 (0.0 - 8.3)
Have you experienced any of the following - Illness in self (%)	0.0 - 16.0	7.2 (5.1)	8.0 (4.0 - 12.0)	0.0 - 25.0	11.3 (7.1)	12.0 (6.7 - 16.7)	0.0 - 16.0	5.4 (4.5)	4.2 (0.0 - 8.0)
Have you experienced any of the following - Felt lonely (%)	29.2 - 72.0	51.8 (11.8)	50.0 (44.0 - 64.0)	36.0 - 73.3	51.1 (10.5)	48.0 (45.8 - 60.0)	32.0 - 72.0	45.6 (10.6)	44.0 (37.5 - 52.0)
Have you experienced any of the following - Lost friendships (%)	4.0 - 64.0	36.7 (18.8)	33.3 (20.0 - 56.0)	8.0 - 56.0	38.6 (13.4)	40.0 (28.0 - 48.0)	24.0 - 64.0	36.8 (11.5)	36.0 (28.0 - 44.0)
Have you experienced any of the following - Had a child delayed in school (%)	79.2 - 100.0	95.1 (7.6)	100.0 (88.0 - 100.0)	83.3 - 100.0	95.6 (5.9)	100.0 (88.0 - 100.0)	88.0 - 100.0	95.2 (3.8)	96.0 (92.0 - 96.0)
Have you experienced any of the following - Refused (%)	0.0 - 0.0	0.0 (0.0)	0.0 (0.0 - 0.0)	0.0 - 0.0	0.0 (0.0)	0.0 (0.0 - 0.0)	0.0 - 0.0	0.0 (0.0)	0.0 (0.0 - 0.0)
Have you experienced any of the following - Other (Personal) (%)	0.0 - 4.0	0.3 (1.0)	0.0 (0.0 - 0.0)	0.0 - 0.0	0.0 (0.0)	0.0 (0.0 - 0.0)	0.0 - 0.0	0.0 (0.0)	0.0 (0.0 - 0.0)
Have you experienced any of the following - None (Personal) (%)	0.0 - 41.7	18.9 (11.7)	16.0 (8.0 - 29.2)	0.0 - 24.0	9.9 (7.4)	8.0 (4.0 - 16.0)	0.0 - 40.0	19.4 (10.5)	20.0 (12.0 - 28.0)
Have you experienced any of the following - Someone in family felt ill (%)	0.0 - 28.0	11.3 (9.1)	12.0 (0.0 - 16.0)	0.0 - 24.0	8.2 (7.0)	8.0 (4.0 - 16.0)	0.0 - 32.0	10.7 (7.9)	8.0 (8.0 - 16.0)
Have you experienced any of the following - Difficulties in eating and sleeping (%)	28.0 - 72.0	49.1 (13.6)	52.0 (33.3 - 60.0)	20.0 - 72.0	52.0 (13.4)	56.0 (45.8 - 60.0)	8.3 - 64.0	37.8 (15.4)	36.0 (24.0 - 48.0)
Have you experienced any of the following - Felt stressed losing income (%)	44.0 - 87.5	68.0 (13.7)	70.8 (56.0 - 80.0)	50.0 - 92.0	72.1 (10.5)	73.9 (64.0 - 80.0)	44.0 - 84.0	69.4 (13.2)	72.0 (64.0 - 80.0)
Have you experienced any of the following - Felt stressed (%)	33.3 - 92.0	69.3 (15.2)	72.0 (60.0 - 83.3)	64.0 - 96.0	80.9 (8.7)	80.0 (75.0 - 88.0)	48.0 - 80.0	66.2 (9.8)	68.0 (60.0 - 75.0)

Variable	Control arm (Nazombe)			Empower girls (Chiwalo)			Empower girls and CSO (Mchiramwera and Changata)		
	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)	Range	Mean (SD)	Median (p25-p75)
Have you experienced any of the following - Had a sick friend (%)	0.0 - 16.0	9.4 (5.4)	8.3 (4.0 - 16.0)	0.0 - 20.0	7.2 (7.5)	6.7 (0.0 - 12.5)	0.0 - 20.0	9.1 (6.3)	8.3 (4.0 - 12.0)
Have you experienced any of the following - Lost family (%)	0.0 - 28.0	14.0 (8.0)	16.0 (8.3 - 16.7)	0.0 - 44.0	14.5 (12.0)	12.5 (4.0 - 24.0)	0.0 - 36.0	19.4 (9.6)	20.0 (16.0 - 24.0)
Have you experienced any of the following - Other (Finance) (%)	0.0 - 0.0	0.0 (0.0)	0.0 (0.0 - 0.0)	0.0 - 4.0	0.3 (1.0)	0.0 (0.0 - 0.0)	0.0 - 4.0	0.3 (1.0)	0.0 (0.0 - 0.0)
Have you experienced any of the following - Financial hardship (%)	84.0 - 100.0	96.5 (6.1)	100.0 (88.0 - 100.0)	84.0 - 100.0	95.9 (5.5)	100.0 (91.7 - 100.0)	80.0 - 100.0	94.6 (5.8)	96.0 (91.7 - 100.0)
Have you experienced any of the following - Lost job or business (%)	16.0 - 68.0	35.9 (18.2)	25.0 (20.0 - 52.0)	4.0 - 64.0	28.1 (19.9)	25.0 (8.0 - 44.0)	32.0 - 88.0	50.8 (16.6)	52.0 (36.0 - 60.0)
Have you experienced any of the following - Increases in food prices (%)	70.8 - 100.0	91.6 (10.2)	96.0 (92.0 - 100.0)	80.0 - 100.0	93.5 (7.4)	96.0 (87.5 - 100.0)	76.0 - 100.0	89.2 (8.2)	92.0 (80.0 - 96.0)
Have you experienced any of the following - Travel expenses (%)	68.0 - 96.0	83.5 (9.9)	84.0 (75.0 - 92.0)	62.5 - 100.0	82.2 (12.8)	88.0 (68.0 - 92.0)	72.0 - 100.0	90.0 (9.8)	88.0 (83.3 - 100.0)
Have you experienced any of the following - Increased prices (%)	48.0 - 96.0	74.6 (17.8)	72.0 (56.0 - 92.0)	48.0 - 92.0	71.7 (13.7)	68.0 (62.5 - 88.0)	68.0 - 100.0	90.0 (10.7)	92.0 (79.2 - 100.0)

Table S 3: Cluster-level DiD sensitivity analysis* on primary outcomes

Variable	Baseline (Mean %)	Endline (Mean %)	Difference at baseline (%)	Difference at endline (%)	Unadjusted DiD estimator (%**) (95% CI)	Adjusted*** DiD estimator (%*) (95% CI)
Knowledge of national laws						
Control - Nazombe	51.4	89.5				
Arm 1 (Empower girls) - Chiwalo	50.5	91.2	-0.9	1.7	2.7 (-7.4-13.9)	4.8 (-6.2-17.0)
Arm 2 (Empower girls and CSO) - Mchiramwera and Changata	49.5	85.6	-1.9	-3.9	-1.9 (-10.3-7.3)	-1.3 (-9.8-8.0)
Most girls in this community marry before the age of 18, agree (%)						
Control - Nazombe	82.8	80.7				
Arm 1 (Empower girls) - Chiwalo	84.9	76.3	2.1	-4.4	-6.3 (-14.3-2.5)	-6.4 (-14.9-3.1)
Arm 2 (Empower girls and CSO) - Mchiramwera and Changata	94.6	91.2	11.8	10.5	-1.2 (-8.6-6.7)	-0.8 (-8.2-7.3)
Most people in this community expect girls to marry before the age of 18, agree (%)						
Control - Nazombe	48.1	42.2				
Arm 1 (Empower girls) - Chiwalo	53.7	35.6	5.6	-6.6	-11.4 (-22.5-1.3)	-11.7 (-23.6-2.1)
Arm 2 (Empower girls and CSO) - Mchiramwera and Changata	55.6	47.2	7.5	5	-2.4 (-13.1-9.6)	-2.7 (-13.6-9.5)
If they don't ensure their daughters and/or nieces are married early, their family will not be respected in the community, agree (%)						
Control - Nazombe	23.9	27.1				
Arm 1 (Empower girls) - Chiwalo	54.1	26.8	30.2	-0.3	-26.3 (-34.5 - -17.0)	-26.2 (-35.1 - -16.1)
Arm 2 (Empower girls and CSO) - Mchiramwera and Changata	33.9	25.4	10	-1.7	-11.0 (-19.7 - -1.4)	-10.4 (-19.3 - -0.5)

CSO: Civil society organization.

*Arms 2 and 3 combined.

**DiD estimator was converted into percent change using the formula $[\exp(\theta)-1] * 100$, where θ is the regression coefficient obtained from the DiD regression model.

***Models adjusted for age, education, ethnicity, and marital status.

Table S 4: Cluster-level DID sensitivity analysis* on SRHR outcomes

Variable	Baseline (Mean %)	Endline (Mean %)	Difference at baseline (%)	Difference at endline (%)	Unadjusted DiD estimator (%*) (95% CI)	Adjusted** DiD estimator (%*) (95% CI)
Unmarried adolescent girls should have access to contraception/FP services, agree (%)						
Control - Nazombe	35	40.9				
Arm 1 (Empower girls) - Chiwalo	39.2	40.2	4.2	-0.7	-4.8 (-16.3-8.4)	0.1 (-12.8-15.0)
Arm 2 (CSO) - Mchiramwera	32.6	33.4	-2.4	-7.5	-5.0 (-16.5-8.2)	-4.4 (-16.2-9.2)
Arm 3 (Empower girls and CSO) - Changata	44.6	38.4	9.6	-2.5	-11.4 (-22.1-0.9)	-11.1 (-21.9-1.2)
Married adolescent girls should have access to contraception/FP services, agree (%)						
Control - Nazombe	96.4	90				
Arm 1 (Empower girls) - Chiwalo	95.9	85.4	-0.5	-4.6	-4.0 (-11.2-3.7)	-5.7 (-13.0-2.2)
Arm 2 (CSO) - Mchiramwera	94.6	89.2	-1.8	-0.8	0.9 (-6.6-9.1)	2.3 (-5.2-10.4)
Arm 3 (Empower girls and CSO) - Changata	91.4	83.6	-5	-6.4	-1.5 (-8.8-6.5)	-0.5 (-7.7-7.2)
Giving unmarried girls access to contraceptives makes them promiscuous, agree (%)						
Control - Nazombe	82.8	87.1				
Arm 1 (Empower girls) - Chiwalo	84.6	82.8	1.8	-4.3	-6.1 (-13.2-1.6)	-5.7 (-13.4-2.7)
Arm 2 (CSO) - Mchiramwera	76.7	82.8	-6.1	-4.3	1.7 (-6.0-10.0)	0.9 (-7.0-9.5)
Arm 3 (Empower girls and CSO) - Changata	74.6	87.3	-8.2	0.2	8.7 (0.5-17.6)	8.3 (-0.0-17.3)
Unmarried girls who get pregnant are naughty, agree (%)						
Control - Nazombe	93.1	93.8				
Arm 1 (Empower girls) - Chiwalo	95.4	95.2	2.3	1.4	-1.0 (-5.3-3.6)	-1.3 (-5.9-3.5)
Arm 2 (CSO) - Mchiramwera	90.7	94.4	-2.4	0.6	3.0 (-1.5-7.8)	4.0 (-0.7-8.8)
Arm 3 (Empower girls and CSO) - Changata	91.6	94.1	-1.5	0.3	1.8 (-2.7-6.5)	2.2 (-2.3-6.9)
It is acceptable for girls to have sex before marriage, agree (%)						

Variable	Baseline (Mean %)	Endline (Mean %)	Difference at baseline (%)	Difference at endline (%)	Unadjusted DiD estimator (%*) (95% CI)	Adjusted** DiD estimator (%*) (95% CI)
Control - Nazombe	3	1.6				
Arm 1 (Empower girls) - Chiwalo	4	2.9	1.1	1.3	0.3 (-3.5-4.3)	1.1 (-3.1-5.5)
Arm 2 (CSO) - Mchiramwera	1.1	4	-1.8	2.4	4.4 (0.4-8.6)	4.8 (0.6-9.1)
Arm 3 (Empower girls and CSO) - Changata	7	5.4	4.1	3.8	-0.2 (-4.0-3.7)	-0.4 (-4.3-3.6)
It is acceptable for boys to have sex before marriage, agree (%)						
Control - Nazombe	2.7	2.4				
Arm 1 (Empower girls) - Chiwalo	4.8	3.2	2.1	0.8	-1.3 (-5.3-2.9)	-1.1 (-5.4-3.4)
Arm 2 (CSO) - Mchiramwera	1.6	4.3	-1.1	1.9	3.0 (-1.1-7.4)	2.8 (-1.5-7.2)
Arm 3 (Empower girls and CSO) - Changata	7.2	6.2	4.5	3.8	-0.8 (-4.8-3.4)	-1.1 (-5.1-3.1)
I would like contraceptives/family planning services to be available to girls in my community, agree (%)						
Control - Nazombe	40.3	49.9				
Arm 1 (Empower girls) - Chiwalo	39.1	50.6	-1.2	0.7	2.0 (-10.4-16.2)	6.7 (-7.4-22.8)
Arm 2 (CSO) - Mchiramwera	37.5	48.5	-2.8	-1.4	1.4 (-11.0-15.5)	3.1 (-9.9-17.9)
Arm 3 (Empower girls and CSO) - Changata	41.3	48.1	1	-1.8	-2.7 (-14.6-10.8)	-3.5 (-15.4-10.0)
All girls have a right to access contraceptives/family planning services, agree (%)						
Control - Nazombe	48.6	54.8				
Arm 1 (Empower girls) - Chiwalo	43.4	51.7	-5.2	-3.1	2.2 (-10.5-16.6)	4.0 (-10.0-20.1)
Arm 2 (CSO) - Mchiramwera	39	49.8	-9.6	-5	4.8 (-8.2-19.7)	4.8 (-8.7-20.3)
Arm 3 (Empower girls and CSO) - Changata	47.2	55.2	-1.4	0.4	1.9 (-10.8-16.3)	2.1 (-10.8-16.8)
Aware of any family planning services available to unmarried adolescent girls in your community, yes (%)						
Control - Nazombe	62.2	78.4				

Variable	Baseline (Mean %)	Endline (Mean %)	Difference at baseline (%)	Difference at endline (%)	Unadjusted DiD estimator (%*) (95% CI)	Adjusted** DiD estimator (%*) (95% CI)
Arm 1 (Empower girls) - Chiwalo	61.7	78.9	-0.5	0.5	1.0 (-10.3-13.7)	-1.3 (-13.2-12.2)
Arm 2 (CSO) - Mchiramwera	66.4	80.2	4.2	1.8	-2.4 (-13.3-9.8)	-2.9 (-14.1-9.8)
Arm 3 (Empower girls and CSO) - Changata	70.1	71.1	7.9	-7.3	-14.2 (-23.8 - -3.4)	-14.0 (-23.7 - -3.0)

CSO: Civil society organization.

*DiD estimator was converted into percent change using the formula $[\exp(\theta)-1] * 100$, where θ is the regression coefficient obtained from the DiD regression model.

**Models adjusted for age, education, ethnicity, and marital status.

Table S 5: Cluster-level DiD sensitivity analysis* on other norms and practices

Variable	Baseline (Mean %)	Endline (Mean %)	Difference at baseline (%)	Difference at endline (%)	Unadjusted DiD estimator (%*) (95% CI)	Adjusted** DiD estimator (%*) (95% CI)
A girl who has no money for school fees should marry, agree (%)						
Control - Nazombe	7.8	8.1				
Arm 1 (Empower girls) - Chiwalo	9.7	8.6	1.9	0.5	-1.4 (-7.5-5.2)	-0.1 (-6.8-7.1)
Arm 2 (Empower girls and CSO) - Mchiramwera and Changata	8.2	4.9	0.4	-3.2	-3.5 (-8.7-2.0)	-3.6 (-8.9-2.0)
A girl who gets pregnant should marry, agree (%)						
Control - Nazombe	22.3	12.5				
Arm 1 (Empower girls) - Chiwalo	26.5	14.1	4.2	1.6	-2.7 (-12.6-8.3)	-0.4 (-11.3-11.8)
Arm 2 (Empower girls and CSO) - Mchiramwera and Changata	26.7	17.2	4.4	4.7	0.3 (-8.6-10.1)	0.2 (-8.8-10.1)
It is wrong to marry a girl before the age of 18, agree (%)						
Control - Nazombe	94.6	90.5				
Arm 1 (Empower girls) - Chiwalo	91.6	88.3	-3	-2.2	0.8 (-6.6-8.7)	-2.5 (-10.1-5.8)
Arm 2 (Empower girls and CSO) - Mchiramwera and Changata	91.4	90	-3.2	-0.5	2.7 (-3.8-9.7)	2.3 (-4.3-9.3)
A girl should have a say in who she marries, agree (%)						
Control - Nazombe	97.8	76.7				
Arm 1 (Empower girls) - Chiwalo	95.2	71.1	-2.6	-5.6	-3.0 (-10.0-4.6)	-3.9 (-11.4-4.3)
Arm 2 (Empower girls and CSO) - Mchiramwera and Changata	94	83.6	-3.8	6.9	11.3 (4.3-18.7)	11.0 (3.9-18.6)
A girl should have a say in when she marries, agree (%)						
Control - Nazombe	93.7	87.8				
Arm 1 (Empower girls) - Chiwalo	90.6	83.8	-3.1	-4	-0.9 (-7.5-6.3)	-0.8 (-8.0-7.0)
Arm 2 (Empower girls and CSO) - Mchiramwera and Changata	87.5	92.7	-6.2	4.9	11.8 (5.2-18.7)	11.8 (5.1-18.9)
The initiation camps are necessary to prepare girls for marriage, agree (%)						
Control - Nazombe	25.1	32.5				
Arm 1 (Empower girls) - Chiwalo	35.4	31.9	10.3	-0.6	-10.3 (-20.0-0.5)	-11.3 (-21.4-0.2)

Variable	Baseline (Mean %)	Endline (Mean %)	Difference at baseline (%)	Difference at endline (%)	Unadjusted DiD estimator (%*) (95% CI)	Adjusted** DiD estimator (%*) (95% CI)
Arm 2 (Empower girls and CSO) - Mchiramwera and Changata	38	34	12.9	1.5	-10.8 (-19.2 - -1.6)	-12.2 (-20.4 - -3.0)
Once a girl has attended an initiation camp, she must have sex, agree (%)						
Control - Nazombe	8.7	9.6				
Arm 1 (Empower girls) - Chiwalo	13.9	9.9	5.2	0.3	-4.8 (-11.8-2.8)	-2.5 (-10.1-5.7)
Arm 2 (Empower girls and CSO) - Mchiramwera and Changata	11.5	6.6	2.8	-3	-5.7 (-11.8-0.8)	-6.2 (-12.2-0.2)
If a girl does not attend an initiation camp, she is unfit to marry, agree (%)						
Control - Nazombe	20.9	27.3				
Arm 1 (Empower girls) - Chiwalo	21.3	20.8	0.4	-6.5	-6.7 (-17.6-5.7)	-3.1 (-15.0-10.4)
Arm 2 (Empower girls and CSO) - Mchiramwera and Changata	50.5	56	29.6	28.7	-1.0 (-11.1-10.3)	0.1 (-10.0-11.4)

CSO: Civil society organization.

*Arms 2 and 3 combined.

**DiD estimator was converted into percent change using the formula $[\exp(\theta)-1] * 100$, where θ is the regression coefficient obtained from the DiD regression model.

***Models adjusted for age, education, ethnicity, and marital status.



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