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# Summary Report

## Adolescents 360 Outcome Evaluation in Tanzania

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Image source: Adolescents 360 website

## Acknowledgments

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## List of Acronyms

| | |
|---|---|
| AOR | Adjusted Odds Ratio |
| A360 | Adolescents 360 |
| BMGF | Bill & Melinda Gates Foundation |
| CI | Confidence Interval |
| CIFF | Children's Investment Fund Foundation |
| DHS | Demographic and Health Survey |
| HMIS | Health Management Information Systems |
| IUD | Intrauterine Device |
| LAM | Lactation Amenorrhea Method |
| LARC | Long-Acting Reversible Contraceptive |
| LSHTM | London School of Hygiene & Tropical Medicine |
| mCPR | Modern Contraceptive Prevalence Rate |
| MITU | Mwanza Interventional Trials Unit |
| MoH | Ministry of Health |
| n | Number of Observations |
| NGO | Non-Governmental Organization |
| OE | Outcome Evaluation |
| OR | Odds Ratio |
| PSI | Population Services International |
| PSU | Primary Sampling Unit |
| SDM | Standard Days Method |
| SRS | Simple Random Sample |
| ToC | Theory of Change |
| UNICEF | United Nations Children's Fund |

| | |
|---|---|
| USSD | Unstructured Supplementary Service Data |
| WHO | World Health Organization |

# Executive Summary

## Introduction

Among 15–19-year-old girls, 3.9 million unsafe abortions following adolescent pregnancies in low- and middle-income countries occur each year (WHO, 2020). Providing access to safe and reliable sexual and reproductive health services, including family planning, is crucial in order to reduce both neonatal and maternal mortality (Bearinger et al., 2007, UN, 2015). Evidence suggests that the use of modern contraceptives can increase girls' and women's decision-making power, which in turn can bring about better educational and employment opportunities (Alano and Hanson, 2018, Do and Kurimoto, 2012) However, adolescent girls face a variety of barriers in obtaining and using modern contraception (WHO, 2020, Chandra-Mouli et al., 2014).

In Tanzania, despite an increasing trend in contraceptive use from 1991, there are notable differences in contraceptive use and access across different geographical regions in the country. Among married women, unmet need for family planning varies from 10% in Lindi to 37% in Kaskazini Pemba (DHS, 2016).

## Adolescents 360

Adolescents 360 (A360) was a four-and-a-half year initiative targeted at adolescents in Ethiopia, Nigeria and Tanzania. It aimed to increase voluntary modern contraceptive use among sexually active 15–19-year-old girls in these countries. It employed a multidisciplinary approach bringing together social marketing, human-centered design, developmental neuroscience, sociocultural anthropology and youth engagement to design and scale up the program in the intervention areas.

In Tanzania, A360 developed the 'Kuwa Mjanja' ('Be Smart') intervention. Kuwa Mjanja is an adolescent sexual and reproductive health program which provides 15–19-year-old girls with adolescent-friendly contraceptive counseling alongside life and entrepreneurial skills sessions. The Kuwa Mjanja events aimed to spread the message about the role of contraception in enabling girls to 'achieve their dreams' and supporting their future plans. The events are organized as out-of-clinic events – pop-up tents in community spaces where girls learn an entrepreneurial skill such as jewelry/ soap making from a qualified provider (Itad, 2020). During out-of-clinic events, girls are provided with a 'next visit' card with details of a nearby facility, the phone number of a Population Services International (PSI) staff member or service provider, and an Unstructured Supplementary Service Data (USSD) number they can text anonymously with questions. Girls are also asked to provide their own phone numbers so PSI can follow up through a central call center. Kuwa Mjanja 'Queens' act as a continuous point of contact for girls in their communities, helping to direct girls to youth-friendly providers if they have questions or concerns. Kuwa Mjanja Queens are paid small stipends and are recruited through the network of local government officials. They are further trained to visit girls and parents door-to-door to invite them to the upcoming events. In-clinic events in public health facilities provide a safe space for girls to access counseling from a trained government service provider along with access to free, on-the-spot contraception. Lastly, up to 2019, the Kuwa Mjanja events also included 'parent sessions' to support parents of adolescent girls to start conversation about contraception and encourage them to enable and support their daughters to attend the Kuwa Mjanja events.

A360 established a Theory of Change (ToC) (see

**Figure** 1) which described the theoretical causal pathways through which the project was planned to bring about the intended change. As the underpinning structure of A360, the ToC forms the key framework for the analysis and interpretation of the outcome evaluation (Itad & LSHTM, 2016).

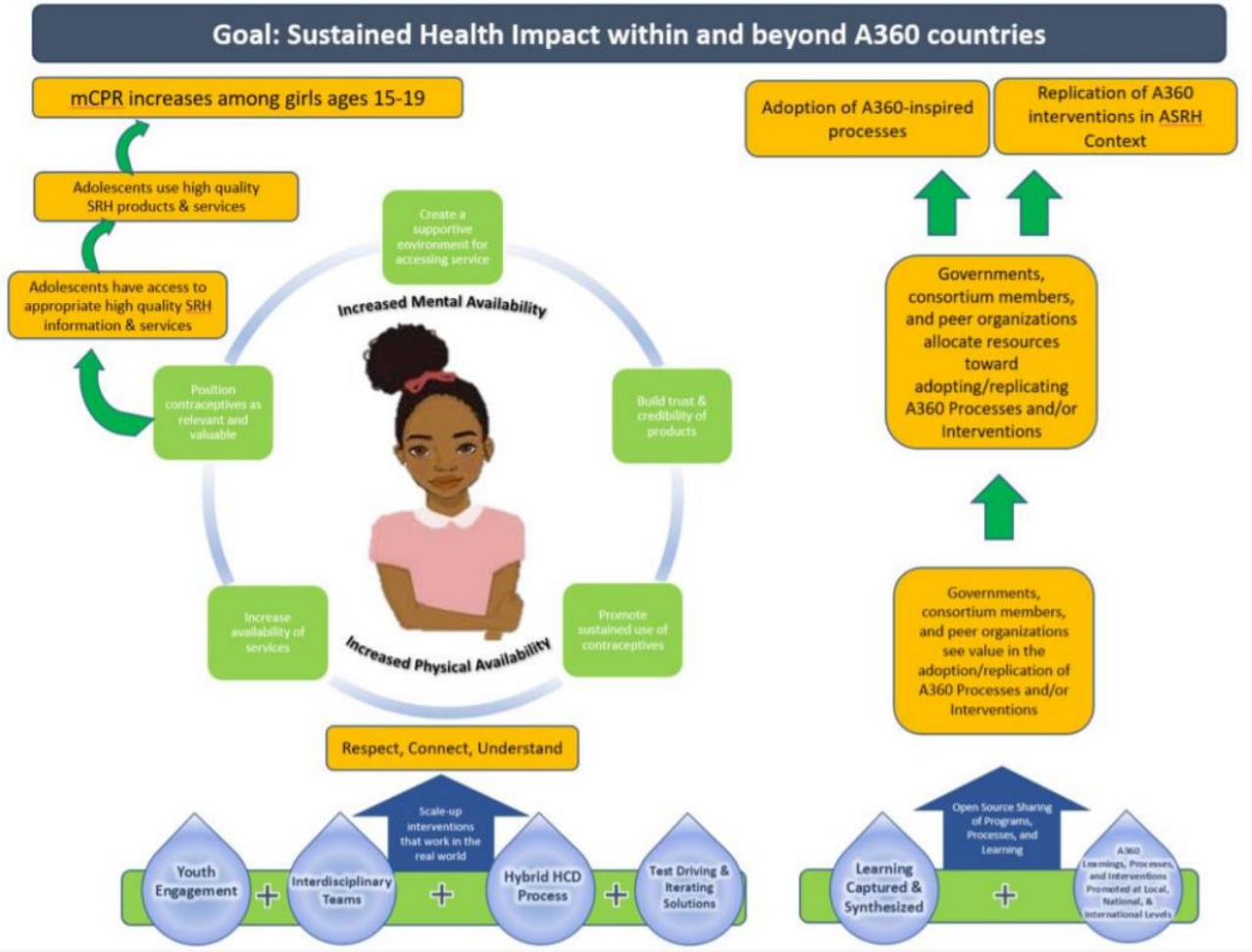
The external evaluation of the Kuwa Mjanja intervention comprised a process evaluation, an outcome evaluation and a cost-effectiveness study. This report is focused on the outcome

evaluation of the A360 intervention in Tanzania. Our primary aim was to evaluate the effectiveness of the Kuwa Mjanja intervention in increasing the population-level modern contraceptive prevalence rate (mCPR) among girls aged 15–19 years in study sites. Our secondary aims were to:

(1) evaluate the effectiveness of the intervention in changing secondary outcomes aligned with the A360 ToC;

(2) quantify the association between the respondents' self-reported exposure to A360 and the primary and secondary outcomes.

Figure 1: A360 Theory of Change[1]




## Methods

PSI and partners implemented Kuwa Mjanja in 10 regions in Tanzania (Kagera, Geita, Mwanza, Arusha, Tabora, Tanga, Dar es Salaam, Mbeya, Iringa and Morogoro). The outcome evaluation was carried out in urban areas of Ilemela District in Mwanza Region. Mwanza Region was chosen by the evaluators owing to the high unmet need for modern contraception among 15–19-year-old girls relative to the other A360 target regions (DHS, 2016).

A repeated cross-sectional survey was conducted. 15–19-year-old married and unmarried girls living in the study sites at the time of the survey were targeted as a part of the evaluation. The A360

[1] Source: Slide deck 'A360 Evaluation Key findings from the Process Evaluation, 2019', March 2020.

program was implemented in this region from January 2018 to September 2020. Baseline survey data were collected between 8 September 2017 and 31 January 2018 and endline survey data between 28 May and 12 October 2021.

For the primary analysis, the impact of Kuwa Mjanja was assessed by quantifying the changes in mCPR between baseline and endline. The primary hypothesis was that the prevalence of modern contraceptive use among sexually active girls aged 15–19 years living in areas where the A360 program was implemented would increase between baseline and endline, and that this increase in mCPR would be greater than that which would have occurred in the absence of the intervention. A linear regression model was fitted to obtain the average street-level difference in mCPR between baseline and endline. The linear regression model was adjusted for predefined confounders, which included age, education level, religion, wealth quintiles and parity, averaged at street level. In addition to the prespecified confounders, marital status, averaged at street level, was used in the primary and secondary outcome analyses.

Further, the impact of Kuwa Mjanja was assessed through self-reported exposure to the Kuwa Mjanja intervention at endline. Logistic regression models were used for binary outcomes, and linear regression models were used for continuous outcomes. Regression models included the same predefined confounders as described above. Finally, data collected by the Ministry of Tanzania on modern contraceptive use were examined to assess the change in mCPR across Tanzania, in order to understand ongoing trends in mCPR.

## Results

### Implementation

Kuwa Mjanja was delivered through A360 outreach teams who rotated between districts each month. Kuwa Mjanja was implemented by PSI in 10 regions (Kagera, Geita, Mwanza, Arusha, Tabora, Tanga, Dar es Salaam, Mbeya, Iringa and Morogoro) (Atchison *et al.*, 2018).

### Characteristics of adolescent girls

In both the baseline and endline surveys, the highest proportion of respondents were 15 years old (22.74%).The median age of unmarried adolescent girls was 17 years (range 15–19 years). The median age of married adolescent girls was 19 years (range 15–19 years) at baseline and 18 (range 15–19 years) at endline. Almost two-thirds (65.27%) had secondary ‘O’ level training or higher at endline, an increase from 57% at baseline. Protestants and members of other Christian denominations represented the most common religion (43.98% and 47.43% in baseline and endline respectively). 94.28% baseline and 92.96% endline respondents were unmarried at the time of the survey.

### Primary outcome

Our findings indicate that mCPR was 50.79% (95% confidence interval (CI): 47.81 – 53.76) at baseline and 41.56% (95% CI: 38.41 – 44.77) at endline. The mCPR among girls aged 15–19 years in Ilemela District decreased by nine percentage points (95% CI: 0.3 – 17) from baseline to endline, after adjusting for confounding variables. In further exploratory analysis, we saw that the decrease in overall modern contraception use over the study period was driven by a decline in male condom use from 34.17% (95% CI: 31.24 – 37.23) at baseline to 19.09% (95% CI: 16.20 – 22.36) at endline. Although we were unable to access data on mCPR trends among adolescents from non-A360 sites in Tanzania as originally planned, available data did not suggest that large declines in mCPR were seen among all women in Tanzania over the same period.

### Secondary outcomes

**Figure 2** shows a summary of the results. Long-acting reversible contraceptive (LARC) use among modern contraceptive users, and awareness of contraceptive products, both increased over time. There was evidence of a decrease over time in four outcomes included within the A360 ToC: awareness about where to obtain the service, intention to use a modern contraceptive method in the future, girls' views on the benefits of modern contraception, and self-efficacy to use modern contraception.

### Association between self-reported exposure to A360 and primary and secondary outcomes

Self-reported exposure to Kuwa Mjanja was 24%. After adjustment for age, education, religion, wealth quintiles and parity, adolescent girls who reported exposure to A360 had greater mCPR than those who reported no exposure (adjusted odds ratio (aOR): 1.63; 95% CI: 1.28 – 2.09). A 54% prevalence of modern contraceptive use was seen among the respondents who reported exposure to A360, compared to 37% among the ones who reported having no exposure to A360.

Self-reported exposure to A360 was also associated with reduced unmet need (aOR: 0.72; 95% CI: 0.54 – 0.98), increased knowledge (i.e. awareness) of contraceptive products (aOR: 2.01; 95% CI: 1.16 – 3.49) and an improvement in girl's views on the benefits of contraception (aOR: 1.27; 95% CI: 0.99 – 1.62) (**Figure 3**).

## Discussion and conclusion

Contrary to our a priori hypothesis, there was a 9 percentage point decrease in mCPR among study participants between baseline and endline. This decrease in overall modern contraception use over the study period was driven by a decline in self-reported male condom use. Additionally, over the years, we found evidence of a decrease in agreement with benefits of contraceptive use, intention to use, attitude toward contraceptives, and self-efficacy toward the use and access of modern contraceptives.

In contrast, we saw an increase in LARC use and awareness of contraceptives between baseline and endline. Further, among the 24% of unmarried and married adolescent girls who reported exposure to A360 interventions, we found evidence of increased use of modern contraceptives and decreased unmet need. This association persisted after adjustment for covariates. Exposure to A360 also showed a positive association with adolescent girls' awareness of contraceptive products, awareness of where to obtain them and perceived benefit of modern contraceptives.

Our study used a before–after design to track the change over time in mCPR among adolescent girls in Mwanza, Tanzania during implementation of A360. The sampling strategy ensured that data collected were representative of the population of girls in the study area at each time period. However, we have identified potential limitations to the study. Most importantly, no data were collected from a non-exposed comparator group, so these results could reflect changes over time outside Kuwa Mjanja implementation. Additionally, there were some measured differences between girls at baseline and endline – most notably in levels of educational attainment and proportion of girls in school – and unmeasured differences between the two populations cannot be ruled out.

In conclusion, contrary to expectation we found statistically significant evidence of a population-level decrease in mCPR among adolescent girls in Mwanza, Tanzania over the period of A360 implementation, driven by a fall in self-reported condom use. However, we also found some evidence of greater use of modern contraception among girls who self-reported exposure to Kuwa Mjanja as compared to girls who were not exposed. Data on secondary outcome showed mixed trends. Possible explanations for these findings include an unintended negative impact of A360 on population-level condom use, bias in the study methodology at baseline, endline or both, or a combination of factors. The process evaluation findings will be critical in helping to further unpack these results.

Figure 2:Results of linear regression models, adjusted for confounding factors[2]

Figure 2A (for binary outcomes)

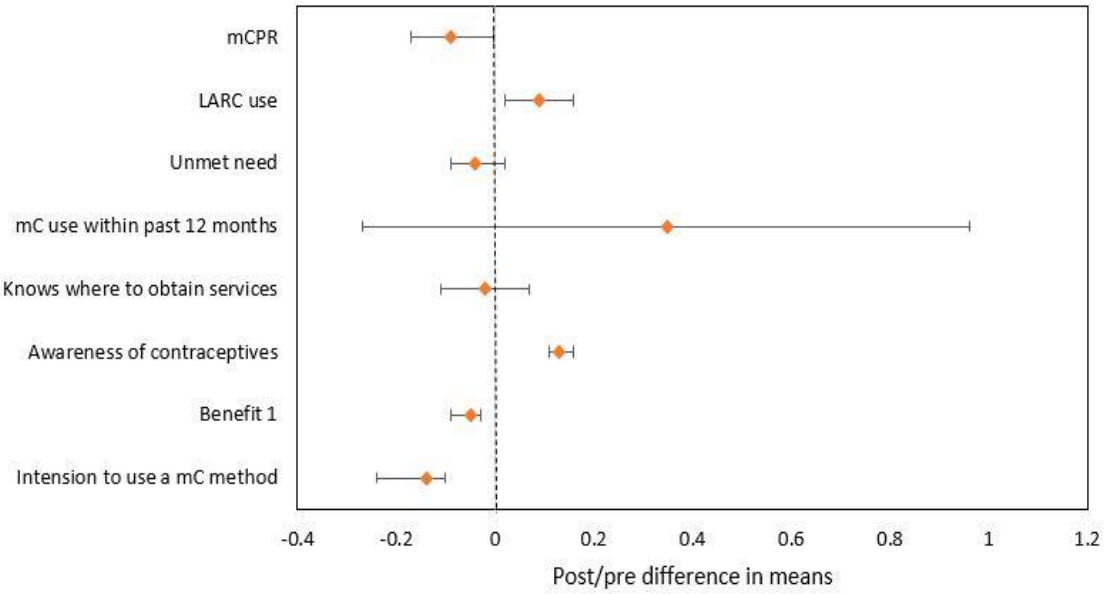
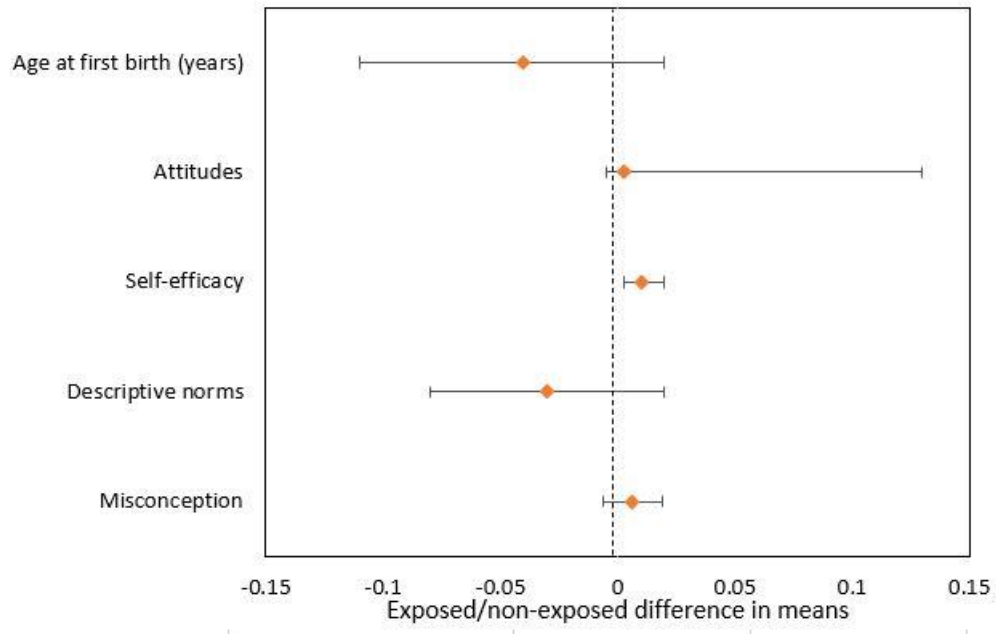



Figure 2B (for continuous outcomes)




[2]Increase in misconception is the desirable outcome. For the misconception index, respondents who disagreed with the misconception were scored 1 and respondents who agreed were scored 0. Thus, higher scores are more desirable than lower scores. Note that age at first birth is in years; other measures are percentage point changes.
Benefit 1: Modern contraception allows adolescent girls to complete their education, take up better economic opportunities and fulfil their potential.

Figure 3: Associations between self-reported exposure and binary outcomes (odds ratios) (Figure 3A) and between self-reported exposure and continuous outcomes (Figure 3B)[3]

Figure 3A: Associations between self-reported exposure and binary outcomes (odds ratios)

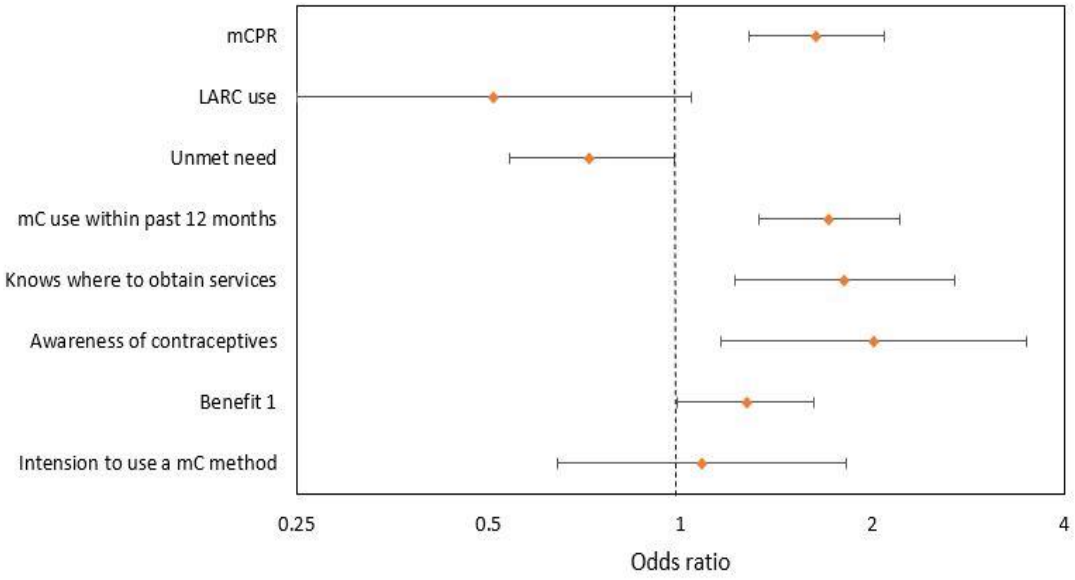
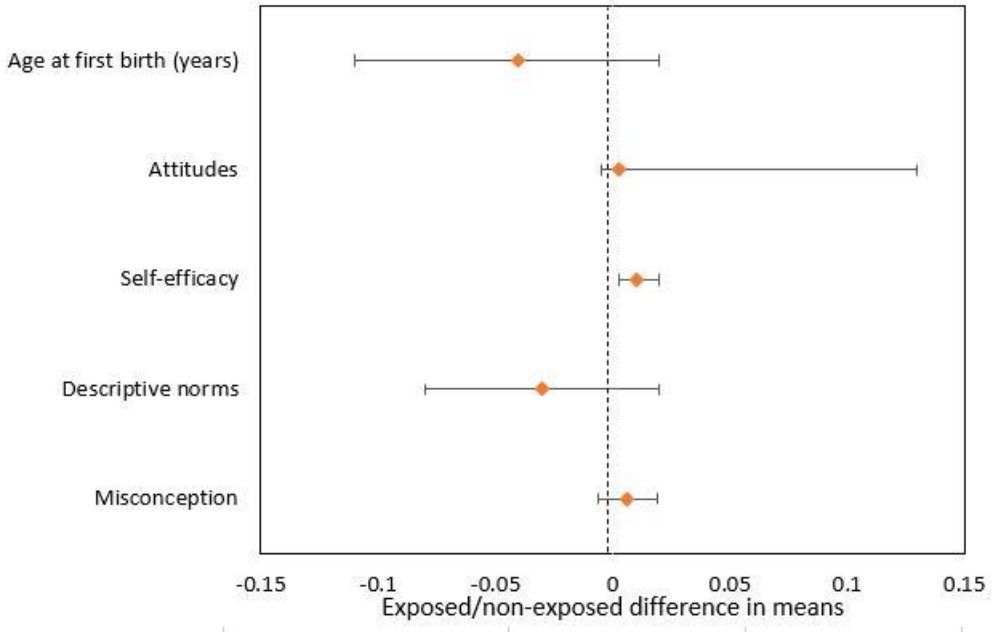



Figure 3B: Associations between self-reported exposure and continuous outcomes




[3] Abbreviations: mCPR – modern contraceptive prevalence rate; LARC – long-acting reversible contraceptives; mC – modern contraception.
Increase in misconception is the desirable outcome. For the misconception index, respondents who disagreed with the misconception were scored 1 and respondents who agreed were scored 0. Thus, higher scores are more desirable than lower scores. Note that age at first birth is in years; other measures are percentage point changes.
Benefit 1: Allows adolescent girls to complete their education, take up better economic opportunities and fulfill their potential.

# Adolescents 360 Outcome Evaluation in Tanzania

Summary report

## 1. Introduction to the program and the evaluation

### 1.1 Background

Adolescent pregnancies can be considered a major public health concern despite a declining trend in recent years (Leftwich & Alves, 2017). According to the United Nations Children's Fund (UNICEF), an estimated 15% of women below the age of 18 give birth globally (UNICEF, 2021). Furthermore, among 15–19-year-old girls, 3.9 million unsafe abortions following adolescent pregnancies in low- and middle-income countries have been reported (WHO, 2020). According to medical consensus, these adolescent pregnancies are detrimental not only to the adolescent mother but also to the babies (Karataşlı *et al.*, 2019). Hypertensive disorders of pregnancy, anemia, gestational diabetes and increased delivery complications are some of the consequences faced by pregnant adolescents (Azevedo *et al.*, 2015). Due to this, pregnancy and childbirth-associated complications have been reported as a leading cause of death among 15–19-year-old girls globally (Neal *et al.*, 2012). Additionally, these risks can be elevated in low-resource, low-income settings because of the lack of quality services (Gottschalk & Ortayli, 2014). Thus, ensuring access to sexual and reproductive healthcare services, including for family planning, is critical to reduce newborn, child and maternal mortality (Bearinger *et al.*, 2007; UN, 2015).

The use of modern contraceptives can also increase women's decision-making power, which in turn can bring about better educational and employment opportunities (Alano and Hanson, 2018; Do and Kurimoto, 2012).

In Tanzania, despite an increasing trend in overall contraceptive use from 1991, there are notable differences in contraceptive use across different geographical regions in Tanzania. Use of modern contraceptives among married women varied from 52% in Lindi to 13% in Geita (DHS, 2016).

Modern contraceptive use is highest among currently married women in the Southern Zone (51%), followed by the Southern Highlands Zone (44%), and the lowest in Zanzibar (14%). In Tanzania, modern contraceptive use ranges from a low of 7% among currently married women in Kusini Pemba to a high of 52% of women in Lindi and 51% in Ruvuma (DHS, 2016).

Thus, understanding the trends in modern contraceptive use and enabling the provision of family planning services can play a significant role not only in decreasing the mortality rate among adolescent girls globally but also in empowering girls.

### 1.2 Adolescents 360 intervention

Adolescents 360 (A360) was a four-and-a-half-year initiative that targeted adolescents in Ethiopia, Nigeria and Tanzania. It aimed to increase modern contraceptive use among 15–19-year-old girls in these countries (Atchison *et al.*, 2018). The intervention employed adolescent-friendly services in the form of community-level sexual and reproductive health education, counseling and increased contraceptive availability (Atchison *et al.*, 2018). A multidisciplinary approach bringing together social marketing, human-centered design, developmental neuroscience, sociocultural anthropology

and youth engagement was used to design and scale up the program in the intervention areas. The A360 initiative was funded by the Bill & Melinda Gates Foundation (BMGF) and the Children's Investment Fund Foundation (CIFF). Population Services International (PSI) led the implementation of A360 in Tanzania.

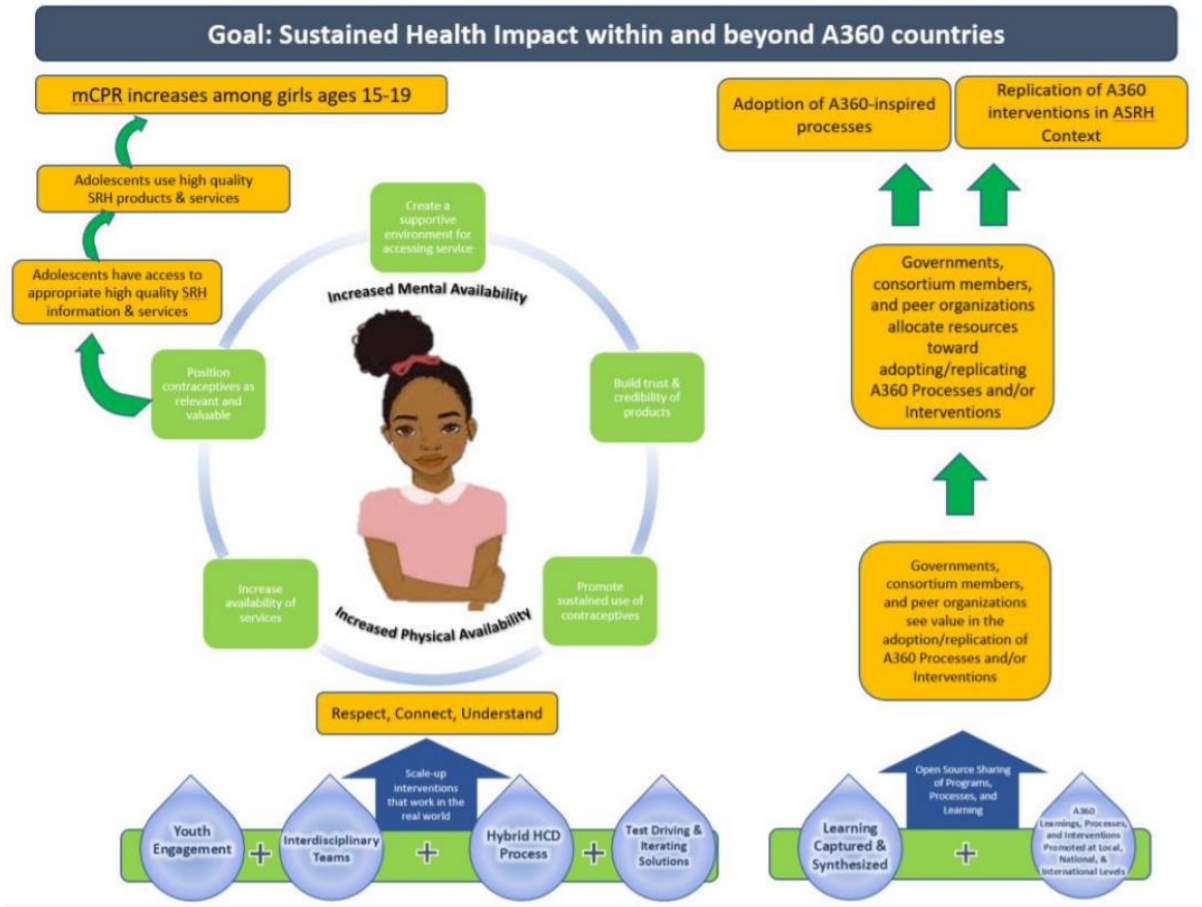
In Tanzania, PSI implemented the A360 intervention under the 'Kuwa Mjanja' brand. Kuwa Mjanja is an adolescent sexual and reproductive health program which provides 15–19-year-old girls with adolescent-friendly contraceptive counseling alongside life and entrepreneurial skills sessions. The Kuwa Mjanja events aim to spread the message about the role of contraception in enabling girls to 'achieve their dreams' and support their future plans. Some Kuwa Mjanja events are held out-of-clinic, where girls are given the chance to hear messages that validate their aspirations, receive contraceptive counseling from a trained provider, and learn and practice a vocational skill (Itad, 2020). Additionally, in-clinic events in public health facilities provide a safe space for girls to access counseling from a trained government service provider along with access to free, on-the-spot contraception. Lastly, the Kuwa Mjanja events also run 'parent sessions' to encourage parents of adolescent girls to start conversation about contraception and to enable and support their daughters to attend the Kuwa Mjanja events (Itad, 2020). Kuwa Mjanja is delivered through A360 outreach teams who rotate districts each month. In Tanzania, Kuwa Mjanja was implemented by PSI in 10 regions (Kagera, Geita, Mwanza, Arusha, Tabora, Tanga, Dar es Salaam, Mbeya, Iringa and Morogoro) (Atchison *et al.*, 2018). The outcome evaluation was conducted in urban wards of Ilemela District, Mwanza Region (see **Figure 4**). Mwanza has a total population of 2.8 million (DHS, 2016).

Figure 4 : Map of Mwanza region showing districts by boundaries (green lines represent the major roads)


## 1.3 Conceptual framework

The A360 project developed a Theory of Change (ToC) **(Figure 5**: A360 Theory of Change**),** which described the theoretical causal pathways through which the project aimed to achieve the intended change. As the underpinning structure of the A360 project, the ToC model forms the key framework for the analysis and interpretation of the outcome evaluation (Itad & LSHTM, 2016).

Figure 5: A360 Theory of Change[4]




## 1.4 Hypothesis and aims

Our primary hypothesis was that the modern contraceptive prevalence rate (mCPR) among sexually active fecund girls aged 15–19 years living in the areas where A360 is implemented will increase between baseline (2018) and endline (2021). Hence, our principal aim was to evaluate the effectiveness of Kuwa Mjanja in increasing mCPR among 15–19-year-old girls in Tanzania. Our subsequent secondary aims aligned with A360 ToC (see **Figure 5**) and are presented in **Table 1**.

In order to strengthen the validity of our findings, we also quantified the association between the respondents' self-reported exposure to A360 and primary and secondary outcomes.

**Table 1: Primary and secondary outcomes**

| Outcome domain | Indicators |
|---|---|
| Primary outcome | • Prevalence of modern contraceptive use among sexually active girls aged 15–19 years (a respondent is classified as sexually active if they reported having sexual intercourse in the past 12 months) |
| Secondary outcomes | • Proportion of current modern contraceptive users who are using a long-acting reversible contraceptive (LARC)<br>• Modern contraceptive use in last 12 months (past use)<br>• Age-specific fertility rates |

[4] Source: Slide deck 'A360 Evaluation Key findings from the Process Evaluation, 2019', March 2020.

| | |
|---|---|
| | • Unmet need for modern contraception among sexually active girls aged 15–19 years<br>• Awareness of where to obtain contraceptive services and products<br>• Adolescent girls' knowledge on the benefits of modern contraceptives<br>• Adolescent girls' misconceptions about modern contraceptives<br>• Adolescent girls' agency (self-efficacy) to use modern contraceptives to prevent unintended pregnancies<br>• Adolescent girls' awareness of modern contraception<br>• Adolescent girls' attitudes toward the use of modern contraceptives to prevent unintended pregnancies |

## 1.5 Structure of the report

The external evaluation of the A360 intervention comprised a process evaluation led by Itad, an outcome evaluation led by the London School of Hygiene & Tropical Medicine (LSHTM) and a cost-effectiveness study led by Avenir Health. This report presents key findings and insights emerging from the outcome evaluation in Tanzania and was written in collaboration with the team at Mwanza Interventional Trials Unit (MITU), who led data collection. The target audiences are BMGF, CIFF and the PSI-led consortium that implements the A360 program.

This report starts with a summary of the methods used for the outcome evaluation which is supported by several appendices. The methods are followed by the results section, which is organized as follows: 3.1 – Evaluation setting; 3.2 – Characteristics of the survey population; 3.3 – Main outcome; 3.4–3.8 – Secondary outcomes, subdivided into ToC components; 3.9 – Association between self-reported exposure to A360 and primary and secondary outcomes; 3.10 – Differences in secondary outcomes by marital status. The report ends with a brief discussion and conclusions.

# 2. Methods

## 2.1 Evaluation setting

PSI and its partners implemented Kuwa Mjanja in 10 regions in Tanzania (Kagera, Geita, Mwanza, Arusha, Tabora, Tanga, Dar es Salaam, Mbeya, Iringa and Morogoro). We carried out the outcome evaluation study in urban areas of Ilemela District in Mwanza Region. Mwanza Region was chosen by the evaluators as that region had a high unmet need for modern contraception among 15–19-year-old girls relative to the other A360 target regions (DHS, 2016). The unmet need reported in Mwanza was 34% according to the 2016 DHS. Additionally, the study was limited to the urban and semi-urban wards in Ilemela District, in part since PSI focuses efforts in more densely populated areas and in part due to resource constraints. Additionally, this selection was driven by guidance from the District Reproductive and Child Health Coordinator, who recommended targeting wards with high unmet demand. Lastly, the collaborative link between LSHTM and MITU also contributed to the selection of a district in Mwanza region. The methodology used in the outcome evaluation is described in detail in Atchison et al. (2018) and in **Appendix A**.

The selected Ilemela District covers the northern part of Mwanza municipality and comprises 19 wards. Unlike the baseline survey, which included 15 urban and semi-urban wards, the endline survey was restricted to 14 urban and semi-urban wards in the Mwanza region. The population size of each of these wards is comparable. Furthermore, each ward is administratively divided into a number of neighborhoods, called 'streets'.

## 2.2 Design and instrumentation

A repeated cross-sectional design was adopted for the evaluation. Married and unmarried girls (15–19 years old) living in the study sites at the time of the survey were targeted as a part of the evaluation. The primary sampling unit (PSU) for our survey was a street – the smallest administrative unit within each ward. As per the study protocol, a two-stage sampling design was used. For the baseline survey, 15 urban and semi-urban wards were included. A simple random sample (SRS) of 34 streets was selected from across the 15 urban and semi-urban wards. In the first eight streets, an SRS of households was visited; after this, the sampling strategy was modified to visit all households in a street. Therefore, in the remaining 26 streets all households were visited. The change in sampling strategy was necessary to ensure the target sample size was achievable. A similar sampling strategy was employed at endline. However, due to logistical reasons one of the wards included at baseline was excluded from the sample at endline. The final survey area included 14 wards and 30 streets.

In addition to adolescent girls, cohabiting adults were also interviewed as part of the survey. In accordance with the study protocol, the adults were systematically picked after certain intervals from a list of eligible girls. Eligible girls are the ones who reported sexual activity in the past 12 months and the ones who consented to the interview of an adult they live with.

MITU collected population-based survey data at both baseline and endline. The baseline population-based survey data were collected between 8 September 2017 and 31 January 2018 and endline survey data between 28 May and 12 October 2021.

The data collection tool employed was a questionnaire that was adapted from several research instruments. The questionnaire was developed in English and then translated into Swahili. Following extensive pretesting, and after pilot surveys in communities outside of the selected study areas, final modifications were made to the questionnaire.

Female interviewers aged between 18 and 26 administered the questionnaire in face-to-face interviews. The interviewers were provided with one-week extensive training prior to the administration of the interviews. Data were collected and recorded electronically on tablets in the field. This allowed for improved data quality through real-time data delivery, built-in logical checks and skip patterns.

Ethical approval was obtained from the LSHTM Ethics Committee and the National Health Research Ethics Review Sub-Committee of Tanzania.

## 2.3 Outcome measures

The primary outcome was mCPR. For the A360 outcome evaluation, mCPR is defined as ‘the proportion of fecund and sexually active girls who reported the use of modern contraceptives at the time of the survey’. Additionally, we have described the prevalence of modern contraceptives using the DHS definition (see **Appendix C**).

We also described and analyzed certain secondary outcomes in order to facilitate a better understanding of the ways in which A360 affected modern contraceptive use among adolescents.

## 2.4 Statistical analysis

The impact of A360 in Tanzania was analyzed using STATA 17.0 (StataCorp, 2021). Initially, descriptive statistics on sociodemographic and reproductive health characteristics of the surveyed adolescent girls at baseline and endline were calculated. To assess the impact, the street-level mCPR rates were calculated at both baseline and endline, and then change over time within pairs was estimated by linear regression (‘0’ baseline and ‘1’ endline). The regression coefficient associated with this model describes the street-level difference between endline and baseline. Thus, a value

above 0 is indicative of an increase over time and a value below 0 is suggestive of decrease over time. Additionally, we adjusted for age, education level, parity, religion, marital status and wealth quantile, averaged at street level. The confounders were listed in the prespecified statistical analysis plan.

### 2.4.1 Analysis of trends in modern contraceptive use

A secondary dataset on modern contraceptive use was examined to assess the change in mCPR in the A360 region. This was done because mCPR was measured only for intervention areas and there was no comparison group, so observed changes in mCPR could be due to other influences (Atchison *et al.*, 2018).

Publicly available data on mCPR from the Tanzania National Health Portal was used to describe the trend in mCPR in Tanzania. Data were collected routinely by the Ministry of Health (MoH) in Tanzania. Data were not disaggregated, and presented the average monthly mCPR from 2016 to 2020 for married and unmarried women in the 15–49 age group. Although similar data were available for 2021, we suspected potential errors in reporting, and hence 2021 was not included in the secondary data analysis. Since the mCPR was calculated as a part of routine data collection by the MoH, mCPR according to the A360 outcome evaluation definition could not be calculated. Using these data, we calculated the annual mean mCPR along with the 95% CI estimates.

### 2.4.2 Association between self-reported exposure to A360 and primary and secondary outcomes

We also assessed differences in primary and secondary outcomes among adolescents who did and did not self-report exposure to the Kuwa Mjanja intervention. The questions presented to assess the respondents' self-exposure are summarized in Table 2.

The association between self-reported exposure to A360 and the primary and secondary outcomes was estimated using the endline data. For binary outcomes we used a logistic regression model, which calculated the ratio of odds among exposed and non-exposed, thus giving the odds ratio (OR). The association is positive if OR > 1 and negative if OR < 1. We adjusted the model using a fixed effect of street to account for clustering of observations. For continuous outcomes, such as attitude and self-efficacy, the difference in mean score between exposed and non-exposed was calculated using linear regression models. The association is positive if the difference is above zero and negative if it is below zero. All the models were adjusted for the prespecified confounders described above. An analysis of associations between self-reported exposure and sociodemographic characteristics is presented in **Appendix B**.

Table 2: Defining exposure on the basis of the questions[5]

| | | POSITIVE ANSWER | NEGATIVE ANSWER | EXPOSED |
|---|---|---|---|---|
| **Q1** | Heard about health project with pineapple as a symbol (no/yes) | Answers yes | Answers no | Answers positively to Q1 and to Q3 or Q4 |
| **Q2** | Heard about Kuwa Mjanja (no/yes) | Answers yes | Answers no | Answers positively to Q2 and to Q3 or Q4 |
| **Q3** | Attended a meeting, event or workshop where Kuwa Mjanja was mentioned or pineapple displayed (no/yes) | Answers yes | Answers no | Answers positively to Q3 and to Q1 or Q2 |
| **Q4** | Heard sentences from the nanasi story (1 to 4 sentences) | Recognizes at least one sentence | Does not recognize sentences | Answers positively to Q4 and to Q1 or Q2 |

Figure 6: Image presented to endline survey respondents


# 3. Results

## 3.1 Evaluation setting

A change in mCPR could be brought about by other interventions targeting youth and adolescents in the study area during the same time period. We identified similar activities conducted in Mwanza by Marie Stopes Tanzania and the IMPACT project. In Mwanza region, Marie Stopes Tanzania, a part of Marie Stopes International, provides a range of modern contraceptive methods according to the clients' needs, along with sexual and reproductive health counseling. In Mwanza, Marie Stopes Tanzania has static clinics where people can get information about their reproductive choices and access high-quality family planning services. Marie Stopes Tanzania serves people of all ages, and does not specifically reach out to adolescent girls. However, it is possible that some members of the study population are served by Marie Stopes services. Improving Access to Reproductive, Maternal and New-born Health (IMPACT), was launched in 2017, and was cofounded by Global Affairs Canada and Aga Khan Foundation Canada. IMPACT targeted over 750,000 women, girls, infants and men living in eight districts in Mwanza. Their activities included demand creation for contraception and referrals to facilities for contraception services, but they did not provide contraception directly.

[5] Source: A360 Outcome Evaluation: Statistical Analysis Plan.

## 3.2 Characteristics of the survey population

*At both baseline and endline, most respondents were 15 years old. Over half of them had secondary 'O' level training or higher education. Protestants/other Christian denominations represented the most common religion. Over 90% of the respondents in Tanzania were unmarried.*

At both baseline and endline, the median age of unmarried adolescent girls was 17 years (range 15–19 years). The median age of married adolescent girls was 19 years (range 15–19 years) at baseline and 18 (range 15–19 years) at endline. In both the baseline and endline surveys, the highest proportion of respondents were 15 years old (22.74%). Among the respondents, 18.17% were aged 19 years at baseline and 19.65% were 19 years old at endline. At endline, among the 421 respondents who had given birth, 85.51% reported having one child. Almost two-thirds of respondents (65.27%) had secondary 'O' level training or higher at endline, an increase from 57% at baseline. Respondents with no education fell from 3.70% at baseline to 2.24% at endline. Protestants and other Christian denominations remained the most commonly represented religion at both baseline and endline, followed by Catholics and Muslims. The proportion of individuals who owned a smartphone was higher at baseline (10.45%) compared to endline (9.95%). Additionally, 94.28% baseline and 92.96% endline respondents were unmarried at the time of the survey (see **Table 6** in **Appendix C**).

Furthermore, the proportion of girls who reported sexual activity within the last month varied from 6.46% (95% CI: 5.48 – 7.62) at baseline to 7.83% (95% CI: 6.59 – 9.28) at endline. Similarly, 20.05% (95% CI: 18.63 – 21.55) of girls reported sexual activity in the past 12 months at baseline and 20.72% (95% CI: 19.36 – 22.15) at endline. Additionally, the proportion of girls who were pregnant at the time of the survey varied from 2.79 (95% CI: 2.35 – 3.31) at baseline to 2.87 (95% CI: 2.50 – 3.30) at endline (**Table 7** in **Appendix C**).

## 3.3 Main outcome – modern contraceptive use

*Overall, the regression analysis adjusted for confounding factors showed a 9 percentage point (95% CI: 0.3% – 17%) decrease in mCPR between baseline and endline surveys.*

**Table 3** below shows the individual-level mCPR at baseline and endline. The mCPR was 50.79% (95% CI: 47.81 – 53.76) at baseline and 41.56% (95% CI: 38.41 – 44.77) at endline. The regression model adjusted for confounding variables showed evidence of a 9 percentage point decrease in mCPR over time (95% CI: -0.17 – -0.003); p-value: <0.0429; **Table 4**).

'Trying to get pregnant' (32.35%) followed by 'breastfeeding' (16.7%) were the most common reasons for not using contraceptives by married respondents, whereas 'infrequent sex' (12.24%) was the most common reason for non-use of modern contraceptives by unmarried respondents.

**Table 3: Descriptive results: mCPR (95% CI) in Tanzania at baseline (2018) and endline (2021)**

| | mCPR Baseline | mCPR Endline |
|---|---|---|
| **Married** | 31.31 (23.10 – 40.89) | 33.94 (28.14 – 40.28) |
| **Unmarried** | 53.71 (50.79 – 56.62) | 43.23 (39.47 – 47.07) |
| **Married + unmarried** | 50.79 (47.82 – 53.76) | 41.56 (38.42 – 44.78) |

**Table 4: Analytical results: the relationship between contraceptive use (95% CI) and time unadjusted and adjusted for confounders**

| | Unadjusted for confounders | | Adjusted for confounders[1] | |
|---|---|---|---|---|
| | **Coefficient** | **p-value** | **Coefficient** | **p-value** |

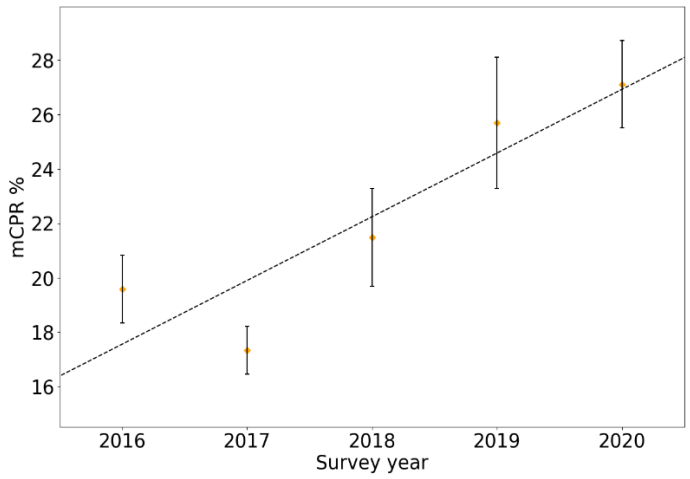
| | (95% CI) | | (95% CI) | |
|---|---|---|---|---|
| **Married + unmarried**[2] | | | | |
| mCPR * time | -0.09 (-0.15 – -0.05) | 0.0004 | -0.09 (-0.17 – -0.003) | 0.0429 |
| **Married girls** | | | | |
| mCPR * time | 0.02 (-0.09 – 0.14) | 0.670 | 0.04 (-0.06 – 0.14) | 0.4066 |
| **Unmarried girls** | | | | |
| mCPR * time | -0.10 (-0.16 – -0.05) | <0.001 | -0.08 (-0.15 – -0.003) | 0.0418 |

[1] Street-level estimates adjusted for age, religion, education level, parity, wealth quintile and marital status. Results of a linear regression model. [2] The model with both married and unmarried respondents was adjusted for marital status in addition to the other confounders.

### 3.3.1 Analysis of trend in modern contraceptive use

A secondary data analysis was conducted to identify any trends in modern contraceptive use in Tanzania. The data, obtained from the Tanzania National Health Portal, represents the modern contraceptive prevalence rate among 15–49-year-old women from 2016 to 2020. As seen in **Figure 7** below, there seems to be an upward trend in mCPR. However, it is necessary to note that the data presented include both adolescents and adults, and the figure excludes the last year of data collection (2021).

Figure 7: Secondary dataset (HMIS) – range and average mCPR among married and unmarried women aged 15–49 years in Tanzania between 2016 and 2020




## 3.4 Adolescents' use of high-quality sexual and reproductive health products and services

Kuwa Mjanja was designed to provide high-quality sexual and reproductive health products and services through several activities, such as the free, on-the-spot provision of contraceptives in the in-clinic and pop-up events. To assess impact of implementation on this component of the ToC, several outcomes were measured.

*According to the linear regression model, there was a 9 percentage point increase over time (95% CI: 2 – 16) in the proportion of modern contraception users who were using LARCs.*

*There was no evidence of change in either unmet need or the age specific fertility rate.*

### 3.4.1 Proportion of long-acting reversible contraceptive users among all modern contraceptive users

Among the sexually active and fecund current users of modern contraception, almost a 7% increase in LARC users was seen at endline. 14.29% (95% CI: 10.76 – 18.73) and 20.99% (95% CI: 18.04 – 24.28) reported the use of LARCs (including implants, intrauterine devices (IUDs) and injectables) at baseline and endline respectively. This increase over time can be attributed to the increase in use of implants. The regression model also showed evidence of a nearly 9 percentage point increase in the proportion of LARC users over time (95% CI: 2 – 16; p-value: 0.0192; see **Table 17** in **Appendix C**).

### 3.4.2 Use of a modern contraceptive method within last 12 months

There is no evidence of an effect of Kuwa Mjanja on the use of modern contraceptive methods in the past 12 months (coefficient: 0.35; 95% CI: -0.27 – 0.96; p-value: 0.2508). However, evidence suggests that there is a positive impact of exposure to A360 on modern contraceptive use. This is discussed in Section 3.9.

### 3.4.3 Age-specific fertility rate and unmet need for modern contraception

Unmet need for modern contraception was 38.20% at baseline (95% CI: 35.72 – 40.74) and 35.95% at endline (95% CI: 32.93 – 39.09; **Table 9** in **Appendix C**). Additionally, according to the regression model, there is no evidence of change over time (coefficient: -0.04; 95% CI: -0.09 – 0.02; p-value: 0.1934; see **Table 17** in **Appendix C**). The age-specific fertility rate was similar at baseline and endline (see **Table 7** in **Appendix C**).

## 3.5 Adolescent girls have access to appropriate high-quality sexual and reproductive health information and services

Another objective of A360 was to provide greater access to high-quality sexual and reproductive health information and services. In order to access the impact on this component of the ToC, we measured the girls' awareness of contraceptive products and their knowledge of where to obtain health services.

*There was a 13% increase over time in the proportion of girls who were aware of contraception (heard of contraceptives).*

*However, there was no evidence of change over time in awareness of where to obtain the family planning services.*

### 3.5.1 Knowledge of contraceptive methods

Most respondents had heard of contraceptives at both baseline and endline. At baseline 81.23% (95% CI: 80.13 – 82.29) reported having previously heard of contraceptives, with this proportion increasing to 95.04% (95% CI: 94.34 – 95.66) at endline (**Table 10** in **Appendix C**). The regression model estimated a 13% (95% CI: 11 – 16; p-value: <0.001) street-level increase over time in the proportion of girls who had heard of contraception (see **Table 17** in **Appendix C**).

### 3.5.2 Awareness of where to obtain family planning services

There was a small increase in the proportion of girls who knew where to obtain family planning services. At baseline, 58.24% (95% CI: 54.33 – 62.05) of respondents who intended to use a method but were not currently using one knew where to obtain health services. At endline, this proportion

rose to 60.06% (95% CI: 57.25 – 62.82). However, the final regression model did not show any evidence of a change over time (coefficient -0.02; 95% CI: -0.11 – 0.07; see **Table 17** in **Appendix C**).

## 3.6 Contraception positioned as relevant and valuable for adolescent girls

A360 interventions were designed to impart the belief that contraception is relevant and valuable for adolescent girls. To assess impact on this component of the ToC, we measured the girls' agreement with statements about the benefits of modern contraception and their intention to use a modern method of contraception.

*At endline, the proportion of adolescent girls agreeing with the 'benefits of contraceptives' statement 'Contraception allows adolescent girls to complete their education, take up better economic opportunities and fulfill their potential' decreased by 5% (95% CI: 3 – 9) compared to baseline.*

*Similarly, the intention to use modern contraception decreased by 14% (95% CI: -10 – 24) between baseline and endline.*

### 3.6.1 Benefits of contraceptive methods

The proportion of girls who agreed with the statement 'Contraception allows adolescent girls to complete their education, take up better economic opportunities and fulfill their potential' decreased over time from 86.99% to 84.14%. The final regression model also showed strong evidence of street-level decrease in the proportion of girls agreeing to the benefit over time (coefficient: -0.05; 95% CI: -0.09 – -0.03; p-value: <0.001; see **Table 17** in **Appendix C**).

At endline, 76.78% (95% CI: 75.35 – 78.15) of girls who had previously heard of contraceptives agreed with the statement 'Using modern contraception can allow a girl to achieve her life goals'. This question was not included at baseline.

### 3.6.2 Intention to use modern contraception

Intention to use modern contraception among non-users decreased from 75.05% (95% CI: 71.01 – 78.7) at baseline to 72.78% (95% CI: 69.24 – 76.06) at endline. The final regression model also showed strong evidence of decrease in the proportion of girls agreeing to the benefit over time (coefficient: -0.14; 95% CI: -0.24 – -0.10; p-value: <0.008; see **Table 17** in **Appendix C**).

## 3.7 Supportive environment for adolescent girls to access services

Another important goal of A360 was to enable the provision of a supportive environment for the adolescent girls. To assess the impact of A360 on this component of the ToC, multiple indicators were measured at baseline and endline. These include the girls' attitude and self-efficacy toward the use of modern contraceptives to prevent unintended pregnancies.

*Approval for both unmarried and married couples to use modern contraception was lower at endline than baseline. Consistent with this result, the linear regression model also showed that the adolescent girls' attitude toward modern contraceptive use decreased by 14% over time (95% CI: 5 – 24).*

*The self-efficacy index score decreased from 3.34 at baseline to 3.15 at endline.*

### 3.7.1 Attitudes toward using contraceptive methods

Both at baseline and endline, the proportion of respondents who approved of the use of modern contraceptives by married couples was higher than the proportion who approved of use by unmarried couples. However, approval for both unmarried and married couples to use modern contraception was lower at endline. Consistent with this result, the linear regression model showed

that adolescent girls' attitude toward modern contraceptive use decreased by 14% over time (95% CI: 5 – 24; p-value: 0.0067; see **Table 17** in **Appendix C**).

### 3.7.2 Self-efficacy to access and use contraceptive methods

Both baseline and endline surveys assessed adolescent girls' self-efficacy using a four-item index asking questions about perceived ability to access and use family planning methods. The mean self-efficacy score decreased from 3.34 (95% CI: 3.27 – 3.41) at baseline to 3.16 (95% CI: 3.08 – 3.23) at endline. This is consistent with the analytical results with a regression coefficient of -0.36 (95% CI: -0.55 – -0.17; p-value: <0.001; see **Table 17** in **Appendix C**).

### 3.7.3 Descriptive norms

At endline only, descriptive norms were assessed by asking respondents what they thought about the girls aged 15–19 years in their community. Nearly 51% of respondents believed that most of the girls aged 15–19 years in their community use modern contraceptives, and 57% of respondents believed that most of the girls in the community use modern contraceptives in secrecy without telling their partner (see **Table 15** in **Appendix C**).

## 3.8 Trust and credibility of family planning products

One of the objectives of A360 was to improve trust and credibility associated with the modern contraceptive. In order to access the impact of A360 in increasing the trust, we measured the girls' views about the misconceptions around the use of modern contraceptives.

*The mean misconception index increased from 0.81 (95% CI: 0.77 – 0.84) at baseline to 0.89 (95% CI: 0.85 – 0.92) at endline. An increase in the misconception is associated with a decreased agreement with the misconceptions relating to contraception; thus a greater score is more desirable.*

### 3.8.1 Misconceptions and modern contraceptive disadvantages

Respondents who had previously heard of contraceptives were asked whether they agreed or disagreed with each of the following statements: (1) use of a long-acting reversible contraceptive like injections, IUDs and implants can make a girl your age permanently infertile; (2) changes to normal menstrual bleeding patterns, which is caused by some contraceptives, are harmful to health; (3) modern contraceptives can make adolescent girls permanently fat. A misconceptions score was generated based on these three questions; a score of 1 was assigned to 'disagreement with misconception' and 0 to 'agreement with misconception'. The misconception score ranged from 0 to 3, with greater scores being more desirable than lower scores.

The mean misconception score at baseline was 0.81 (95% CI: 0.77 – 0.84) and at endline was 0.89 (95% CI: 0.85 – 0.92) (see **Table 16** in **Appendix C**). According to the regression model, there was no evidence of an increase in the score over time (coefficient: 0.05; 95% CI: -0.09 – 0.19; p-value: 0.4590).

## 3.9 The association between self-reported exposure to Adolescents 360 and primary and secondary outcomes

*Overall, self-reported exposure to Kuwa Mjanja was 23.66%.*

*Respondents who reported Kuwa Mjanja exposure had higher mCPR (aOR: 1.63; 95% CI: 1.28 – 2.09) and lower unmet need (aOR: 0.72; 95% CI: 0.54 – 0.98).*

Self-reported exposure to Kuwa Mjanja was 23.66%.

Self-reported exposure to Kuwa Mjanja and its association with sociodemographic factors and mCPR is presented in detail in **Appendix B.** A 54% prevalence of modern contraceptive use was seen among the respondents who reported exposure to A360, compared to 37% among those who reported having no exposure to A360. Girls exposed to Kuwa Mjanja had almost twice the odds of using a modern contraceptive method at present, compared to girls not exposed to Kuwa Mjanja (aOR: 1.63; 95% CI: 1.28–2.09). A similar trend is seen in the use of modern contraceptives in the past 12 months (aOR:1.71; 95% CI: 1.33 – 2.21; p-value <0.001). However, we found no evidence of association between self-reported exposure and LARC use among contraceptive users (see **Table 18** in **Appendix C**).

Furthermore, there is evidence of higher awareness about contraceptives among girls who were exposed to Kuwa Mjanja compared to those not exposed (aOR: 2.01; 95% CI: 1.16 – 3.49; p-value: 0.0134). We also found some evidence of increased awareness of a place to obtain family planning services among those reporting exposure to A360 in comparison to the non-exposed respondents (see **Table 18** in **Appendix C**).

There was weak evidence of an association between exposure and agreement with the benefit of contraception (aOR: 1.27; 95% CI: 0.99 – 1.62; p-value: 0.0513). However, no association was observed between intention to use contraceptives and self-reported A360 exposure (see **Table 18** in **Appendix C**). (We have included an analysis of data collected from adult household residents in **Appendix E**.)

## 3.10 Differences in secondary outcomes by marital status

Among modern contraceptive users, there was evidence of a 6% increase in LARC use over time among unmarried adolescents (95% CI: 1 – 10; p-value: 0.0150); there was no evidence of a change in LARC use among married adolescents over the study period (coefficient: -3%; 95% CI: -26% – 20%; p-value: 0.7768).

Measures of (i) a supportive environment to access services and trust and (ii) credibility of family planning products decreased or showed no change over time among unmarried girls and increased among married girls. For example, supportive attitudes toward contraception increased by 11% between baseline and endline among married girls (95% CI: 1 – 21; p-value: 0.033), and disagreement with misconceptions about modern contraceptives increased by 35% (95% CI: 3 – 68; p-value: 0.0343). In contrast, supportive attitudes toward modern contraceptives decreased by 6% among unmarried adolescents (95% CI: -8 – -3; p-value: 0.013), and there was no evidence of a change in disagreement with misconceptions (coefficient: 5%; 95% CI: -7 – 17; p-value: 0.3817).

Finally, the proportion of unmarried adolescents intending to use contraception in the future decreased by 8% between baseline and endline (95% CI: -14 – -1; p-value: 0.031). There was no evidence of change in this measure among married adolescents (coefficient: 8%; 95% CI: -6 – 22; p-value: 0.2341).

# 4. Discussion

## 4.1 Major findings

**After adjustment for confounding variables, modern contraception use decreased by 9 percentage points between baseline and endline among adolescent girls in Mwanza, Tanzania (95% CI: 0.3 – 17). This decrease was accompanied by declines in some secondary outcomes measuring aspects of the ToC, including self-efficacy and attitudes toward contraception use. However, self-reported exposure to Kuwa Mjanja was associated with significantly higher odds of current contraception use compared to non-exposure (aOR: 1.63; 95% CI: 1.28 – 2.09).**

The decrease in modern contraception use over the study period was driven by a decline in male condom use from 34.17% (95% CI: 31.24 – 37.23) at baseline to 19.09% (95% CI: 16.20 – 22.36) at endline (see **Table 8** in **Appendix C**). Among modern contraceptive users, the proportion using LARCs increased by 9 percentage points (95% CI: 2 – 16) between baseline (14.29%) and endline (20.99%); this increase in LARC use was greater among unmarried girls (see **Appendix F**). Moreover, girls who self-reported exposure to Kuwa Mjanja had increased current use and increased contraception use in the last 12 months. However, self-reported exposure to Kuwa Mjanja was not associated with increased LARC use.

There was evidence of a decline in measures of girls' attitudes toward contraception and intention to use contraception, and of decreased misconceptions about contraception, particularly among unmarried girls. These measures were included within the ToC as important concepts underpinning A360 interventions, and decline in these measures suggests that the conditions required for A360 to have maximum impact were not met. There was a small decrease over time in the proportion of girls agreeing with the statement 'using modern contraception can allow an adolescent girl to complete her education, find a better job and have a better life', and a somewhat larger decrease in intention to use contraception among non-users (14% decrease; 95% CI: 10% – 24%; p-value: 0.008).

Secondary data analysis of routine contraceptive use data from Tanzania suggested a general upward trend in mCPR from 2016 to 2020.

In summary, contrary to expectation we found statistically significant evidence of a population-level decrease in mCPR among adolescent girls in Mwanza, Tanzania over the period of A360 implementation, driven by a fall in self-reported condom use. However, we also found some evidence of greater mCPR among those young women self-reporting exposure to the A360 interventions. Data on secondary outcomes showed mixed trends. Possible explanations for these findings include an unintended negative impact of A360 on population-level condom use, bias in the study methodology at baseline, endline or both, or a combination of factors.

## 4.2 Strengths and limitations

Our study was designed to evaluate the population-level impact of Kuwa Mjanja on adolescent girls in Mwanza, Tanzania through a before-and-after design, with collection of comparable data before the intervention was implemented and after implementation. Our sampling strategy ensured that data collected were representative of the population of girls in the study area at each time period. Additionally, secondary data was used to analyze the trend in mCPR in Tanzania. This was done because study outcomes were measured in intervention areas only and there was no comparison group, so observed changes in mCPR could be due to secular trends or other influences. Finally, data on self-reported exposure to Kuwa Mjanja were collected at endline; these questions were developed with substantial support from the PSI implementation team and local researchers, and allowed us to more clearly understand the individual-level impact of Kuwa Mjanja exposure.

We identified several potential limitations to this study, however. Most notably, no comparison group was used in the study design. The lack of comparison groups in quasi-experimental designs leads to threats to internal validity and to the ability to conclude that an observed correlation is due to a single cause and that other explanations for the correlation are not plausible (Shadish et al., 2002, Marsden and Torgerson, 2012).

We have noted several possible alternative explanations for the decrease in mCPR during the study period.

First, Kuwa Mjanja implementation was ongoing in 2018, when the Tanzanian president made negative statements about contraception (BBC, 2018) and a change in policy was instituted, banning contraception advertisements (Adebayo & Odutayo, 2018). The A360 process evaluation notes that this political environment was a substantial barrier to implementation of Kuwa Mjanja (Itad, 2021).

Second, there were changes in the population between baseline and endline: the number of adolescent girls resident in the study area increased noticeably, and the sampling strategy at endline had to be modified to account for this change (see **Appendix A** for details). There were some measured differences between girls at baseline and endline – most notably in levels of educational attainment and proportion girls in school – and unmeasured differences between the two populations cannot be ruled out.

Third, the endline survey was conducted seven to twelve months after implementation of Kuwa Mjanja ended in Mwanza Region. Implementation of Kuwa Mjanja in Mwanza Region stopped by October 2020. However, due to COVID-19, the endline population survey in Mwanza Region was not conducted until May 2021 to October 2021. This gap between the end of implementation and the survey means that the youngest survey participants were unlikely to have been exposed to Kuwa Mjanja.

Other limitations include:

- **Changes in instrumentation due to COVID-19.** The mode of data collection in baseline and endline surveys differed somewhat because of modifications to reduce the risk of COVID-19 transmission (details in **Appendix A**). However, among all the respondents, the proportion of girls reporting sexual activity over the past 12 months increased between baseline and endline – 26.52% (95% CI: 24.72 – 28.39) at baseline and 28.55% (95% CI: 26.69 – 30.49) at endline. This increase suggests that it is unlikely that study participants were deterred from speaking openly about sexual activity and other sensitive topics because of the COVID-19 safety measures.
- **Limitations of self-reported data.** Respondents self-reported their modern contraceptive use, sexual activity and exposure to the program. Since both the use of contraceptives and sexual activity are sensitive topics, girls may not wish to report accurately on their contraception use or sexual activity. To minimize misclassification due to self-reporting impacting on the evaluation findings, we used identical question sequences for very personal questions at baseline and endline surveys and provided extensive interviewer training. Furthermore, all interviews were conducted in privacy, and away from husband and other adults, as much as possible.
- **Limitations of secondary data availability at the time of reporting.** While the study was designed without a control group, we used secondary data to assess the trend in mCPR outside the evaluation area, in order to contextualize our findings within broader trends. Unfortunately, data specific to the age group eligible for Kuwa Mjanja were not available to us, nor were data from 2021, so we presented only the average monthly mCPR among 15–49-year-old women between 2016 and 2020. This population is substantially different from the population of interest, and reduces the comparability of this analysis to the analysis of survey data.

## 4.3 Potential impact of the COVID-19 pandemic

The interviews for the endline data collection were conducted from May to October 2021, and thus began over 12 months after the beginning of the COVID-19 pandemic in March 2020. Some have suggested that the COVID-19 pandemic could limit the ability of potential contraception users to access needed services, both by disrupting the supply chain of pharmaceuticals and devices and by diverting health care resources from sexual and reproductive health services to COVID-19 care. COVID-19-related lockdowns may also reduce demand for services, as users are unable to travel to access care (Riley *et al.*, 2020).

The published evidence on contraceptive use in Tanzania during the COVID-19 pandemic is limited. Within the information that is available, however, there is little evidence from external sources that

the COVID-19 pandemic caused stock-outs or other issues with the supply of contraceptives to users in Tanzania. Tanzania has followed World Health Organization (WHO) guidance to help ensure access to contraceptives during the pandemic by relaxing contraceptive prescription requirements, and has recommended that emergency contraception be available at pharmacies (Krubiner *et al.*, 2021). There is mixed evidence on whether demand for family planning changed due to COVID-19. For example, a survey of health care providers in sub-Saharan Africa led by WHO noted no decrease in the demand for contraception in Tanzania early in the COVID-19 pandemic (June 2020) compared with before the pandemic (Ouedraogo *et al.*, 2021). In contrast, others have argued that pre-existing limitations in resources available to support reproductive health care in Tanzania were exacerbated by the COVID-19 pandemic, leading to increased unplanned pregnancies (Pallangyo *et al.*, 2020).

COVID-19 did substantially affect Kuwa Mjanja implementation. As reported in the process evaluation, there was a three-month pause in service delivery between the beginning of COVID-19 restrictions in March 2020 and the publication of government guidance on providing safe services in May 2020. After May 2020, Kuwa Mjanja implementation was limited to door-to-door visits and short discussions, to eliminate gatherings of large groups (Itad, 2020).

In summary, we note that implementation of Kuwa Mjanja was clearly affected by the COVID-19 pandemic, but the effects of COVID-19 on the supply of contraceptive commodities seem limited. While demand for contraception may have been affected by the COVID-19 pandemic, other trends, including the political environment described above, were likely to have also affected demand.

## 4.4 A360 in the context of sexual and reproductive health best practices

A360 interventions, including Kuwa Mjanja, were developed using evidence-based strategies for increasing the demand for and acceptance of modern contraception among adolescents. Some of these strategies included (1) the use of outreach activities to access users (McCleary-Sills et al., 2014, Denno et al., 2012, Mwaikambo et al., 2011) and (2) free on-the-spot contraception (Brieger *et al.*, 2001, WHO, 2011).

Outreach activities, in which users were engaged outside health facilities at schools and in the community, were central to Kuwa Mjanja. Kuwa Mjanja activities were delivered door-to-door and in school as well as in health facilities, though the mix of venues changed over the implementation period, due in part to the COVID-19 pandemic (Itad, 2021). Outreach activities help to raise awareness of contraception among people not generally reached by health facilities. In the present analysis, we measured an increase in the proportion of girls who knew about contraception (from 81.23% [95% CI: 80.13 – 82.29] at baseline to 95.04% [95% CI: 94.34 – 95.66] at endline). These increases suggest that outreach activities may have been effective at increasing awareness, though the negative political environment described earlier may also have increased (negative) awareness of contraception.

Kuwa Mjanja provided girls with their contraceptive of choice for free, on the spot. This removed both commodity and travel costs, and is likely to have increased access among those with fewer resources. There is some evidence that giving condoms for free leads to increased use (Brieger et al., 2001, WHO, 2011), but there is less evidence that reducing non-condom method costs affects use (WHO, 2011). As mentioned above, the Tanzanian MoH recommended that restrictions on prescribing contraception be removed and task sharing increased to ensure that contraception was available during the COVID-19 pandemic (Krubiner *et al.*, 2021; Mubiru & Fischer, 2020). These measures are also likely to increase access to contraception.

# 5. Conclusions

Our findings suggest that during the Kuwa Mjanja intervention period, there was an overall 9 percentage point decrease in contraceptive use (95% CI: 0.03 - 17; p-value: 0.0429; see **Table 4**). There were increases in some secondary outcomes during the Kuwa Mjanja intervention period,

including an increase in the proportion of adolescent contraceptive users using LARCs, knowledge of contraception methods, and awareness of where to obtain health services. However, several secondary outcome measures, including attitudes toward using contraceptive methods and self-efficacy to access and use contraceptive methods, also declined during the intervention period.

Because the study design did not include a comparison group, it is difficult to disentangle the effects of Kuwa Mjanja from other competing events and trends. Secondary analysis of Tanzanian MoH mCPR data for 15–49-year-olds showed a general upward trend in mCPR from 2016 to 2020; however, these data are not directly comparable to the A360 study population and time period, as data were not available disaggregated for 15–19-year-olds and analysis did not include data from 2021.

One possible explanation of these findings is that an unintended consequence of the Kuwa Mjanja intervention was to reduce condom use among adolescent girls and young women in the study sites. However, the presence of a positive association between contraceptive use and self-reported exposure to Kuwa Mjanja is hard to reconcile with such an unintended effect.

Several events during the intervention period provide plausible explanations for the overall decline in mCPR. First, the political environment in Tanzania was not supportive of contraception during the intervention period. This complicated implementation of the intervention and may have led to changed attitudes and increased misinformation around contraception. Second, there was an increase in the adolescent population in the study area between the baseline and endline surveys. Girls in the study area at endline may have been different from girls at baseline in other measures that were not captured in the evaluation survey but were important predictors of contraception use.

Finally, the COVID-19 pandemic may have affected supply and demand for contraception. Service delivery in Tanzania stopped between March and May 2020. However, external sources suggest that contraception use in Tanzania was minimally impacted by COVID-19. More specifically, the Kuwa Mjanja intervention was modified to ensure adherence to COVID-safety protocols, with mass mobilization events and school-based events no longer included in the intervention as part of the pandemic response (Itad, 2021).

Around 24% of girls reported that they had heard of or used some of the Kuwa Mjanja intervention activities. Notably, these girls did use contraception more than those who were not exposed (current contraception use: aOR: 1.63, 95% CI: 1.28 – 2.09, p-value: <0.001; contraception use within past 12 months: aOR: 1.65, 95% CI: 1.07 – 2.56, p-value: 0.02). This supports the possibility that, while intervention activities were impactful to those who were able to access them, competing events meant that the population-level trend in contraceptive use was the opposite of what was expected.

While these findings primarily summarize the results of baseline and endline quantitative surveys, we have relied upon the process evaluation to contextualize these results. Other data sources, including most notably monitoring and evaluation data collected by the implementing team, will complement the findings presented here and aid in interpretation of results.

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## Appendix A: Methodology details

See the attached document.

## Appendix B: Analysis of A360 self-reported exposure data

See the attached document.

# Appendix C: Report tables

## Response rates

Table 5: Reasons for non-response and response rates among adolescent girls in Tanzania at endline (2020)

| | Endline |
|---|---|
| **Eligible girls aged 15–19 identified** | 6,248 |
| **Interviewed for face-to-face** | 5,043 |
| **Response rate** | 81% |
| **Reasons for non-response** | |
| Not eligible | 232 |
| Denied consent | 16 |
| Not reached | 74 |
| Relocated to another place | 155 |
| The participant is dumb | 4 |
| Traveled | 660 |
| Household locked | 10 |
| Mental illness | 13 |
| Set appointment | 34 |
| Available at night-time only | 3 |
| Household not available | 4 |

## Characteristics of adolescent girls

Table 6: Descriptive results: Percentage distribution of adolescent girls according to selected characteristics, baseline (2018) and endline (2021)

| | Baseline | Endline |
|---|---|---|
| | n = 3,511 | n = 5,043 |
| **Marital status** | **(% and number)** | |
| Unmarried | 94.28 (3310) | 92.96 (4688) |
| Married | 5.72 (201) | 7.04 (355) |
| | | |
| **Age (Years)** | **(%)** | |
| 15 | 23.70 | 22.74 |
| 16 | 17.23 | 20.70 |
| 17 | 21.93 | 18.48 |
| 18 | 19.00 | 18.40 |
| 19 | 18.14 | 19.65 |
| | | |
| **Number of living children**[1] | **(%)** | **(%)** |
| No children | 5.15 | 4.99 |
| 1 child | 84.54 | 85.51 |
| 2 children | 9.97 | 9.03 |
| 3 or more children | 0.34 | 0.24 |
| No response | 0 | 0.24 |
| | | |
| **Education level** | **(%)** | |
| No education | 3.70 | 2.24 |
| Primary education | 38.14 | 30.87 |
| Post-primary training | 1.20 | 1.61 |
| Secondary 'O' level training | 53.92 | 58.79 |
| Post-secondary 'O' level training | 1.00 | 2.16 |
| Secondary 'A' level training | 1.45 | 2.52 |
| Post-secondary 'A' level training | | 0.02 |
| University | 0.60 | 1.78 |
| | | |
| **Religion** | **(%)** | |
| Catholic | 39.19 | 35.55 |
| Protestant/Other Christian denomination | 43.98 | 47.43 |
| Muslim | 16.55 | 16.12 |
| No religion | 0.28 | 0.12 |
| Others | | 0.77 |
| | | |
| **Wealth quintiles** | **(%)** | |
| 1st quintile | 9.37 | 9.93 |
| 2nd quintile | 16.98 | 16.24 |
| 3rd quintile | 10.08 | 15.03 |
| 4th quintile | 17.77 | 24.99 |

| | | |
|---|---|---|
| 5th quintile | 19.74 | 16.84 |
| No response | 26.06 | 16.97 |
| | | |
| **Mobile phone access** | **(%)** | |
| I personally own a mobile smartphone | 10.45 | 9.95 |
| At least once a week | 2.73 | 6.64 |
| Less than once a week | 5.38 | 3.27 |
| Not at all | 81.40 | 80.05 |
| No response | 0.03 | 0.08 |

[1] Among the girls who have given birth. n = 291 for baseline and n = 421 for endline.

**Table 7: Descriptive results: Sexuality and fertility of adolescent girl respondents (estimate, 95% CI)**

| | **Baseline** | **Endline** |
|---|---|---|
| | n = 3,511<br>(except for 'Median (interquartile range) age at first sexual intercourse') | n = 5,043<br>(except for 'Median (interquartile range) age at first sexual intercourse') |
| **Timing of last intercourse** | **(%)** | |
| Within last month | 6.46 (5.48 – 7.62) | 7.83 (6.59 – 9.28) |
| Within last 12 months | 20.05 (18.63 – 21.55) | 20.72 (19.36 – 22.15) |
| More than 12 months | 14.13 (12.79 – 15.58) | 6.82 (6.01 – 7.69) |
| Never had sex | 58.67 (56.61 – 60.7) | 64.33 (62.68 – 66.32) |
| No response | 0.68 (0.39 – 1.21) | 0.29 (0.14 – 0.65) |
| | | |
| | *n = 1378* | *n = 1747* |
| **Median (interquartile range) age at first sexual intercourse** | 16 (15 – 17) | 16 (15 – 17) |
| | | |
| **Currently pregnant** | **(%)** | |
| Yes | 2.79 (2.35 – 3.31) | 2.87 (2.50 – 3.30) |
| No | 96.9 (96.4 – 97.33) | 96.61 (96.02 – 97.11) |
| Unsure | 0.31 (0.18 – 0.54) | 0.51 (0.34 – 0.77) |
| | | |
| **Ever been pregnant** | **(%)** | |
| Yes | 11.88 (10.31 – 13.65) | 10.19 (8.85 – 11.71) |
| No | 88.12 (86.35 – 89.69) | 89.73 (88.2 – 91.08) |
| Unsure | | 0.08 (0.03 – 0.22) |
| | | |
| **Ever given birth** | **(%)** | |
| Yes | 8.29 (7.13 – 9.61) | 8.35 (7.07 – 9.83) |
| No | 91.71 (90.39 – 92.87) | 91.65 (90.17 – 92.93) |
| | | |
| **Age-specific fertility rate (per 1,000)** | 44.72 (36.21 – 55.11) | 46.40 (40.13 – 53.59) |
| | | |
| **Median (Inter-quartile range) age at first birth** | NA | 17 (16 – 18) |

## Main outcome – modern contraceptive use

Table 8: Descriptive results: Contraceptive use (95% CI) at individual level at baseline (2018) and endline (2021)

| | Baseline | Endline |
|---|---|---|
| | | |
| **No. of girls**[1] | n = 758 | n = 1,215 |
| | | |
| **Any method (%)** | 53.1 (49.63 – 56.55) | 46.75 (44.07 – 49.44) |
| | | |
| **Any modern method**[2] **(%)** | 50.79 (47.82 – 53.76) | 41.56 (38.42 – 44.78) |
| | | |
| **Modern method (%)** | | |
| Implants | 3.03 (1.91 – 4.79) | 5.84 (4.59 – 7.40) |
| IUD | 0.26 (0.06 – 1.17) | 0.33 (0.12 – 0.93) |
| Injectables | 3.96 (2.94 – 5.32) | 2.51 (1.77 – 3.67) |
| Daily pills | 0.39 (0.12 – 1.29) | 0.33 (0.12– 0.93) |
| Emergency pills | 0.26 (0.06 – 1.16) | 1.32 (0.79 – 2.20) |
| Male condom | 34.17 (31.24 – 37.23) | 19.09 (16.20 – 22.36) |
| Female condom | 0.39 (0.11 – 1.37) | 0.41 (0.11 – 1.54) |
| Standard Days Method (SDM) | 8.31 (6.06 – 11.30) | 11.44 (9.27 – 14.04) |
| Lactation Amenorrhea Method (LAM) | | 0.25 (0.05 – 1.24) |
| | | |
| **LARC use among modern contraceptive users**[3] **(%)** | 14.29 (10.76 – 18.73) | 20.99 (18.04 – 24.28) |
| | | |
| **Any traditional method (%)** | 2.37 (1.50 – 3.73) | 5.19 (3.88 – 6.90) |
| | | |
| **Not currently using (%)** | 46.83 (43.40 – 50.30) | 53.25 (50.56 – 55.93) |
| | | |
| **No response (%)** | 0.13 (0.02 – 1.03) | 0 |

[1] Includes all girls who reported sexual activity in the past 12 months and are fecund. [2] Modern methods include female sterilization, male sterilization, contraceptive pill, IUD, injectables, implants, female condom, male condom, diaphragm, contraceptive foam and contraceptive jelly, LAM, SDM and cycle beads.
[3] Percentage of LARC users among all modern contraceptive users, which includes implant, IUD and injectables.

## Secondary outcomes – descriptive results

### Adolescents use high-quality sexual and reproductive health products and services

**Table 9: Descriptive results: Fertility preferences and unmet need of adolescent girl respondents (estimate, 95% CI) at baseline (2018) and endline (2021)**

| | Baseline | Endline |
|---|---|---|
| | n = 239 | n = 332 |
| **Planning status of most recent birth** | **(%)** | |
| Wanted them | 29.29 (21.09 – 39.09) | 35.54 (30.57 – 40.84) |
| Wanted later | 54.39 (45.23 – 63.27) | 55.42 (50 – 60.72) |
| Wanted no more | 15.9 (11.59 – 21.43) | 9.04 (6.72 – 12.05) |
| | | |
| | n = 932 | n = 1,413 |
| **Unmet need for modern contraception**[1] | **(%)** | |
| No unmet need | 61.8 (59.26 – 64.28) | 64.05 (60.91 – 67.07) |
| Unmet need for spacing[2] | 36.16 (33.8 – 38.59) | 34.39 (31.68 – 37.21) |
| Unmet need for limiting[3] | 2.04 (1.28 – 3.24) | 1.56 (60.91 – 67.07) |
| Total unmet need | 38.2 (35.72 – 40.74) | 35.95 (32.93 – 39.09) |

[1] Total number of adolescent girls aged 15–19 years who are fecund and sexually active (sex in the past year), or postpartum amenorrheic or pregnant. [2] Unmet need for spacing includes: pregnant women whose pregnancy was mistimed; fecund women who are non-pregnant, who are not using any modern method of contraception, and say they want to wait two or more years for their first/next birth; and postpartum amenorrheic women, who are not using any modern method of contraception, and say at the time they became pregnant they had wanted to delay pregnancy. [3] Unmet need for limiting refers to: pregnant women whose pregnancy was unwanted; fecund women who are non-pregnant, who are not using any modern method of contraception, and want no more children; and postpartum amenorrheic women, who are not using any modern method of contraception, and say at the time they became pregnant they had not wanted any more children.

### Adolescent girls have access to appropriate high-quality sexual and reproductive health information and services

**Table 10: Descriptive results: Adolescent girls' knowledge of contraceptive methods (estimate, 95% CI) at baseline (2018) and endline (2021)**

| | Baseline | Endline |
|---|---|---|
| | n = 3,511 | n = 5,043 |
| **Ever heard of contraception**[1] | **(%)** | |
| Yes | 81.23 (80.13 – 82.29) | 95.04 (94.34 – 95.66) |
| No | 18.4 (17.35 – 19.5) | 4.99 (4.29 – 5.63) |
| Don't know | 0.37 (0.21 – 0.66) | 0.04 (0.01 – 0.17) |

[1] At baseline, the respondents were asked if they have heard about family planning services in the past 12 months. At baseline, question was phrased as 'have you heard of contraceptives?'

**Table 11: Descriptive results: Awareness of where to obtain health services in girls who have the intention to use contraception (estimate, 95% CI), at baseline (2018) and endline (2021)**

| | Baseline | Endline |
|---|---|---|
| | n = 804 | n = 626 |
| **Aware of where to obtain health services**[1] | **(%)** | |
| Yes | 58.24 (54.33 – 62.05) | 60.06 (57.25 – 62.82) |
| No | 41.76 (37.95 – 45.67) | 39.94 (37.18 – 42.75) |
| | | |
| | n = 470 | n = 376 |
| **Source of method mentioned**[2] | **(%)** | |
| Health sector[3] | 94.74 (92.71 – 96.22) | 99.73 (97.77 – 99.97) |
| Interpersonal sources[4] | 10.00 (7.05 – 13.99) | 2.13 (0.98 – 4.57) |
| Others[5] | 2.13 (1.21 – 3.71) | 2.13 (0.98 – 4.57) |

[1] From the girls who have were not using contraception and had future intention to use contraceptives.
[2] Among girls who were aware of where to get the services from. Respondents could mention multiple sources
[3] Health sector includes hospitals, dispensaries, clinics, community health workers, pharmacy, Voluntary Counseling and Testing (VCT) centers. [4] Interpersonal sources include teachers, parents, in-laws, siblings, partner, guardians, other relatives, peers, neighbors, peer educator and women's group. [5] Other sources include non-governmental organizations (NGOs), kiosks/shops/markets, bars, guest houses and hotels.

## Contraception positioned as relevant and valuable for adolescent girls

**Table 12: Descriptive results: Benefits of contraception and adolescent girls' future aspirations and intention to use a modern contraceptive method (estimate, 95% CI), at baseline (2018) and endline (2021)**

| | Baseline | Endline |
|---|---|---|
| | n = 2,852 | n = 4,793 |
| **Benefits of contraception**[1] | **(%)** | |
| Allows adolescent girls to complete their education, take up better economic opportunities and fulfill their potential | 86.99 (85.9 – 88.01) | 84.14 (82.45 – 85.7) |
| Using modern contraception can allow a girl to achieve her life goals | NA | 76.78 (75.35 – 78.15) |
| | | |
| | n = 497 | n = 843 |
| **Future intention to use modern contraception**[2] | **(%)** | |
| Yes | 75.05 (71.01 – 78.7) | 72.95 (69.61 – 76.06) |
| No | 20.93 (18.27 – 23.86) | 25.74 (22.76 – 28.96) |
| No response | 4.02 (2.32 – 6.90) | 1.31 (0.76 – 2.22) |

[1] Girls who heard about modern contraceptives were read a number of statements representing benefits of contraception. They were asked whether or not they agreed with the statement. [2] Among girls who were not using any contraceptives at present.

## Supportive environment for adolescent girls to access services

**Table 13: Descriptive results: Attitudes and self-efficacy of adolescent girls toward contraceptive use (estimate, 95% CI) by woreda in Oromia Region, Ethiopia, at baseline (2017) and endline (2020)**

| | **Baseline** | **Endline** |
|---|---|---|
| | n = 2,852 | n = 4,793 |
| **Attitude, index (0–2)**[1] | 1.47 (1.42 – 1.51) | 1.32 (1.29 – 1.34) |
| | | |
| **Attitude, components** | **(%)**[2] | |
| Married couples using a modern contraceptive method to avoid or delay pregnancy | 78.79 (76.37 – 81.02) | 68.27 (66.61 – 69.88) |
| Couples who are not married using a modern contraceptive method to avoid or delay pregnancy | 67.92 (65.2 – 70.52) | 63.49 (61.72 – 65.22) |
| | | |
| | n = 828 | n = 1,421 |
| **Self-efficacy, index (0–4)**[3, 4] | 3.34 (3.27 – 3.41) | 3.15 (3.08 – 3.23) |
| | | |
| **Self-efficacy, components** | **(%)**[5] | |
| I feel able to start a conversation with my husband/partner about contraception | 89.37 (86.71 – 91.55) | 84.17 (82.22 – 85.94) |
| I feel able to obtain information on contraception services and products if I need to | 90.94 (88.73 – 92.75) | 88.88 (86.68 – 90.76) |
| I feel able to obtain a contraception method if I decided to use one | 90.1 (87.98 – 91.87) | 87.83 (85.32 – 89.95) |
| I feel able to use a method of contraception even if my husband/partner does not want me to | 63.77 (60.28 – 67.12) | 54.61 (51.78 – 57.41) |

[1] Among girls who have heard about contraceptives. [2] Proportion of respondents who approved. [3] Among the girls who have heard of contraceptives. [4] Respondents were read a number of statements related to self-efficacy. They were asked whether or not they agreed with the statement. [5] Proportion who agreed with the statement.

**Table 14:Descriptive results: Treatment by provider on adolescent girl's last visit (estimate, 95% CI) at baseline (2018) and endline (2021) (among current modern contraceptive users)**

| | **Baseline** | **Endline** |
|---|---|---|
| | n = 402 | n = 204 |
| **Treated respectfully by provider on last visit**[1] | **(%)** | |
| Yes | 85.32 (80.82 – 8.91) | 86.76 (81.23 – 90.85) |
| No | 1.74 (0.75 – 4.01) | 2.45 (1.13 – 5.25) |
| Don't know | 10.45 (7.54 – 14.3) | 10.29 (6.08 – 16.91) |
| No response | 2.49 (1.35 – 4.54) | 0.49(0.06 – 4.01) |

[1] Current modern contraceptive users were asked whether the last time they obtained a modern contraceptive method they felt like they were treated respectfully.

**Table 15: Descriptive results: Descriptive norms on modern contraception according to adolescent girls (estimate, 95% CI) at endline (2021)**

| | n = 1,421 |
|---|---|
| **Descriptive norms, index**[1, 2] | 3.99 (3.87 – 4.12) |
| **Descriptive norms, components** | **(%)**[3] |
| How many husbands/partners of girls aged 15–19 years in your community do you believe discuss using a method of contraception with their wife/partner | 43.28 (39.44 – 47.20) |
| How many girls aged 15–19 years in your community do you believe use contraceptive methods | 50.74 (47.12 – 54.35) |
| How many girls aged 15–19 years in your community do you believe use contraceptive methods in secrecy from their partner/husband | 57.14 (53.56 – 60.65) |

[1] Among the girls who were sexually active in the past 12 months and had heard of contraceptives.
[2] Respondents were asked about their views regarding girls aged 15–19 years. They were asked whether they thought the statement applied to most girls, less than half, or none. [3] Proportion who answered that the statement applied to most girls.

Note: Girls were not asked about descriptive norms at baseline (2018).

## Trust and credibility of family planning products

**Table 16: Descriptive results: Misconceptions about modern contraception according to adolescent girls (estimate, 95% CI) at baseline (2018) and endline (2021).**

| | **Baseline** | **Endline** |
|---|---|---|
| | n = 2,852 | n = 4,793 |
| **Misconception about modern contraceptives, index (0–3)**[1, 2] | 0.81 (0.77 – 0.84) | 0.89 (0.85 – 0.92) |
| | | |
| **Misconceptions about modern contraceptive components** | **(%)**[3] | |
| Use of a long-acting reversible contraceptive like injections, IUDs and implants can make a girl your age permanently infertile | 28.02 (26.25 – 29.86) | 24.93 (23.43 – 26.5) |
| Changes to normal menstrual bleeding patterns, which is caused by some contraceptives, are harmful to health | 21.6 (19.98 – 23.32) | 21.26 (19.47 – 23.17) |
| Modern contraceptives can make adolescent girls permanently fat | 31.28 (29.86 – 32.73) | 42.46 (40.99 – 43.94) |

[1] Among girls who have heard about modern contraceptives. [2] Respondents were read a number of statements representing common misconceptions about contraception in Tanzania. They were asked whether they agreed or disagreed with the statement. [3] Proportion who disagreed.

## Analytical results

Table 17: Analytical results: the relationship between secondary outcomes and time, adjusted for confounders

| Outcomes | Time effect, coefficient (95% CI)[1] | p-value | Number of streets |
|---|---|---|---|
| Proportion of current modern contraceptive users using a LARC | 0.09 (0.02 – 0.16) | 0.0192 | 60 |
| Unmet need | -0.04 (-0.09 – 0.02) | 0.1934 | 60 |
| Use of modern contraceptives in the past 12 months | 0.35 (-0.27 – 0.96) | 0.2508 | 60 |
| Age at first birth | 0.47 (-0.005 – 0.93) | 0.0524 | 59 |
| Awareness of where to obtain health services | -0.02 (-0.11 – 0.07) | 0.5986 | 60 |
| Awareness of contraceptive products (Heard of contraceptives) | 0.13 (0.11 – 0.16) | <0.001 | 60 |
| Benefit 1 of modern contraception | -0.05 (-0.09 – -0.03) | <0.001 | 60 |
| Intention to use a method | -0.14 (-0.24 – -0.10) | 0.008 | 60 |
| Attitudes | -0.14 (-0.24 – -0.05) | 0.0067 | 60 |
| Self-efficacy | -0.36 (-0.55 – -0.17) | <0.001 | 60 |
| Misconceptions about modern contraceptives | 0.05 (-0.09 – 0.19) | 0.4590 | 60 |

[1] Street-level estimates adjusted for age, religion, education level, parity, wealth quintile and marital status. Results of a linear regression model. [2] Increase in misconception is the desirable outcome. For the misconception index, respondents who disagreed with the misconception were scored 1 and respondents who agreed were scored 0. Thus, higher scores are more desirable than lower scores.

## Descriptive and analytical results for the association between self-reported exposure to A360 and primary and secondary outcomes

Table 18: Descriptive and analytic relationship between binary outcomes and self-reported exposure, adjusted for confounders

| A360 ToC | Outcomes | Descriptive results | | Analytical results | | |
|---|---|---|---|---|---|---|
| | | **Prevalence among exposed** n/N (%) | **Prevalence among unexposed** n/N (%) | **Exposure effect** aOR (95% CI)[1] | **p-value** | **n** |
| **Adolescents use high-quality sexual and reproductive health products and services** | | | | | | |
| | mCPR | 167/309 (54%) | 338/906 (37%) | 1.63 (1.28 – 2.09) | <0.001 | 1215 |
| | Proportion of current modern contraceptive users using a LARC | 26/167 (16%) | 80/338 (24%) | 0.51 (0.25 – 1.04) | 0.0643 | 532 |
| | Unmet need | 100/354 (28%) | 408/1059 (39%) | 0.72 (0.54 – 0.98) | 0.0346 | 1413 |
| | Use of modern contraceptives in past 12 months | 181/309 (59%) | 371/535 (69%) | 1.71 (1.33-2.21) | <0.001 | 1215 |
| **Adolescent girls have access to appropriate high-quality sexual and reproductive health information and services** | | | | | | |
| | Awareness of contraceptive products | 1162/1192 (97%) | 3631/3849 (94%) | 2.01 (1.16 – 3.49) | 0.0134 | 5041 |
| | Awareness of where to obtain health services | 94/132 (71%) | 282/494 (57%) | 1.81 (1.22 – 2.69) | 0.0034 | 626 |
| **Contraception positioned as relevant and valuable for adolescent girls** | | | | | | |
| | Benefit 1[2] of modern contraception | 1025/1130 (91%) | 3008/3424 (87%) | 1.27 (0.99 – 1.62) | 0.0513 | 3839 |
| | Benefit 2[3] of modern contraception | 937/1124 (81%) | 2743/3415 (76%) | 1.18 (0.95 - 1.46) | 0.134 | 3840 |
| | | | | | | |
| | Intention to use a method | 129/170 (76%) | 486/662 (73%) | 1.08 (0.64 – 1.82) | 0.7806 | 832 |

[1] Results of a logistic regression model adjusted for age, religion, education level, parity and wealth quintile.
[2] Benefit 1: Modern contraception allows adolescent girls to complete their education, take up better economic opportunities and fulfill their potential. [3] Benefit 2: Using modern contraception can allow a girl to achieve her life goals

**Table 19: Descriptive and analytic relationship between continuous outcomes and self-reported exposure, adjusted for confounders**

| A360 ToC | Outcomes | Descriptive results | | | Analytical results | | |
|---|---|---|---|---|---|---|---|
| | | **Reported exposure to A360** | **Reported no exposure to A360** | **Difference**[2] | **Exposure effect, Coefficient** (95% CI)[3] | **p-value** | **n** |
| **Adolescents use high-quality sexual and reproductive health products and services** | | | | | | | |
| | Age at first birth (mean) | 16.92 (16.68 – 17.16) | 16.78 (16.65 – 16.91) | 0.14 | -0.04 (-0.11 – 0.02) | 0.1872 | 421 |
| **Supportive environment for adolescent girls to access services created** | | | | | | | |
| | Attitudes index score (0–2)[1] | 1.41 (1.37 – 1.47) | 1.28 (1.26 – 1.30) | 0.13 | 0.003 (-0.005 – 0.13) | 0.3884 | 3947 |
| | Self-efficacy index score (0–4)[1] | 3.30 (3.19 – 3.41) | 3.10 (3.02 – 3.18) | 0.20 | 0.01 (0.003 – 0.02) | 0.0104 | 1219 |
| | Descriptive norms index score (0–6)[1] | 4.13 (3.93 – 4.33) | 3.95 (3.80 – 4.10) | 0.18 | -0.03 (-0.08 – 0.02) | 0.2382 | 1137 |
| **Trust and credibility of family planning products** | | | | | | | |
| | Misconceptions about modern contraceptives index score (0–3)[1] | 0.96 (0.89 – 1.03) | 0.86 (0.82 – 0.89) | 0.10 | 0.006 (-0.006 – 0.019) | 0.3139 | 3750 |

[1] Greater scores are more desirable than lower scores. [2] Mean outcome among exposed minus mean outcome among those not exposed. [3] Results of a linear regression model adjusted for age, religion, education level, parity and wealth quintile.

## Appendix D: DHS & A360 mCPR definition results

See the attached document.

# Appendix E: Cohabiting adults' result

## Characteristics of cohabiting adults

**Table 20** describes background characteristics of cohabiting adults surveyed in the study area.

## Benefits of contraceptive methods

Similar to the trend seen among girls, the proportion of adults who agreed with the benefit 'Allows adolescent girls to complete their education, take up better economic opportunities and fulfill their potential' has decreased over time. While 85.6% agreed with the statement at baseline, the value had dropped to 84% at endline. At baseline, the lowest agreement was associated with the statement 'Some contraception methods reduce sexually transmitted infections/HIV' (28%). However, this statement was not included at endline (see **Table 21**).

## Attitudes toward using contraceptive methods

According to the girls' responses, more respondents approved of the use of modern contraceptives by married couples than unmarried couples at both baseline and endline. However, among the adults at endline, more respondents approved of the use of contraceptives by unmarried couples (62% [95% CI: 54.47 – 69.00]) than married couples (60.67 [95% CI: 55.31 – 65.78]). Additionally, the proportion of respondents who approved of unmarried couples using contraceptives increased from 60% at baseline to 62% at endline (see **Table 22**).

## Beliefs toward self-efficacy of adolescent girls to access and use contraceptive methods

Beliefs toward self-efficacy of adolescent girls remained almost constant, with slight variation over time. Nevertheless, the proportion of respondents who agreed 'It is acceptable for an adolescent girl to use a method of contraception even if her husband/partner doesn't want her to' fell from 44% at baseline to 40.67% at endline (see **Table 22**).

## Descriptive norms

The descriptive norms were assessed only at endline by asking the cohabiting adults about their thoughts on the contraceptive related behavior of 15–19-year-old girls in their community. The results are summarized in **Table 23**.

## Misconceptions about modern contraceptives and modern contraceptive disadvantages

Misconceptions about modern contraceptives remained almost consistent at both baseline and endline. However, unlike other misconceptions, the respondents who agreed with the misconception of modern contraceptives making women permanently fat reduced from 63% at baseline to 34% at endline (see **Table 24**).

## Descriptive tables for cohabiting adults

### Background characteristics

Table 20: Descriptive results – Percentage distribution of cohabiting adults of adolescent girls, according to selected characteristics, baseline (2018) and endline (2021)

| | Baseline | Endline |
|---|---|---|
| | n = 125 | n = 150 |
| **Relationship to adolescent girl** | **(%)** | |
| Husband | 7.2 | 10.07 |
| Cohabiting partner | 5.6 | |
| Boyfriend | 1.6 | |
| Mother | 36.0 | 30.20 |
| Father | 0.80 | 0.67 |
| Mother-in-law | 1.6 | |
| Father-in-law | 0.80 | |
| Grandmother | 4.0 | 7.38 |
| Aunt | 15.2 | 4.03 |
| Sister | 12.0 | 27.52 |
| Cousin | 2.4 | |
| Employer | 8.0 | |
| Other | 4.8 | 20.13 |
| | | |
| **Age (years)** | **(%)** | |
| 20–29 | 35.2 | 38.67 |
| 30–39 | 23.2 | 24.00 |
| 40–49 | 29.6 | 18.67 |
| 50–59 | 4.0 | 10.67 |
| 60–89 | 4.8 | 7.33 |
| Don’t know | 3.2 | 0.67 |
| | | |
| **Education level** | **(%)** | |
| No education | 8.0 | 6.00 |
| Primary education | 55.2 | 54.67 |
| Post-primary training | 2.4 | 2.00 |
| Secondary ‘O’ level training | 26.4 | 26.67 |
| Post-secondary ‘O’ level training | 4.8 | 2.00 |
| Secondary ‘A’ level training | 0 | 0.67 |
| University | 3.2 | 8.00 |
| | | |
| **Religion** | **(%)** | |
| Catholic | 40.8 | 36.00 |
| Protestants/Other Christian denomination | 42.4 | 46.67 |

| | | |
|---|---|---|
| Muslim | 15.2 | 16.00 |
| No religion | 1.6 | 0.67 |
| Others | | 0.67 |

## Contraception positioned as relevant and valuable

**Table 21: Descriptive results – Benefits of contraception among cohabiting adults (Estimate, 95% CI) at baseline (2018) and endline (2021)**

| | **Baseline** | **Endline** |
|---|---|---|
| | n = 125 | n= 150 |
| **Benefits of contraception**[1] | **(%)** | |
| Allows adolescent girls to complete their education, take up better economic opportunities and fulfill their potential | 85.6 (75.6 – 92.0) | 84.00 (77.52 – 88.88) |
| Using modern contraception can allow a girl to achieve her life goals[2] | | 74.67 (65.87 – 81.82) |
| Preventing unintended pregnancies is a benefit of contraception[3] | 88.0 (80.2 – 93.0) | |
| Preventing abortions is a benefit of contraception [3] | 60.0 (46.6 – 72.0) | |
| Some contraception methods reduce sexually transmitted infections/HIV[3] | 28.0 (19.1 – 39.0) | |
| Modern contraception can help with child spacing[3] | 90.4 (83.5 – 94.6) | |

[1] Respondents were read a number of statements representing benefits of contraception. They were asked whether or not they agreed with the statement. [2, 3] Respondents were not given this option at baseline (2018).

## Supportive environment for adolescent girls to access services

**Table 22: Descriptive results – Attitudes and beliefs of cohabiting adults of adolescent girls surveyed (Estimate, 95% CI) at baseline (2018) and endline (2021)**

| | Baseline | Endline |
|---|---|---|
| | n= 125 | n = 150 |
| **Attitudes** | **(%)** | |
| Approval of married adolescent girls aged 15–19 years using a modern contraception method to avoid or delay pregnancy | 64.0 (54.2 – 72.8) | 60.67 (55.31 – 65.78) |
| Approval of unmarried sexually active adolescent girls aged 15–19 years using a modern contraception method to avoid or delay pregnancy | 60.0 (49.5 – 69.7) | 62.00 (54.47 – 69.00) |
| | | |
| **Agreed with statements on girls' self-efficacy**[1] | **(%)** | |
| It is acceptable for an adolescent girl to start a conversation with her husband about contraception | 88.0 (79.5 – 93.3) | 88.00 (82.26 – 92.06) |
| It is acceptable for an adolescent girl to obtain information on contraception services and products if she needs to | 88.8 (79.4 – 94.2) | 90.00 (82.77 – 94.4) |
| It is acceptable for an adolescent girl to obtain a contraception method if she decides to use one | 85.6 (74.7 – 92.3) | 86.67 (80.27 – 91.22) |
| It is acceptable for an adolescent girl to use a method of contraception even if her husband/partner does not want her to | 44.0 (32.9 – 55.8) | 40.67 (32.15 – 49.79) |

[1]Respondents were read a number of statements related to girls' self-efficacy. They were asked whether or not they agreed with the statement.

**Table 23: Descriptive results – Descriptive norms of cohabiting adult respondents surveyed (Estimate, 95% CI) at endline (2021)**

| **Descriptive norms**[1] | **(%)**[2] |
|---|---|
| | n = 150 |
| How many husbands/partners of girls aged 15–19 years in your community do you believe discuss using a method of contraception with their wife/partner | 16.67 (11.28 – 23.93) |
| How many parents/guardians of girls aged 15–19 years in your community do you believe discuss using a method of contraception with their daughter | 24.67 (16.66 – 34.91) |
| How many girls aged 15–19 years in your community do you believe use a contraceptive method | 44.00 (33.33 – 55.25) |
| How many girls aged 15–19 years in your community do you believe use contraceptive methods in secrecy from their partner/husband | 58.00 (46.5 – 68.7) |

[1] Respondents were asked about their views regarding married girls aged 15–19 years. They were asked whether they thought the statement applied to most girls, less than half, or none. [2] Proportions who answered that the statement applied to most girls.

## Trust and credibility of family planning products

**Table 24: Descriptive results – Misconceptions about modern contraception and disadvantages of modern contraceptive methods according to cohabiting adults of adolescent girls surveyed (Estimate, 95% CI) at baseline (2018) and endline (2021)**

| | **Baseline** | **Endline** |
|---|---|---|
| | n = 125 | n = 150 |
| **Misconceptions about contraception**[1] | **(%)**[2] | |
| Use of a long-acting reversible contraceptive like injections, IUDs and implants can make an adolescent girl permanently infertile | 48.8 (39.3 – 58.4) | 41.33 (30.98 – 52.51) |
| Changes to normal menstrual bleeding patterns, which is caused by some contraceptives, are harmful to health | 64.0 (53.6 – 73.3) | 60.00 (50.13 – 69.12) |
| Modern contraceptives can make adolescent girls permanently fat | 63.2 (54.4 – 71.2) | 34.00 (23.24 – 46.71) |
| Adolescent girls who use family planning/birth spacing may become promiscuous[3] | 59.2 (51.3 – 66.6) | NA |

[1] Respondents were read a number of statements representing common misconceptions about contraception in Tanzania. They were asked whether they agreed or disagreed with the statement. [2] Proportions who agreed with statement. [3] Was not asked at endline (2021).

## Appendix F: Sub-group analysis of secondary outcomes for unmarried or married girls

See the attached document.