

Global Early Adolescent Study

GROWING UP GREAT!

Wave 4 Report



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THE GLOBAL EARLY ADOLESCENT
STUDY AT JOHNS HOPKINS
BLOOMBERG SCHOOL OF PUBLIC
HEALTH AND THE KINSHASA
SCHOOL OF PUBLIC HEALTH



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LIST OF ACRONYMS AND KEY PHRASES

ACASI	Audio Computer-Assisted Self-Interview
CBOs	Community-Based Organizations
DiD	Difference in Differences
DRC	Democratic Republic of Congo
FACT Project	Fertility Awareness for Community Transformation
FLE	Family Life Education
GAD-7	Generalized Anxiety Disorder-7
GBV	Gender-based violence
GEAS	Global Early Adolescent Study
GUG!	Growing Up GREAT!
HIV	Human Immunodeficiency Virus
IRH	Institute for Reproductive Health at Georgetown University
ITT	Intention to treat
JHSPH	Johns Hopkins Bloomberg School of Public Health
KSPH	Kinshasa School of Public Health
MOE	Ministry of Education
MOH	Ministry of Health
PHQ9	Patient Health Questionnaire
PNSA	Programme National de la Santé des Adolescents
SGBV	Sexual and gender-based violence
SRH	Sexual and reproductive health
USAID	United States Agency for International Development
VYAs	Very young adolescents

EXECUTIVE SUMMARY

Background

The Global Early Adolescent Study (GEAS) is a worldwide investigation into how gender norms evolve and inform a spectrum of health outcomes in adolescence. The longitudinal GEAS study follows the experiences of over 15,000 adolescent boys and girls on five continents. In Kinshasa, the study also evaluates Growing Up GREAT! (GUG!), a multi-level intervention that works with young adolescents, their families, and community stakeholders to shift gender norms towards improved health.

Methodology

This report outlines the impact of the GUG! intervention using difference-in-differences analyses to compare average changes in the intervention vs. control group over time. It also provides cross-sectional findings for sexual and reproductive health (SRH) indicators newly introduced in wave 4, and cohort results that are representative of all GEAS-Kinshasa participants.

GEAS Findings: Cohort and Evaluation Results

Nearly 70% of baseline participants (n=1,986; 69.9%) were followed up at Wave 4 and were able to be matched across all four rounds. Data indicate persistent social disadvantage among all adolescents in the GEAS-Kinshasa cohort, with more adolescents in the control group in the lowest wealth tertile than the intervention group. Indicators of sexual health preparedness improved over time for all adolescents, with increased SRH communication that translated to improved SRH knowledge. While awareness of contraceptive methods increased in the cohort, misperceptions and stigma remained prevalent. Girls did have increased body pride compared to baseline though continued to have higher sexual double standard scores than boys. The number of adolescents who endorsed teasing gender atypical behavior remained high across both study groups.

Evaluation findings at Wave 4 show that some intervention effects persist three years after the intervention ended. GUG! participants at Wave 4 were still more likely to hold gender equitable attitudes about household chore sharing as compared to the control group. Other intervention effects were found for GUG! sub-groups: 1) as compared to the control group, in school (IS) adolescents saw smaller reductions in parent connectedness over time, greater increases in talking with trusted individuals about pregnancy, and increased body satisfaction; younger (<12 years) IS adolescents showed a greater improvement in pregnancy knowledge; older (12+ years) IS adolescents showed significant decreases in violence perpetration; and finally, out of school (OOS) GUG! adolescents showed reductions in embarrassment about getting contraception.

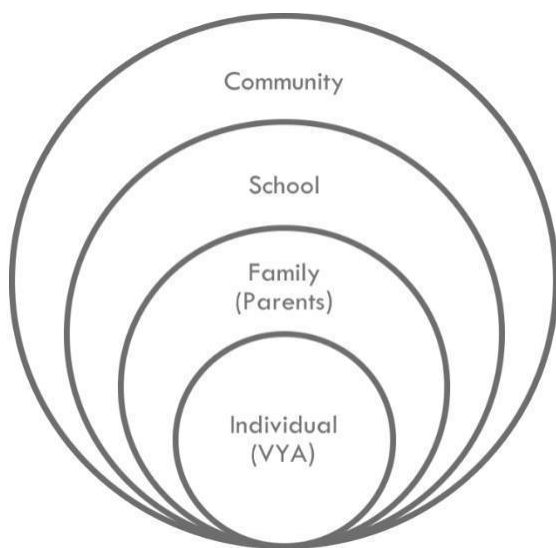
Intervention Implications

Wave 4 data indicate that the GUG! intervention has lasting effects on gender norms about equitable household roles and SRH knowledge and communication. The fact that more lasting intervention effects were seen among IS adolescents at Wave 4 may point to the need for booster sessions or other social support interventions among the relatively disadvantaged OOS adolescents, who initially experienced greater improvement in outcomes at Wave 2. Limited shifts in other measures of gender norms underscore that gender transformative interventions cannot challenge the broader landscape of inequitable gender norms alone. This indicates a continued need for community engagement to encourage shifts in meta-norms and to support related behavior change among adolescents.

ABOUT THE GROWING UP GREAT! INTERVENTION

GUG! is a multi-level intervention for VYAs, their parents and caregivers and other influential community members. GUG! was implemented by Save the Children in Kinshasa from September 2017 to June 2018. It used an ecological approach to provide information and address social and gender norms related to reproductive health and wellbeing at each of the ecological levels (as shown in Figure 1), with the goal of improving both in-school and out-of-school VYAs' SRH knowledge and assets; fostering gender-equitable attitudes and norms and non-violent attitudes and behaviors.

Figure 1 | The Socio-Ecological Model



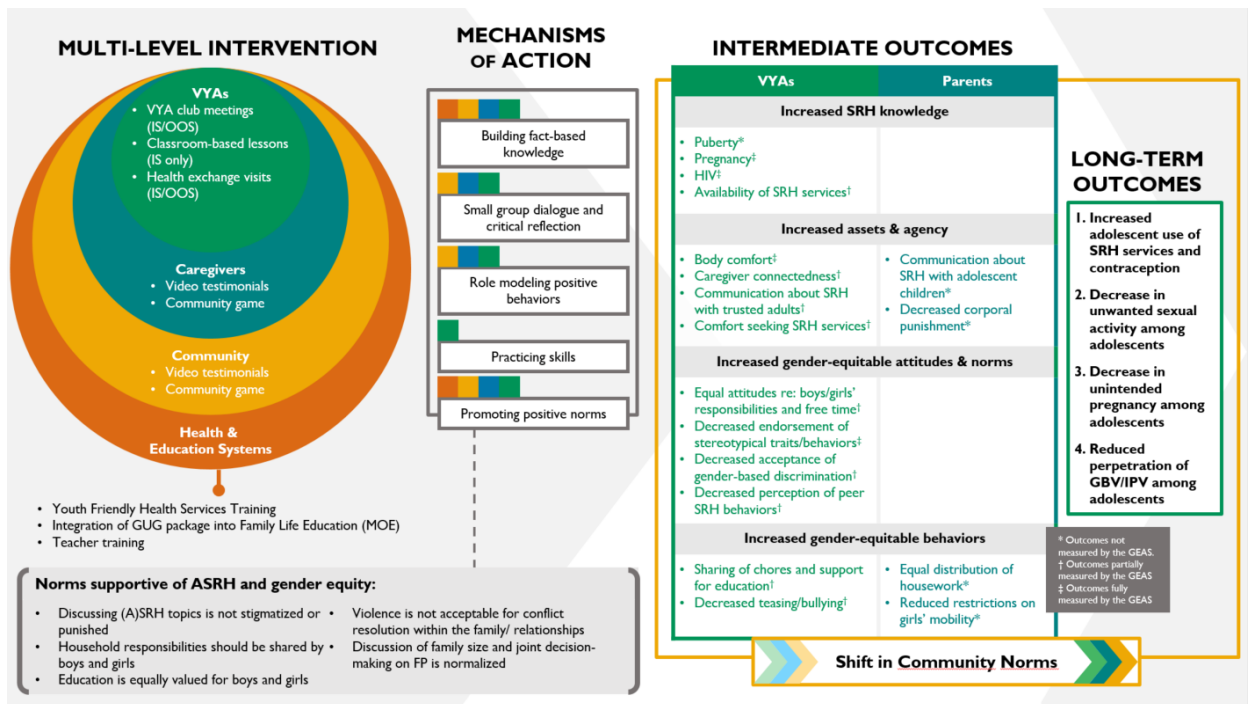
The intervention was guided by a theory of change (TOC) that articulates how multiple reinforcing change mechanisms contribute to outcomes while simultaneously fostering supportive social norms (Figure 2). The TOC and underlying intervention materials target attitudes and behaviors directly relevant not only to VYAs but also the adults in their lives (e.g., equitable sharing of chores, intergenerational discussion about puberty and future goals). As shown in the TOC (Figure 2), the four intermediate outcomes of the GUG! intervention are:

- Increase VYA SRH knowledge
- Increase VYA and Parent/Caregiver¹ assets and agency
- Increase VYA gender-equitable attitudes and norms
- Increase VYA and Parent/Caregiver gender-equitable and non-violent behaviors.

GUG! was informed by other successful approaches for improving gender equity and reproductive health among adolescents, and it incorporates evidence-based recommendations for health interventions with young people. It purposefully targets VYAs, a critical demographic group, to reach them prior to the onset of puberty. This early intervention is intended to provide an opportunity to shape the health trajectory and proactively prevent reproductive and other health problems, rather than addressing health issues as they arise. It also employs a holistic approach to VYA health interventions, acknowledging the multiple layers of influence from parents, peers, teachers and community leaders.

¹ Note: the GEAS study was designed to assess only adolescent outcomes. Parent/caregiver outcomes were assessed via qualitative interviews in 2018. See: Growing Up GREAT! Shows Promise in Skills Development and Norms Shifting After One Year. January 2021. Washington, D.C.: Institute for Reproductive Health, Georgetown University for the U.S. Agency for International Development (USAID) and the Bill and Melinda Gates Foundation. Available: <https://irh.org/resource-library/gug-wave-1-and-2-impact-brief/>

Figure 2 | The GUG! Theory of Change



Activities for Very Young Adolescents

Both in-school and out-of-school VYAs participate in weekly meetings of mixed sex groups using a set of interactive materials from the GUG! toolkit (see Figure 3) to discuss and reflect on norms. Participating VYAs are grouped into clubs with approximately 25 of their peers. In-school VYAs participate in self-facilitated school-based clubs led by trained VYA leaders for the duration of the school year (about 20 sessions), while out-of-school VYAs participate in community-based clubs led by trained facilitators from local community-based organizations (about 28 sessions). All VYA clubs participate in one session led by a health provider trained in providing adolescent-friendly health services, and also a visit to the nearest facility to foster health system linkages and reduce stigma.

Activities for Parents and Caregivers

Parents of VYA club members participate in a series of guided discussions prompted by six different testimonial videos featuring parents in their communities who have adopted key outcome (target) behaviors related to gender, girls' education and communication about puberty and sexuality. Discussions are led by trained facilitators from CBOs and focus on the social norms underlying and driving health behaviors.

School-based Activities

Teachers and other school officials are engaged in several ways. Three focal point teachers at each school are oriented to the GUG! toolkit and provided with a resource document to help them link activities to the national life-skills curriculum. Teachers also serve as resources for VYA school clubs and mentors for VYA club leaders. School-based activities are intended to have a whole-school reach beyond VYA club members to support diffusion of new ideas and encourage social norm change.

However, there is no prescribed number or frequency of in-school sessions, so classroom-based use of intervention materials varies by school.

Activities for the Community

Community members are invited to participate in a fun and interactive game to explore norms around VYA health and gender, and to view and reflect on the video testimonials developed for parent sessions. Teamwork and debate during collaborative gameplay and reflections following the video viewings both provide opportunities for community members to discuss how norms influence behaviors that impact VYAs. An effort is made to engage traditional and religious leaders, as well as other influential persons in these activities.

Figure 3 | The GUG! Toolkit



Table 1 | Growing Up GREAT! Multi-level Intervention Package

Level	Activity	Materials
Individual (VYA)	In-school: about 20 weekly club sessions (peer-led) Out-of-school: about 28 weekly club sessions (adult facilitated)	Puberty workbooks (girls & boys) Storybooks (girls & boys) Activity cards Game
Family (Caregivers)	Six video screenings and facilitated discussions	Testimonial videos
School	Classroom-based sessions (teacher-led; at will – no fixed frequency)	Resources for teachers that link to the National Family Life Education Curriculum
Health system	One provider-led session per VYA club One health center visit per VYA club	Guide for provider-led lesson Instructions for health center visit
Community	Collaborative community sessions (monthly)	Testimonial videos Community Game

ABOUT THE GLOBAL EARLY ADOLESCENT STUDY

Overview

GEAS is the first global study to explore the process of gender socialization in early adolescence, and how this process informs health and behavioral trajectories for boys and girls throughout adolescence and across contexts.

Longitudinal study

The GEAS uses a longitudinal design to assess the relationship between evolving gender norms and a range of key health outcomes across the adolescent period - including sexual health, gender-based violence and mental health - as well as the ways this is influenced by factors at individual, family, community and societal levels. The study provides unique insights into how these relationships vary across cultures and by sex. In a subset of sites including Kinshasa, the GEAS is used in conjunction with a gender transformative intervention to assess shifts in individual gender beliefs and influences on health trajectories over time.

Kinshasa was the first longitudinal site of the GEAS and is operated by the Kinshasa School of Public Health (KSPH) in collaboration with the GEAS Coordinating Center at Johns Hopkins University. The project is jointly funded by the Bill & Melinda Gates Foundation and the United States Agency for International Development (USAID) as part of the global [Passages Project](#). Passages is led by the Institute for Reproductive Health, Georgetown University (IRH) and a consortium of partners including the GEAS, Save the Children, Tearfund and FHI 360. The Passages Project, funded by USAID, aims to transform social norms at scale to promote family planning and reproductive health by testing and evaluating normative change interventions. Under the Passages Project, the GEAS serves to evaluate Growing Up GREAT!, an intervention led by Save the Children and its community-based organization (CBOs) partners to transform reproductive health and gender norms among very young adolescents (VYAs) ages 10-14 at baseline in Kinshasa.

Study setting

Emerging from more than three decades of war, with significant civil strife remaining in some of the eastern and central provinces, the Democratic Republic of Congo (DRC) is one of the poorest countries in the world ranking 175 out of 188 on the Human Development Index (UNDP, 2019). The high prevalence of sexual and gender-based violence (SGBV) - 57% of women reported sexual or physical violence at some point in their lives with 27% of those women reporting sexual violence (DHS, 2013-2014) – reveals deep-rooted gender- inequitable norms and practices that are predominant across the country. Women’s rights are limited in several facets - including access to owning land, restricted civil liberties, minimal participation in the government and the labor force - resulting in women’s higher rates of poverty and lower rates of literacy compared to men (Matundu Mbambi & Faray-Kele, 2010; DHS 2013-2014).

Kinshasa, where the GUG! intervention took place, is the second largest city in sub-Saharan Africa with over 17 million inhabitants, comprising over 16% of the entire country’s population. The total population has rapidly increased in recent years with migration from conflict-affected areas in central

and eastern DRC. The city is a complex, challenging and at times violent place to live, with high rates of poverty and unemployment, inequality, and low-quality education and health.

However, greater access to and use of services is also apparent: at 4.4 the total fertility rate in Kinshasa is lower than other parts of the country; and the modern contraceptive prevalence rate is also higher than other provinces at 21% (PMA2020).

In Kinshasa in 2018, 22% of girls 18-24 years had been married before age 18 and 13.6% had given birth by the age of 18 (PMA2020, 2018). These estimates are higher among the poorest adolescents, placing these girls at higher risk of pregnancy-related complications and death. Girls who are pregnant and/or childbearing are more likely than peers to drop out of school increasing the economic burden on themselves and their families. Literacy rates of 15-24 year olds indicate gender inequalities, with girls at 73.6% literacy compared with 91.2% for boys (DHS 2013-2014). In urban Kinshasa, the 16% of school-age children who are out-of-school (OOS) – are at even higher risk of sexually transmitted infections (STIs), pregnancy and gender-based violence (GBV) compared to their in-school (IS) peers. The communes of Masina and Kimbanseke, where the GUG! intervention and GEAS evaluation take place, represent some of Kinshasa's poorest and most challenging environments for both in- and out-of-school youth.

The government has been proactive in supporting youth with a specific department under the Ministry of Health (MOH) for adolescents, le Programme National de la Santé des Adolescents (PNSA), and a national family life education curriculum mandated by the Ministry of Education (MOE), although it is still under- resourced and developing capacities. This gap in policy and practice results in few younger adolescents who are able to access good quality, age-appropriate reproductive health information and services.

While it is true that many risks to adolescent reproductive health exist, it is equally true that pro-youth policies and national structures also provide direction, with significant opportunities for substantial improvements in health and well-being, especially if efforts are made to strengthen the foundations of sustainable development, including youth capacity and gender equality.

GEAS-KINSHASA STUDY DESIGN

This study in Masina and Kimbanseke, Kinshasa, combines 1) an observational research study that explores how perceptions of gender norms are co-constructed in early adolescence and how they predict a spectrum of outcomes and 2) an impact evaluation to assess the effects of the GUG! intervention among early adolescents in Kinshasa. The observational and impact evaluation components are included in a single GEAS design in Kinshasa defined as a longitudinal quasi-experimental study with an intervention and a control arm, each divided into 2 subgroups, In School (IS) and Out of School (OOS) adolescents. Altogether 2,842 adolescents completed the baseline study between June and November 2017.

STUDY POPULATION

Eligibility criteria

Adolescents were initially included in the study if they were 10-14 years old at the time of baseline interview, had given assent to participate in the study, lived in the study neighborhoods of Masina or Kimbanseke, and if their parents or guardians consented to their child's participation in the study.

Baseline Sampling

Out of School

At baseline, adolescents were recruited using a multi-stage sampling procedure. First, neighborhoods in the two communes were sampled using simple random sampling procedure. In each selected neighborhood, OOS adolescents aged 10-14 years old were identified by Community-Based Organizations (CBOs) in partnership with Save the Children. The CBOs mapped the OOS adolescents living in the included neighborhoods and established a sampling list. They then narrowed this list to those adolescents who met the following criteria: left school over two years ago, did not expect to be enrolled in school the following year, and did not expect to leave their current neighborhood. Adolescents were then selected from this list by simple random sampling to establish groups of 25 children that were recruited for the intervention.

A similar process was used to recruit the OOS adolescents in the control group. With the help of CBOs, OOS adolescents were identified through the same mapping procedure. In each neighborhood, two separate lists were established by sex, and sorted by age in order to obtain an acceptable age distribution. These lists were numbered and subsequently used to draw a random sample (with backups) using random number generation in Microsoft Excel. The list of selected children was then given to the CBOs to contact parents and adolescents to invite them to participate in the survey. In the event a child and/or guardian refused to participate, replacement participants were selected from the backup list. This process was repeated until the required sample size was achieved.

In School

IS adolescents were recruited in the same neighborhoods as OOS adolescents to facilitate follow-up for the intervention groups and avoid contamination across study groups. Save the Children and CBOs conducted a mapping exercise of all schools in neighborhoods within the two selected municipalities that included all primary or secondary schools enrolling adolescents ages 10-14 within each municipality. Schools were grouped into school type (e.g. public, religious, or private). Twenty schools in each municipality were selected using Excel, with the expectation that each school would enroll 25 students in the survey. School leaders were invited to a meeting with the research team to provide an explanation of the survey, and subsequently establish a list of all pupils age 10-14 each in the control and intervention zones. In the event that the list included 25 adolescents or less, all children were contacted. If a school's list was greater than 25 students, simple random sampling was applied to select 25 participants, divided by sex. The list was given to the school leaders to facilitate contact with participants.

Wave 2 through 4 sampling

The Kinshasa School of Public Health team followed two different approaches to re-contact IS and OOS participants for follow-up waves of data collection, though the information collected from each participant's family was consistent (name, age, sex, school at enrollment, and phone numbers).

- *In School* (IS) participants were contacted through school administration and teachers, using existing school channels to establish survey times and notify participants. Participants, who were in school at baseline but had left, transferred schools or moved, were tracked using existing information from teachers and school administrators, as well as neighborhood CBOs and resources. However, teachers and school administrators were limited in their ability to locate participating students who had changed schools between waves.

- *Out of school* (OOS) participants were located by KSPH in coordination with a team of representatives from non-governmental organizations and community-based associations working in the participating neighborhoods. In cases where OOS adolescents were difficult to reach, data collection teams contacted neighbors to collect additional information to locate participants.

Data collection began with a series of meetings with school administrators for data collection with IS adolescents and with CBOs for OOS adolescents to discuss the upcoming data collection activities as well as the challenges faced during baseline data collection. Two weeks before interviews were scheduled, members of the data collection team re-contacted school administrators or CBO representatives, with a list of participants surveyed from their school or area at baseline, in order to identify VYAs still living in the area or attending the school and available to be interviewed. School administrators and CBOs were then contacted by phone to provide the list of participants still available and to establish times and dates for survey administration. School administrators and CBOs were also asked to gather information about participants that had moved or left school, or moved homes in order to help reach those participants. All identified participants were invited to participate in Wave 4 using the same data collection procedures as baseline, with 2,263 re-interviewed at Wave 4 and 1,986 matched to baseline respondents.

DATA COLLECTION PROCEDURES

Wave 4 data collection took place between April and July, 2021. At the beginning of data collection, the average 7-day case rate of COVID-19 was under 50 but spiked in June to a high of 407 on July 2nd, which has since declined. Since the majority of data collection took place before the spike, surveys were administered in person by bringing small groups of adolescents to local community settings, following local guidelines for group size restrictions. Participants were instructed not to attend their scheduled survey time if they experienced any COVID-19 symptoms, though this was never necessary. All data collection centers and tablets were sanitized, and participants were required to wear masks while at the study setting. Data collection was conducted using face-to-face interviews with an interviewer, with sensitive questions administered using Audio Computer-Assisted Self-Interview (ACASI) to promote privacy. Whenever possible, interviewer and respondent sex were matched. The interviews on average took 1.5 hours including time for at least two breaks. For the adolescents who were reached through initial school and CBO contact, the interviews were organized by school and in community spaces (Church, association spaces, or school spaces). For participants reached through active searches, interviews were conducted at homes in a quiet space out of earshot from their parent or guardian. Each interviewer conducted a maximum of two interviews per day, and in the case of group interviews the number of data collectors sent was proportional to the number of expected participants.

Interviews were conducted in Lingala using tablets and uploaded to the SurveyCTO server. Data collectors received four days of refresher training on the questionnaires and a pretest prior to data collection.

GEAS WAVE 4 GUG EVALUATION RESULTS

This section describes differences between the intervention and the control groups two and a half years after the end of the intervention, while accounting for baseline differences. This “difference in differences” approach specifically focuses on how the two groups have evolved since baseline and how these changes compare between the two groups. We present results based on intention to treat analysis (ITT, comparison of intervention and control regardless of GUG! exposure). Sensitivity analysis were conducted using per protocol analyses (PPA, see Appendices D and E).

GROWING UP GREAT EXPOSURE

The GUG! Intervention (September 2017 to June 2018) was designed to engage VYAs in weekly club sessions over the course of the nine months of the school year (for IS VYAs). OOS VYAs joined club sessions for an additional two months. Overall, after accounting for regular holiday breaks and exam periods, VYA school clubs met for approximately 26 weekly sessions while community-based clubs (for OOS VYAs) met for an average of 28 weekly sessions. There was no standard format for weekly meetings. Club facilitators could use any materials from the VYA toolkit that they desired, in any order or frequency, though they were encouraged to use all materials in full at least once by the end of the intervention period. The VYA toolkit included three materials for group use – storybooks (one each for boys and girls), activity cards and the interactive game. Puberty books for girls and boys were distributed to each participating VYA as take-home materials, though they could also be used as references or to inspire discussion during weekly sessions.

While the intervention only covered one year (between baseline and Wave 2 of the GEAS), exposure to GUG activities in the second year were still reported. The continued exposure to GUG! activities even after the intervention was officially over may reflect the integration of GUG! materials and activities in the school curriculum, either as a continuation of previous activities or as a scale up process as the GUG! intervention was expanded to other communes in Kinshasa.

Thus, forty percent of adolescents in the intervention group indicated participating in at least one of the three activities (VYA club, classroom session, or community session) in the six months prior to Wave 3. Roughly a quarter (24%) of VYAs in the control group were exposed to GUG! activities in the six months preceding Wave 3, most of whom (80%) were in school. Exposure to GUG! activities was not assessed in Wave 4.

SOCIO-DEMOGRAPHIC CHARACTERISTICS AT WAVE 4

At wave 4, the mean age of adolescents included in the GEAS survey was 14.6 years old. 81% of boys and 84% of girls were still in school, with no difference between intervention and controls (84% versus 80%). Educational attainment and literacy levels improved over time in all study arms, although the gap between intervention and controls observed at baseline remained in wave 4, with greater age-for-

grade educational attainment among IS adolescents in the intervention compared to the controls (85.21% vs. 77.55%, $p < 0.001$).

33.42% of adolescents lived in the poorest households (lowest tertiles), with a greater number in the control group relative to the intervention (37.01% versus 29.88%). A third of adolescents did not live with both of their parents (29.42%), with no difference between intervention and controls.

In wave 4, 50.43% adolescents reported spending time with peers on a daily basis with no difference by study arms. Boys were more likely to spend time with friends on a daily basis than girls (60.85% versus 39.56%). However, girls are now more likely to have mixed sex peer networks than boys (45.40% versus 40.95%), which is a reversal from baseline.

COMPARISON BETWEEN INTERVENTION AND CONTROL AT BASELINE AND WAVE 4

We present Wave 4 results by the four GUG! intervention target outcomes (as presented in the GUG! Theory of Change - Figure 3 above): (1) SRH knowledge; (2) Assets and agency; (3) Gender-equitable attitudes and norms; and (4) Gender-equitable behaviors.

The blue bars on the graphs indicate baseline results and green represents wave 4 results, with a darker hue indicating a statistically significant difference between intervention and control groups. Graphs in orange hues represent data specific to SRH indicators. This is because the GEAS included a number of questions exploring adolescents' sexual and contraceptive attitudes. While a number of those indicators were included at baseline (and shown with blue bars), other topics were introduced among older adolescents (15 years and older) in subsequent waves (with some introduced for the first time in Wave 4).

I. SRH KNOWLEDGE

SEXUAL & REPRODUCTIVE HEALTH KNOWLEDGE

Four dimensions of sexual and reproductive knowledge were examined in the GEAS, including: two knowledge indices—how to prevent pregnancy and HIV; knowledge about where to access preventive commodities (condoms and contraception); and knowledge about available forms of contraception in the Democratic Republic of Congo.

At baseline, a few differences in sexual health and reproductive knowledge were noted between IS and OOS adolescents in the intervention and control groups. Specifically, adolescents in the OOS intervention group had higher levels of pregnancy knowledge, were more likely to know where to get a condom and where to get contraception than the control group. No such differences were noted among IS adolescents. In fact, girls in the IS control group were slightly more likely to know where to get contraception.

Pregnancy prevention knowledge increased over time for all study groups (Figure 4). Knowledge gains were equally observed between adolescents in the intervention and control groups and were only partially sustained over time. However, when examining pregnancy knowledge by age and school status (Figure 5), a greater improvement can be seen among younger IS adolescents who received the intervention than younger IS controls (OR: 0.59, 95% CI (0.07, 1.11)). Increases in HIV knowledge (Figure 6) were also noticeable and comparable between intervention and controls. Despite these improvements, knowledge about pregnancy and HIV prevention remained suboptimal, as adolescents provided only half the correct answers to the knowledge questions.

Figure 4 | Pregnancy Knowledge

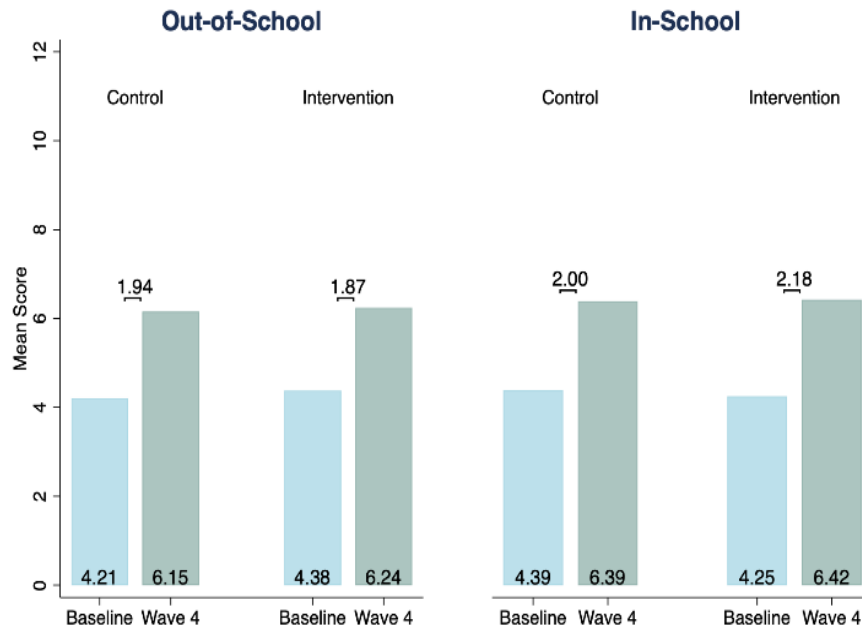


Figure 5 | Pregnancy Knowledge (IS only)

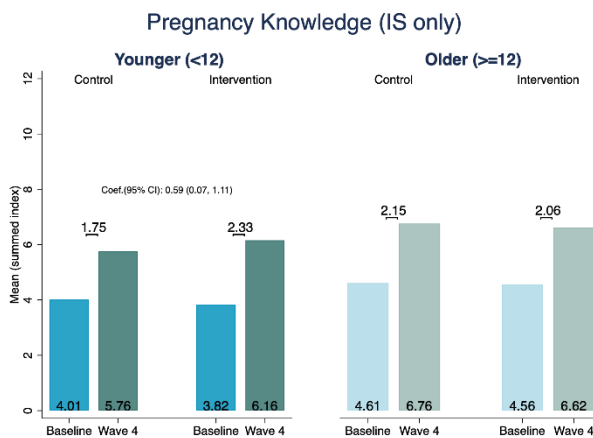
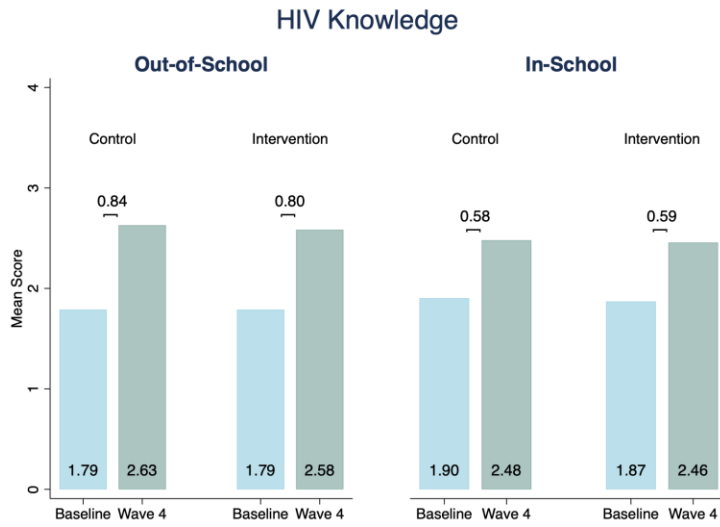


Figure 6 | HIV Knowledge



Knowledge about access to preventive services including where to get condoms (Figure 7) and where to get contraception improved over time (Figure 8). Knowledge of where to get condoms increased by 25 percentage points among OOS and 30 percentage points among IS adolescents, though there was no overall difference between intervention and controls. Likewise, knowledge about where to get contraception increased among girls in all groups, with greater increases among OOS girls than IS girls (no intervention effects).

Figure 7 | Knows where to go to get condoms

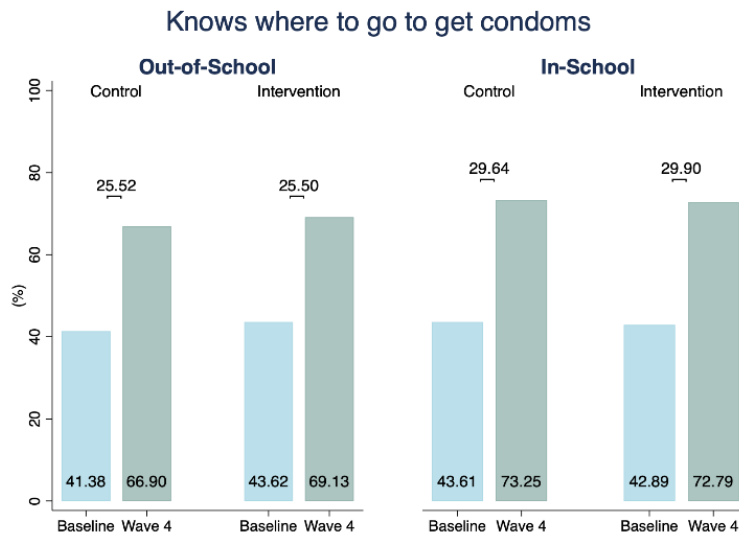
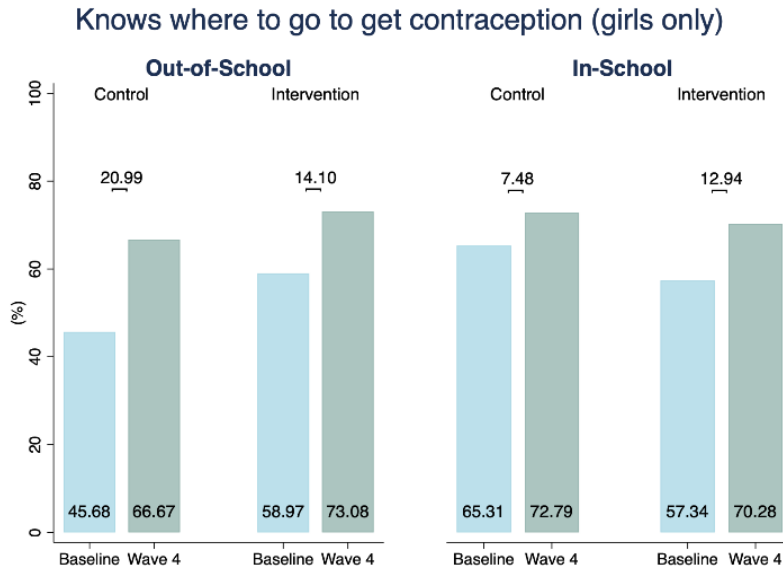
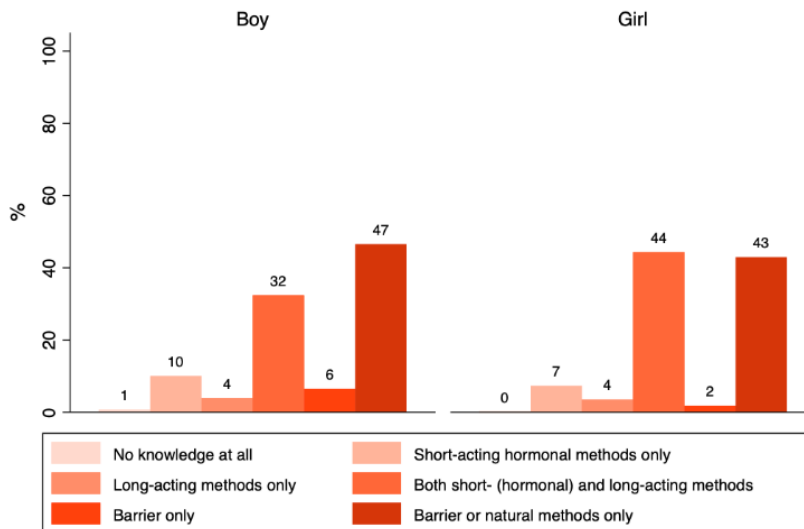


Figure 8 | Knows where to go to get contraception (girls only)



Among adolescents aged 15 and older, all respondents knew of at least one type of contraceptive method,² though there were some differences by gender (Figure 9). Girls had a greater awareness of effective short- and long-acting contraception than boys (44% vs 32%), though many girls and boys only knew of barrier or natural methods (43% and 47%). There were no differences in contraceptive method awareness by school status (Figure 10) or by intervention exposure (Figure 11), with the vast majority of both knowing both short and long acting methods. Increases in awareness of short and long acting methods occurred mostly between waves 2 and 3, except for IS adolescents in the intervention group who saw a greater increase between waves 3 and 4 (Figure 11).

Figure 9 | Contraceptive knowledge at W4 (by sex)



² Short-acting hormonal methods included pills and injectables. Long-acting methods included IUD, implant, and female sterilization.

Figure 10 | Contraceptive knowledge at W4 (by school status)

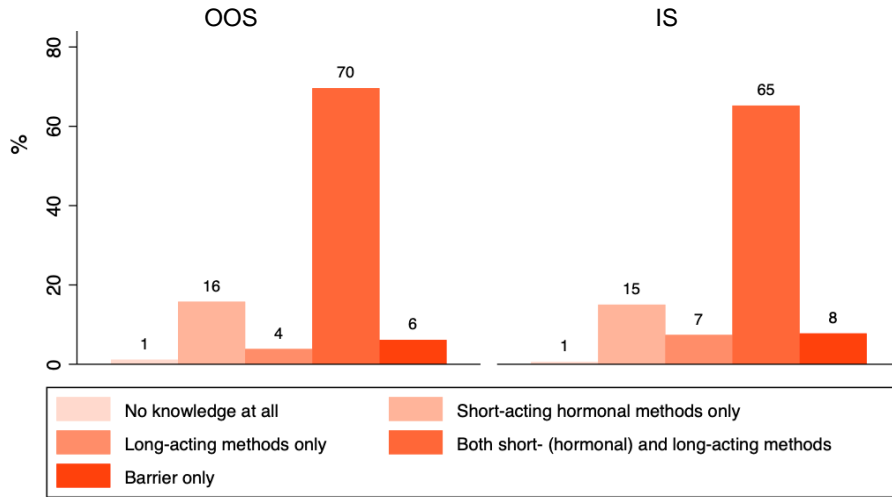
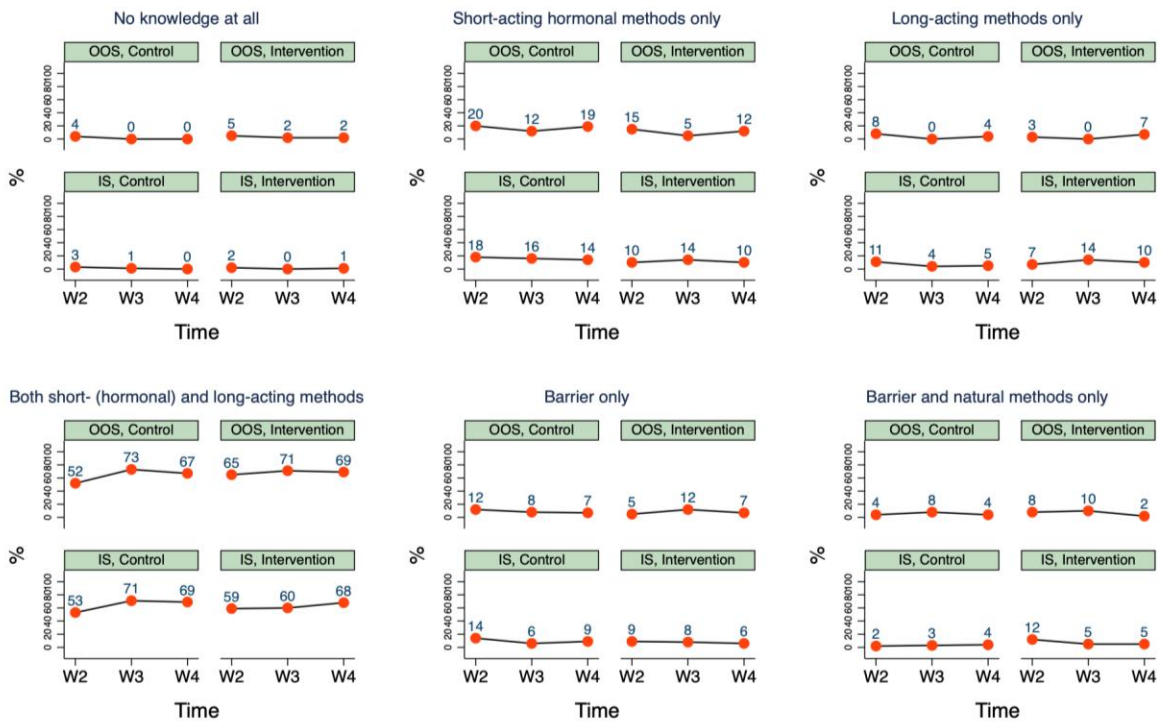


Figure 11 | Knowledge about contraceptive methods over time*

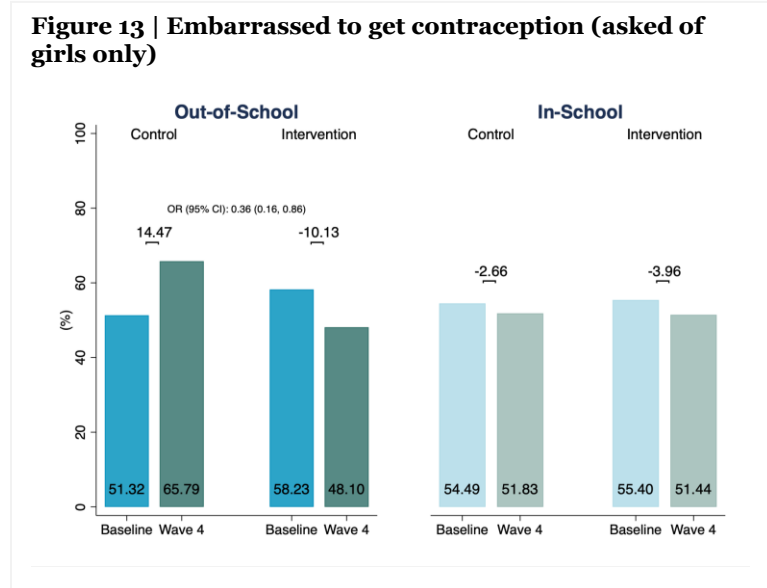
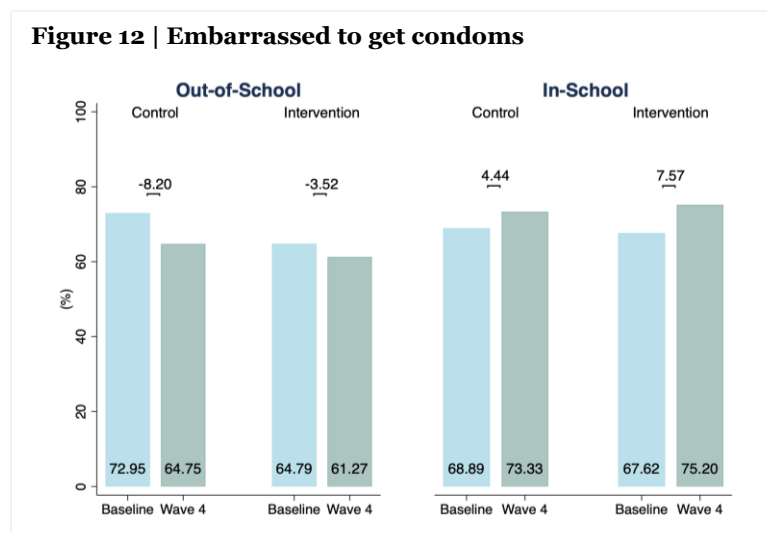


*Among individuals aged 15 or older at W2 who were consistently followed through Wave 4.

SRH ATTITUDES

At baseline, a majority of boys and girls felt embarrassed to get condoms with no differences between interventions and controls. A substantial percentage of girls also felt embarrassed to seek contraception if they needed it.

Although not a direct intervention component, in wave 4, embarrassment to get a condom (Figure 12) slightly decreased among OOS adolescents but increased in IS adolescents. The differential trends between intervention and controls were not statistically significant. Embarrassment about getting contraception (Figure 13) significantly fell among girls in the OOS intervention groups compared to controls, for whom embarrassment increased (OR: 0.36, 95% CI (0.16, 0.86)). Embarrassment to get contraception decreased for all IS groups with no significant difference between intervention and controls.

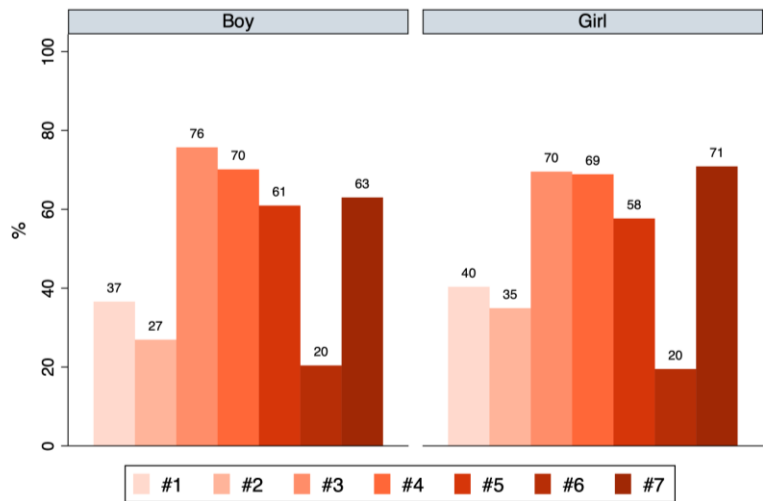


In wave 4, additional analysis was performed on measures relating to misconceptions about contraception that could be contributing to attitudes. Adolescents were asked to agree or disagree with the following statements:

1. Contraception is only for married women.
2. With contraception, a young couple can have sex without worrying about pregnancy.
3. Adolescents or young women who use contraception are seen as promiscuous.
4. If women use contraception, they risk becoming infertile.
5. Contraception can make women very ill.
6. Women or girls who use contraception are better prepared to be mothers because they can decide when to have children.
7. Women or girls should not use contraception before having children.

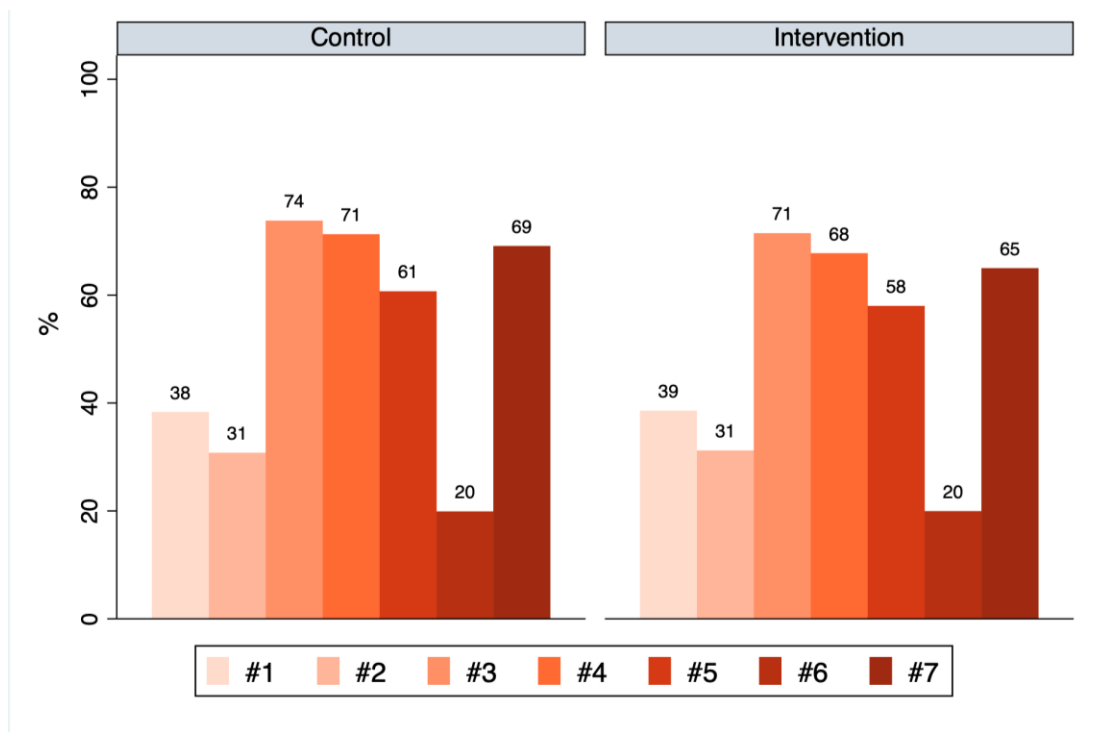
Figures 14 and 15 illustrate how many adolescents agreed with items 1, 3, 4, 5, and 7, and how many disagreed with items 2 and 6 (i.e., whether they hold misperceptions about contraception or not). The graphs demonstrate the relative pervasiveness of these misconceptions, especially for items 3, 4, 5, and 7 (Figure 14). For example, 76% of boys and 70% of girls agree with the statement that adolescents or young women who use contraception are seen as promiscuous. These levels of endorsement were slightly lower among those in the intervention group (Figure 15), though the differences were not statistically significant between the two groups.

Figure 14 | Contraceptive attitudes at Wave 4 (by sex)



1. Contraception is only for married women.
2. With contraception, a young couple can have sex without worrying about pregnancy.*
3. Adolescents or young women who use contraception are seen as promiscuous.
4. If women use contraception, they risk becoming infertile.
5. Contraception can make women very ill.
6. Women or girls who use contraception are better prepared to be mothers because they can decide when to have children.*
7. Women or girls should not use contraception before having children.

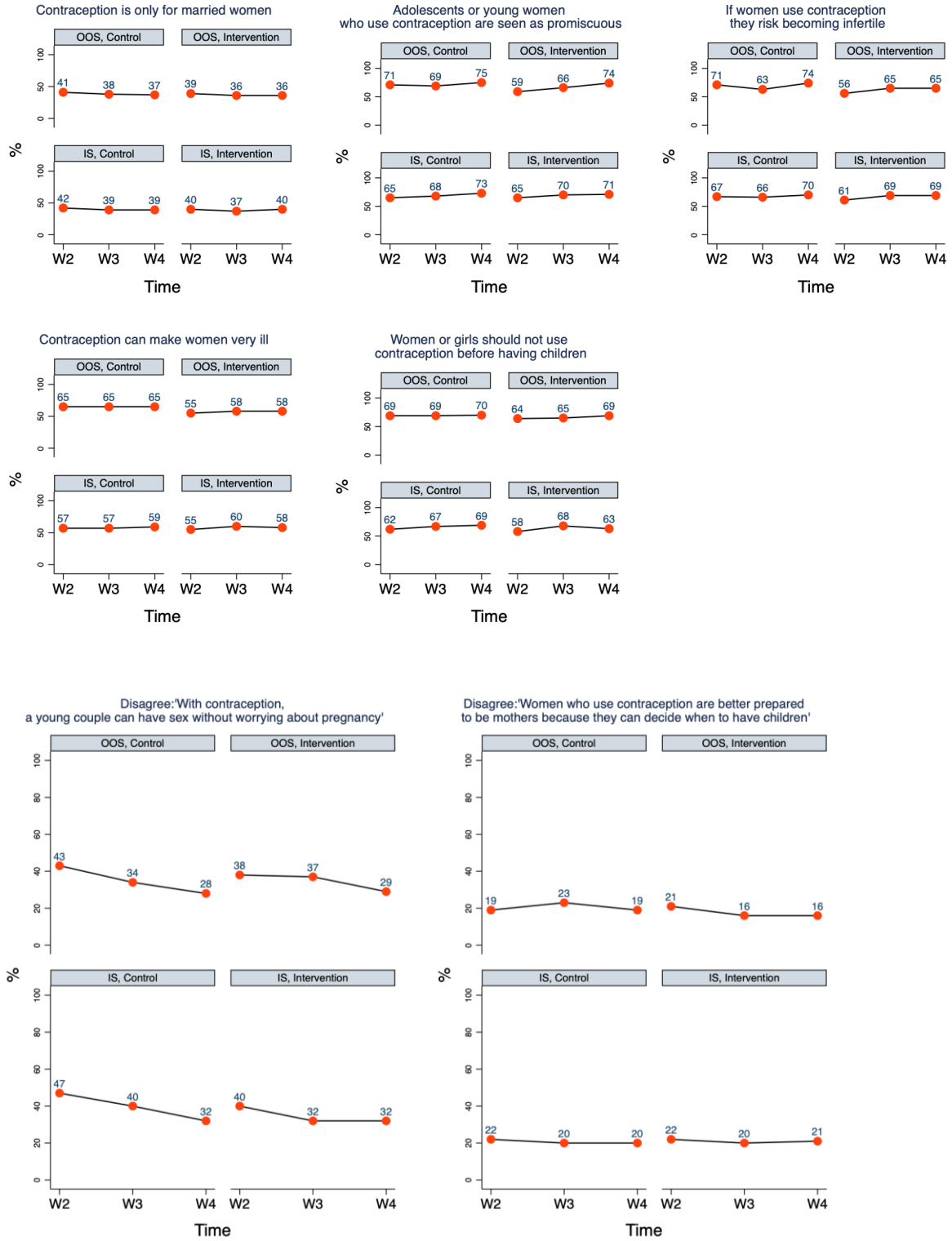
Figure 15 | Contraceptive attitudes at Wave 4 (by study arm)



1. Contraception is only for married women.
2. With contraception, a young couple can have sex without worrying about pregnancy.*
3. Adolescents or young women who use contraception are seen as promiscuous.
4. If women use contraception, they risk becoming infertile.
5. Contraception can make women very ill.
6. Women or girls who use contraception are better prepared to be mothers because they can decide when to have children.*
7. Women or girls should not use contraception before having children.

When looking more closely at these measures longitudinally (Figure 16), most have remained relatively stable between waves 2 and 4. There were slight increases in adolescents who believed girls who use contraception are seen as promiscuous, as well as a decrease in adolescents who agreed that contraception should preempt worries about pregnancy.

Figure 16 | Attitudes towards contraception (across Waves 2 - 4)



RELATIONSHIP AND SEXUAL & REPRODUCTIVE BEHAVIORS

At wave 4, 35.9% of girls and 42.7% boys indicated having ever engaged in a relationship. No differences were seen by study arm or school status (Figure 17). Using representative observational (control-only) data, we see that this proportion increased rapidly with age, starting at age 12 for boys and 13 for girls (Figure 18). Boys under 15 are more likely to engage in romantic relations than girls, but girls catch up after 15, with just over 70% having ever had a romantic relationship by 17.

Figure 17 | Engaged in romantic relations (ever – by study arm)

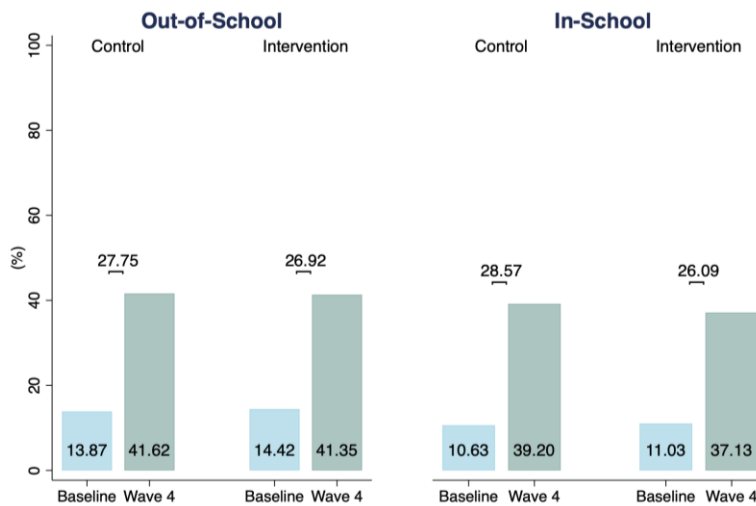
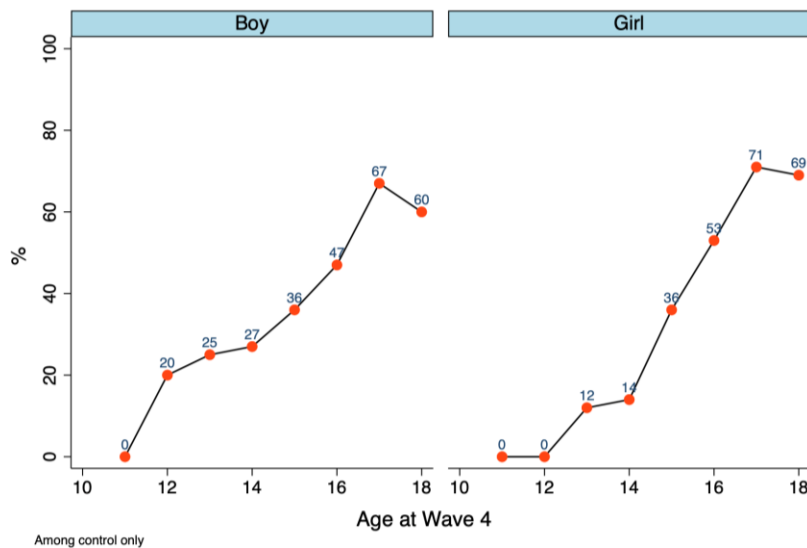
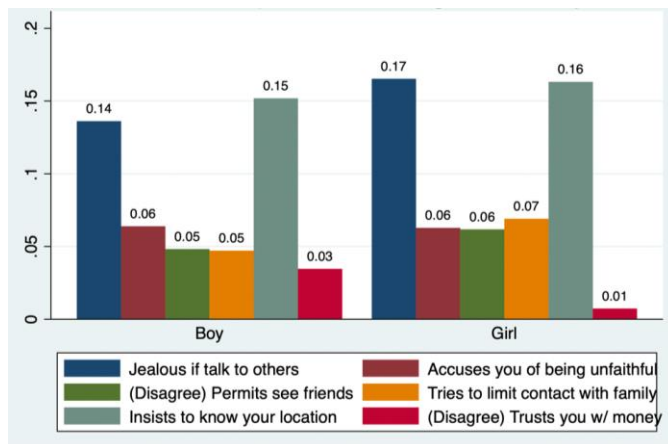


Figure 18 | Ever engaged in romantic relationship



In Wave 4, participants were asked for the first time about controlling behaviors by a romantic partner (Figure 19). Girls reported slightly higher perceived controlling behavior from their partners than boys, although the difference was not statistically significant (Figure 20). There were no differences observed by study arm (Figure 21).

Figure 19 | Endorsement of partner controlling behaviors (by sex)



Percent agree a lot/a little vs. not reported for each item:
 1. Jealous or angry if you talk to other boys/men or girls/women
 2. Frequently accuses you of being unfaithful
 3. Permitted you to meet your friends of the same sex (*reverse coded*)
 4. Tried to limit contact with your family
 5. Insisted on knowing where you are at all times
 6. Trusted you with money (*reverse coded*)

Figure 20 | Average perceived control from current/recent partner (by sex)

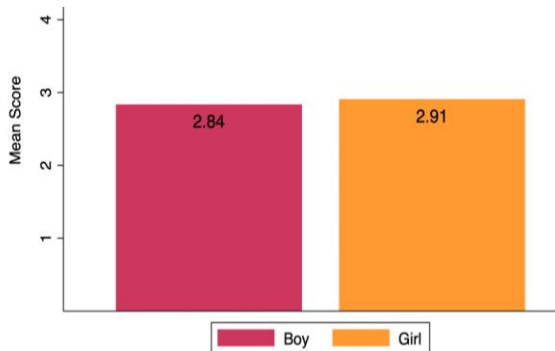
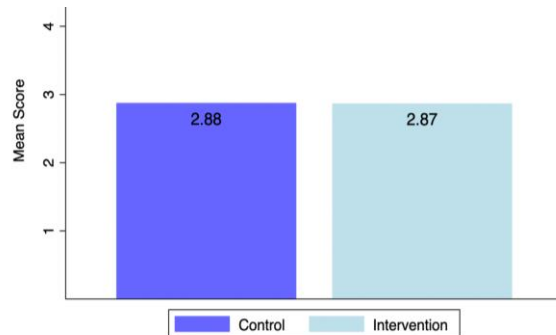


Figure 21 | Average perceived control from current/recent partner (by study arm)



At wave 4, 10.04% of girls and 13.51% boys reported ever having sexual intercourse, with no difference by study arm. While a higher proportion of boys under 16 report any sexual activity compared to younger girls, the opposite is true after 16, as 16.10% of girls 16-17 and 14.40% of boys of the same age group indicate ever having sex. Figures 22 and 23 show Wave 4 report of ever experiencing sexual intercourse by age, sex, and study arm.

As shown in Figure 24, 38% of girls in the control group and 40% in the intervention group used contraception at first sex, with no statistically significant difference. 52% of boys in the control group and 41% in the intervention reported use of contraception the first time they had intercourse.

Figure 22 | Ever sexual intercourse (among control group) – by sex

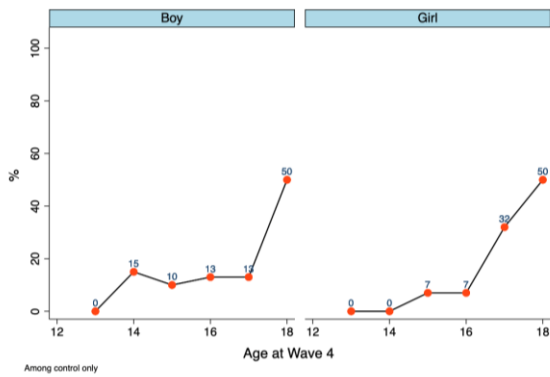
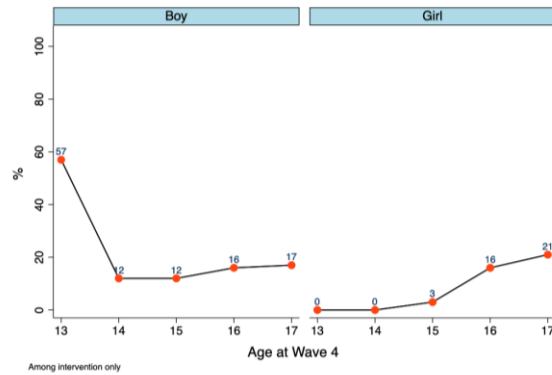
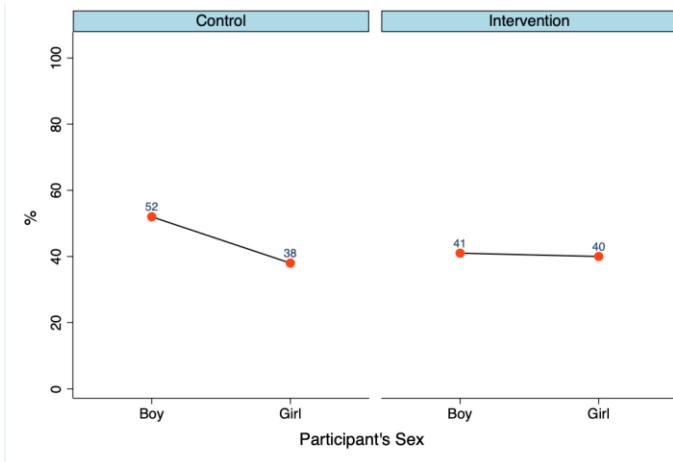


Figure 23 | Ever sexual intercourse (among intervention group) - by sex



The high percentage of boys reporting sexual relations at 13 in the intervention group is due to the very small sample size (n=7) (denominator = ever been in a relationship).

Figure 24 | Contraceptive use at first sex (Wave 4 report)

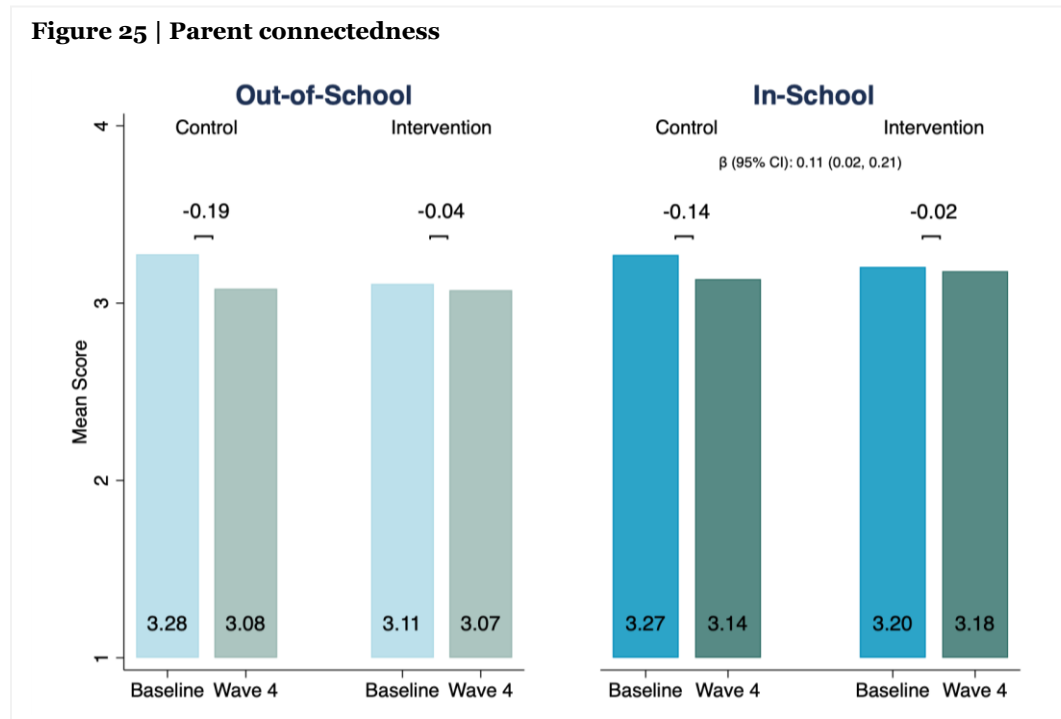


2. ASSETS AND AGENCY

CAREGIVER CONNECTEDNESS

At baseline, adolescents in the intervention and control groups had similar family structures. However, OOS girls in the intervention group were less likely to live with both of their parents than in the control group (intervention vs. control: 41.54% vs. 65.33%). Family relations at baseline, in the form of connectedness (feeling close to caregivers and comfortable communicating concerns regarding puberty and romantic relationship) and monitoring (caregivers being aware of adolescents' location, academic performance and friends' names) were similar between study groups.

Little change in caregiver connectedness was observed over time in either intervention or control groups, with all groups experiencing a slight decrease between baseline and wave 4 (Figure 25). However, the intervention seemed to buffer this trend for the IS group, as IS adolescents in the control group had a significantly greater decrease in parent connectedness than the intervention groups (OR: 0.11, 95% CI (0.02, 0.21)).



ATTITUDES AND EXPERIENCES RELATED TO PUBERTAL DEVELOPMENT AND BODY COMFORT

Another critical component of the GUG! intervention was to promote communication, knowledge and comfort with pubertal development, especially for girls.

At baseline, body satisfaction was moderate (based on an indicator assuming a positive outlook across 5 items) with significant inequalities between OOS and IS adolescents. No differences were noted between intervention and controls at baseline. At baseline, few adolescent girls had gone through menarche, and among those who ever had a period, about half knew when to expect their next period and many felt ashamed of their bodies during their periods, especially the OOS girls. Knowledge about the timing of menstruation was slightly higher among IS girls in the intervention group relative to the control, while stigma was higher among OOS girls in the control group compared to the intervention group ($p=0.044$).

Comparing baseline to wave 4 estimates, body satisfaction increased (Figure 26), with a significantly greater gain among IS intervention relative to control adolescents (OR: 1.34, 95% CI (1.01, 1.78)). When asked if girls should be proud of their bodies as they become women, there was an increase in

agreement in all groups between baseline and wave 4 (Figure 27). However, OOS girls in the intervention group gained body pride while the reverse is true for the control group, though this findings was only marginally statistically significant ($p=0.054$) (Figure 28).

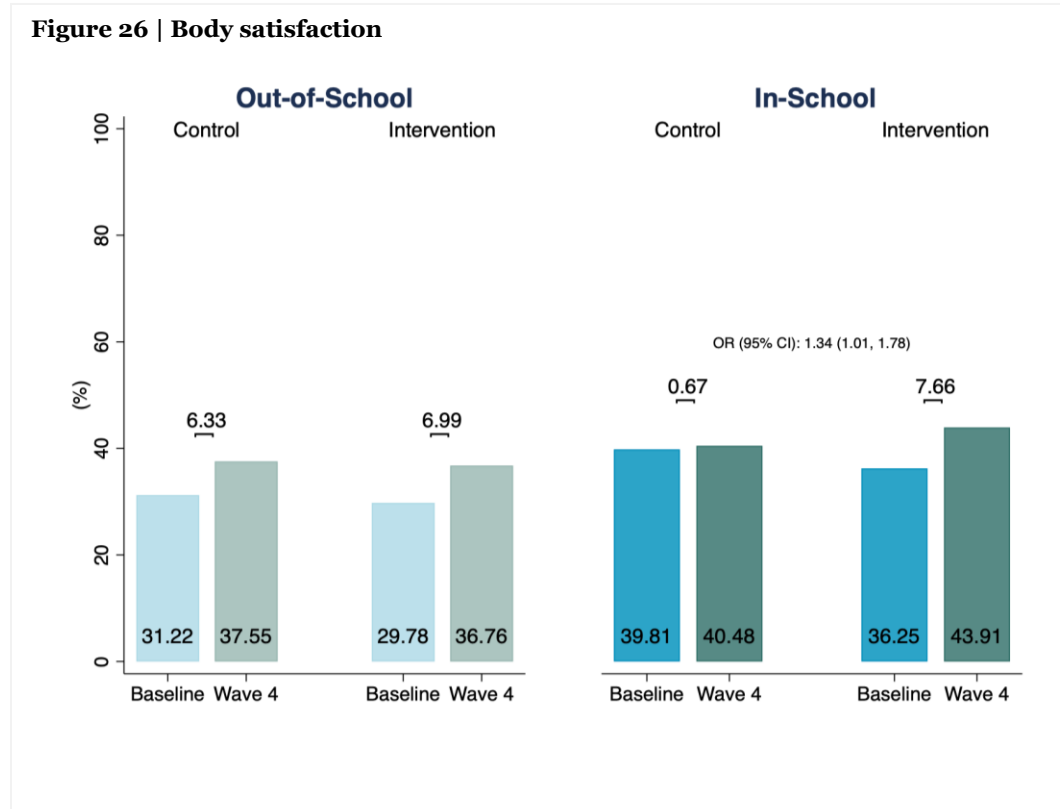


Figure 27 | Girls should be proud of their bodies as they become women

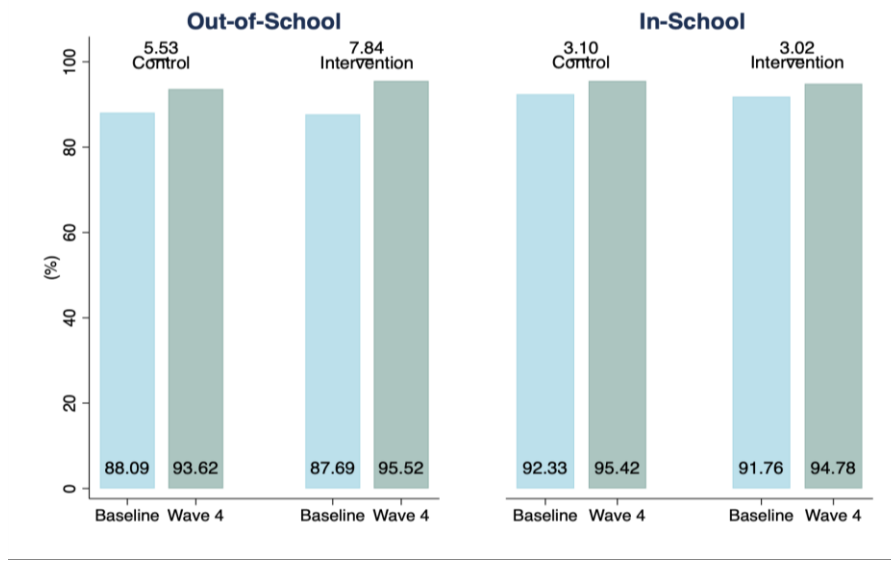
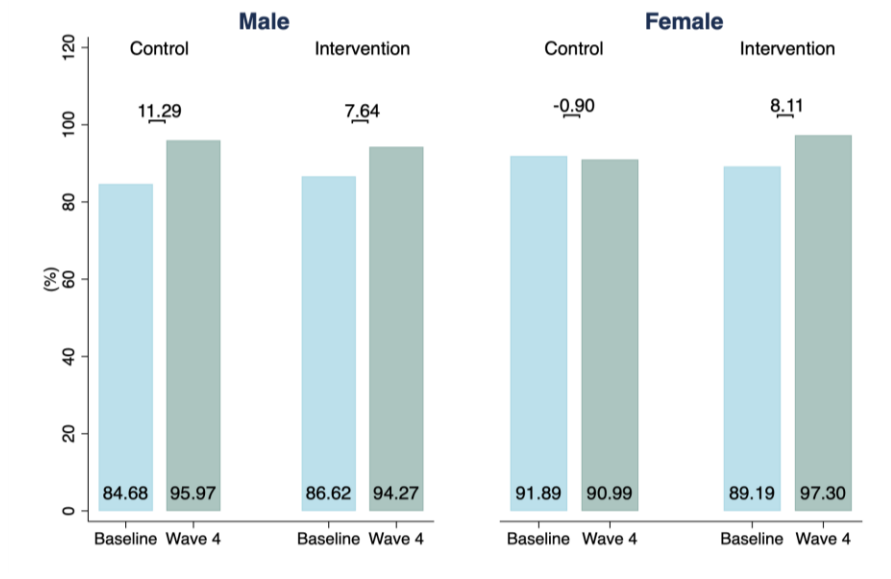


Figure 28 | Girls should be proud of their bodies as they become women (OOS only)



Stigma related to menstruation substantially decreased over time, though there was no significant intervention effect (Figure 29). In addition, an increasing number of adolescent girls track their periods, with greater increases among OOS girls (Figure 30). There were differential effects between OOS and IS girls but no significant effect of the intervention.

Figure 29 | Menstrual attitudes (ashamed of body when menstruating)

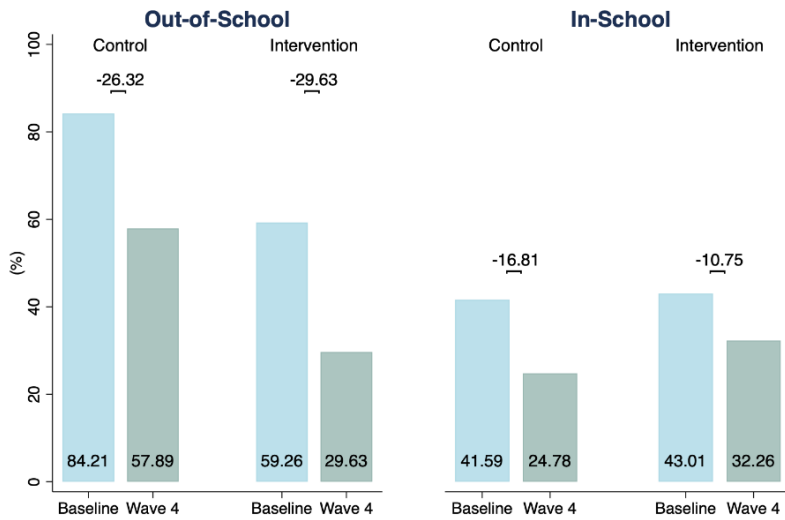
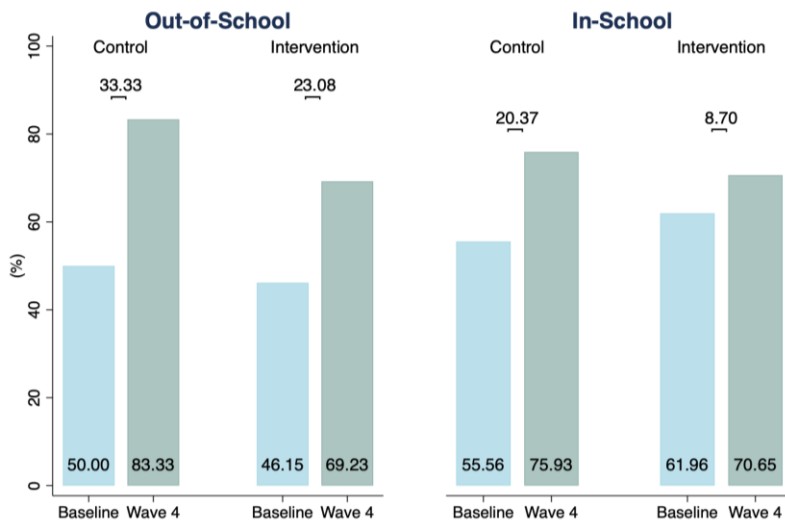


Figure 30 | Period tracking (knows when next period comes)



AGENCY

While agency and women and girl’s empowerment were not direct outcomes of the GUG! intervention, these constructs are viewed as critical dimensions of gender equality, and a process towards improving women’s and girls’ health and wellbeing and were included in the global GEAS study. VYA’s agency was operationalized using three indicators that are salient to the lives of young adolescents across diverse cultural settings (Zimmerman, 2019): 1) voice (or the ability to be heard), 2) freedom of movement, and 3) decision making (or the ability to make daily decisions). At baseline, IS girls in the

intervention group reported having more voice ($p < 0.001$) and decision-making power ($p = 0.002$) than the control groups. No differences were seen in OOS girls, IS or OOS boys.

Over time, voice increased for OOS adolescents and stayed consistent for IS adolescents (Figure 31). No statistically significant differences were seen between the study groups. Freedom of movement increased for all groups, but more so for OOS adolescents than IS adolescents, with no statistically significant differences seen between study groups (Figure 32). Decision making increased over time across both study arms, with both controls and those in the intervention group reporting nearly the same levels of decision making ability at Wave 4 (3.42 and 3.43, respectively) (Figure 33).

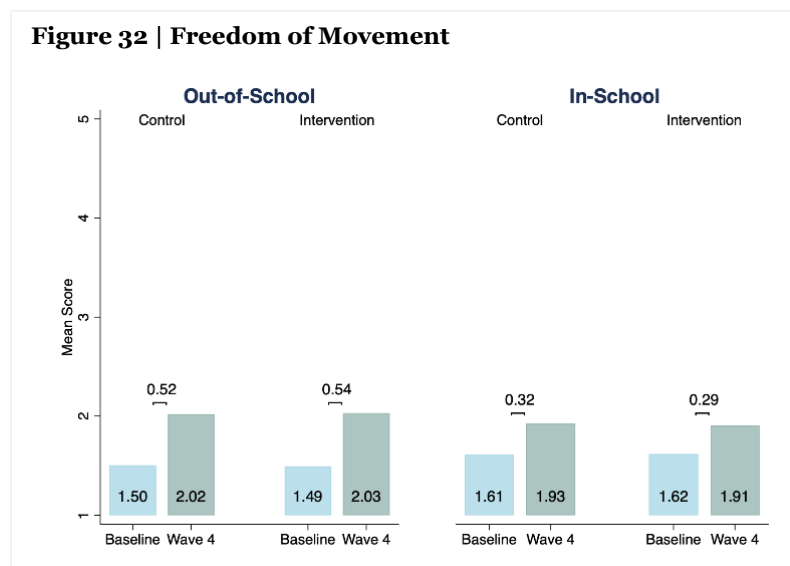
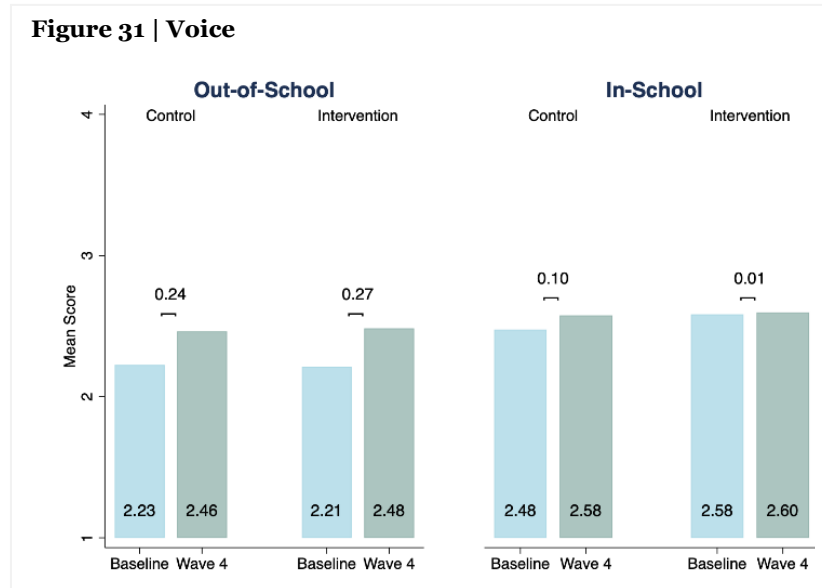
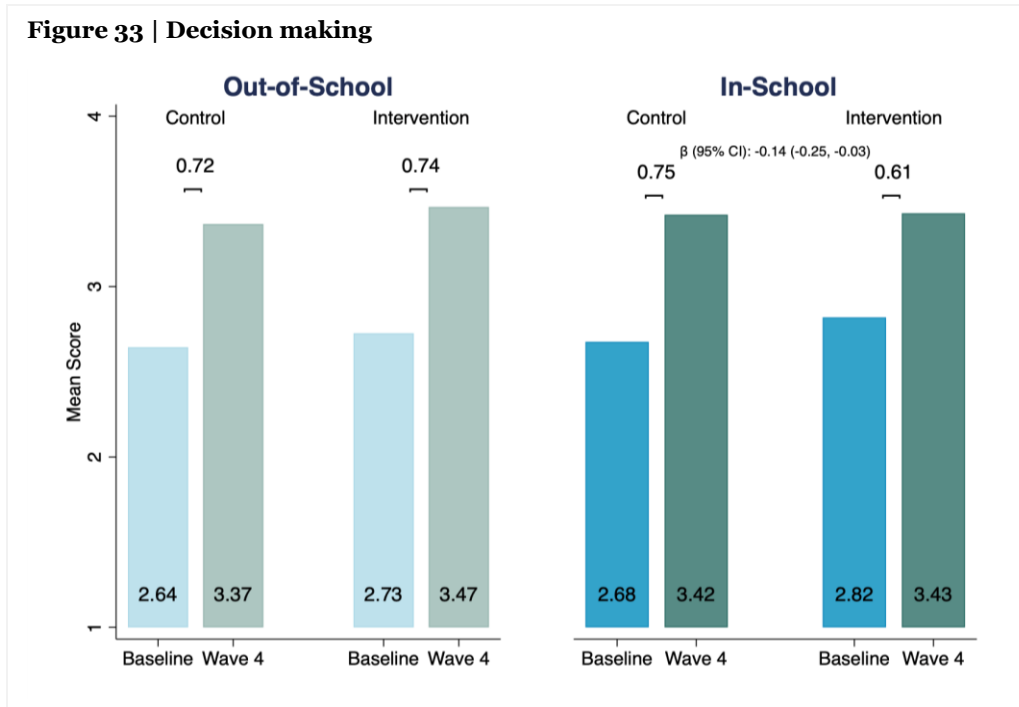


Figure 33 | Decision making



SEXUAL COMMUNICATION

At baseline, communication about SRH topics was rare, with the exception of pubertal changes. Significant differences were noted between interventions and controls: IS adolescents in the intervention group were more likely to have talked about pregnancy. IS intervention boys were also more likely to have talked about contraception, and sexual relations while OOS intervention girls were more likely have talked about body changes.

Over time, communication about SRH topics, including body changes, pregnancy, contraception or sexual relationships increased for both intervention and control groups. Puberty development was the most common SRH topic discussed and communication increased significantly over time, but trends were similar by study group (Figure 34). These conversations happened mainly with friends or other family members, as talking about body changes with parents and caregivers has remained stable (for OOS controls) or decreased (for all other groups) since baseline (Figure 35). OOS control girls also seemed to be catching up with the intervention in communication, though no significant difference was detected (Figure 36).

Figure 34 | Talked about body changes

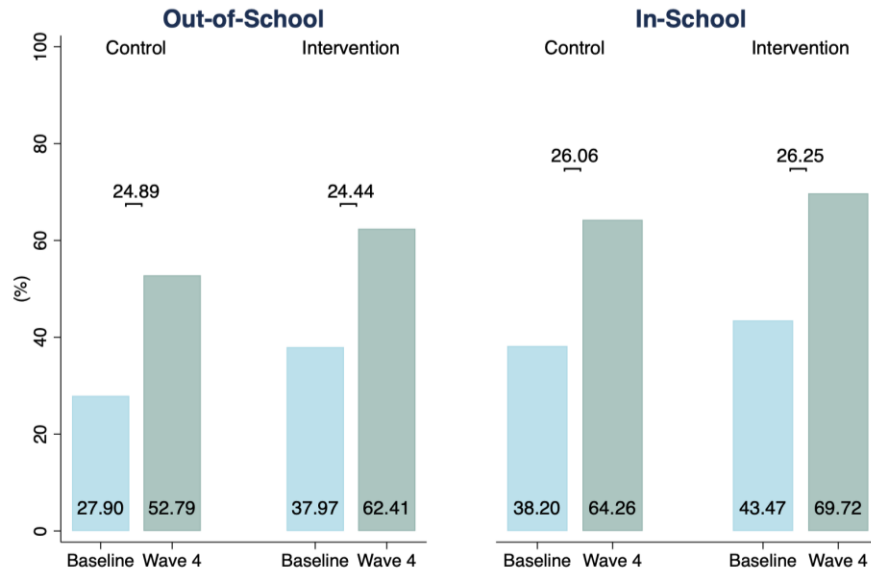


Figure 35 | Talked about body changes with parents/caregivers

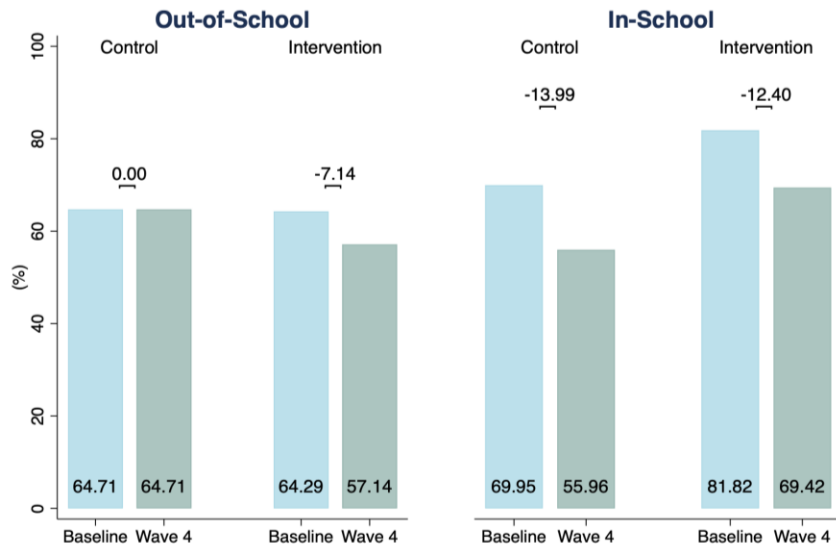
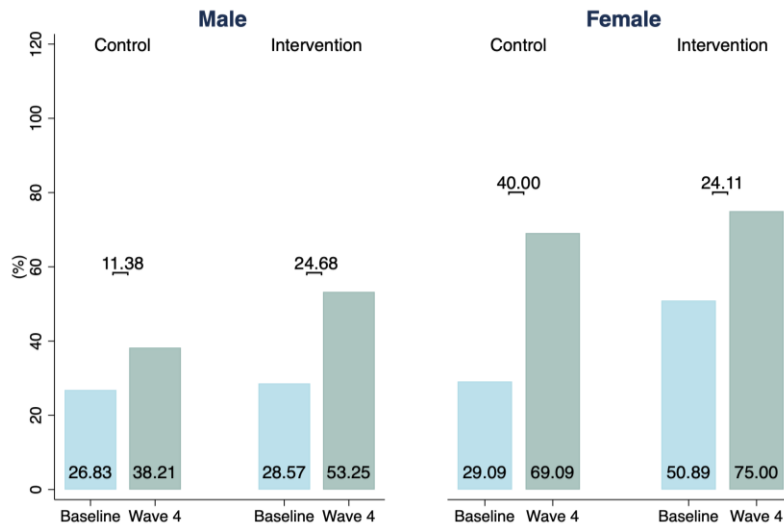
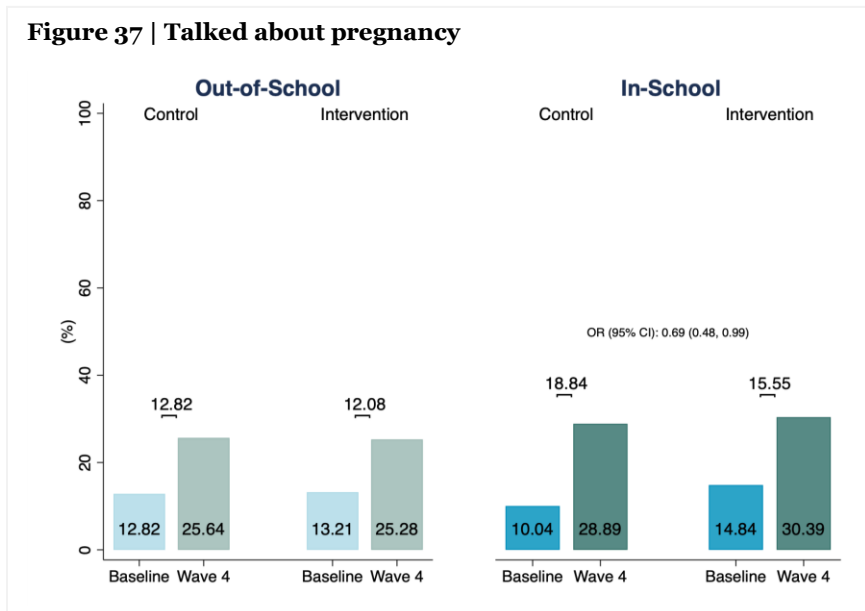


Figure 36 | Talked about body changes (OOS only)



A similar pattern in who adolescents choose to communicate with could be seen with pregnancy. Talking with anyone³ increased over time (Figure 37), with a significant effect of the intervention for IS adolescents (OR: 0.69, 95% CI (0.48, 0.99)), but talking with parents and caregivers is decreasing (Figure 38). Younger IS controls have also significantly caught up with the intervention group in communication about pregnancy (OR: 0.27, 95% CI (0.11, 0.65)) (Figure 39).

Figure 37 | Talked about pregnancy



³ For this item, respondents were asked whether they spoke with any of the following people about pregnancy: Mother/female caregiver; Father/male caregiver; Sister; Brother; Other family member; Friend/peer; Doctor/nurse or other person at a health center. A small sample size for this item limits our ability to further disaggregate these data. For example, among the IS adolescents, only 30% (423/1428) talked about pregnancy with someone. Of these, only a small number communicated with people other than parents/caregivers, leading to unreliable statistical models.

Figure 38 | Talked about pregnancy with parents/caregivers

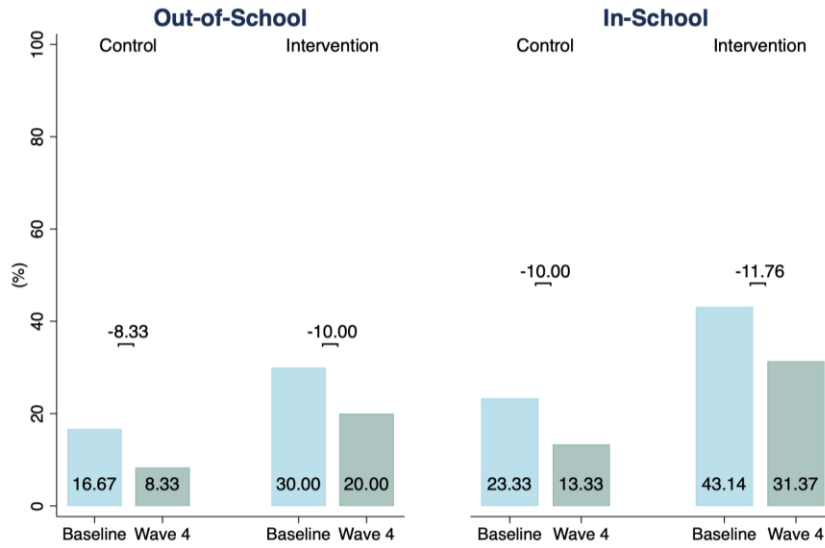
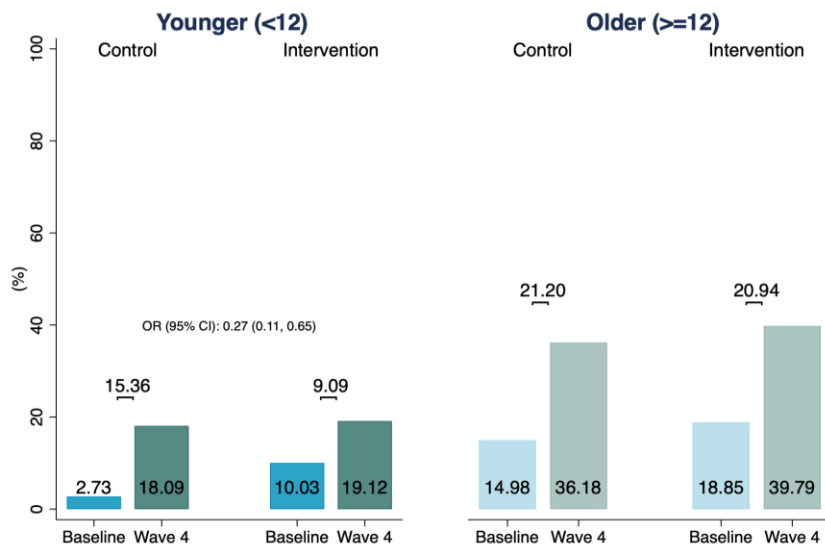


Figure 39 | Talked about pregnancy (IS only)



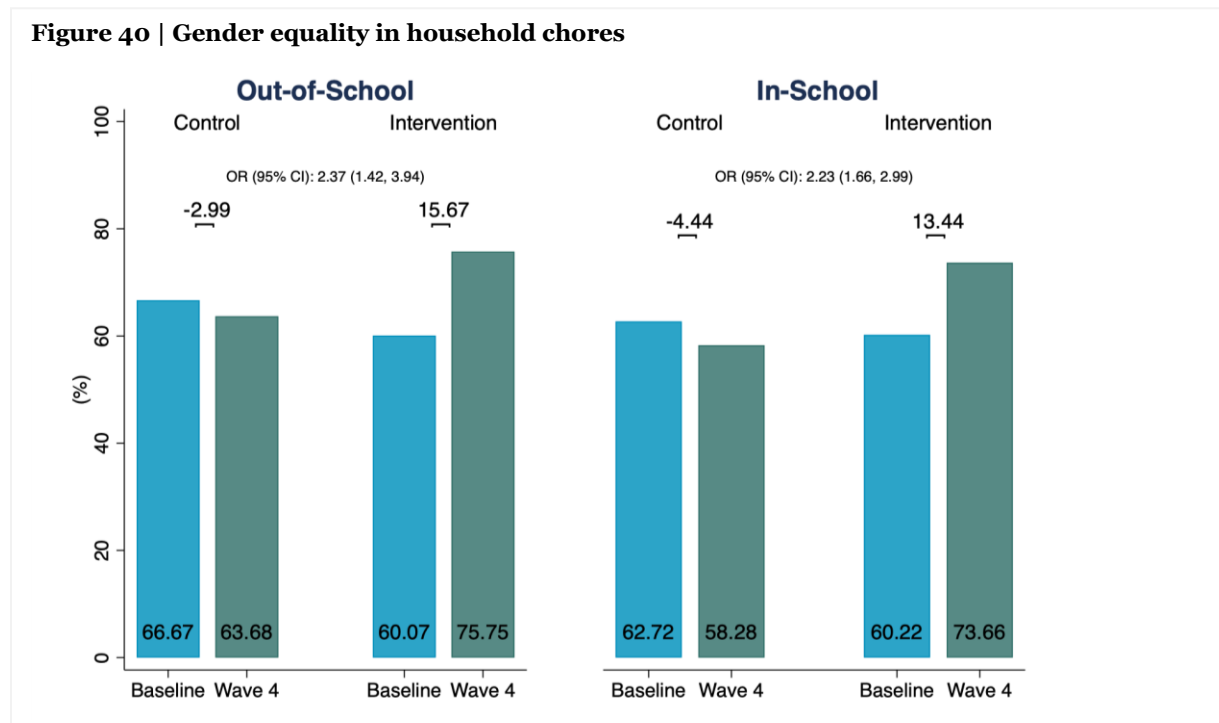
Communication about contraception also increased, though there was no significant difference between intervention and controls or between boys and girls in the IS group. Talk about sexual relationships also increased for all groups, with again IS controls catching up to the intervention group (OR: 0.66, 95% CI (0.44, 0.97)).

3. GENDER-EQUITABLE ATTITUDES AND NORMS

PERCEPTIONS OF GENDER NORMS

At baseline, IS and OOS boys in the control groups were more likely to perceive adolescent romantic relationships as normative ($p=0.006$ and $p=0.048$, respectively) and IS control boys were also more likely to endorse unequal gender stereotypical traits and to be accepting of teasing gender atypical adolescents than IS boys in the intervention group. IS girls in the control group were also more likely to be accepting of teasing gender atypical boys ($p=0.031$), while no other gender normative views were observed by the study group, including attitudes towards sharing household chores. As in all other waves, no differences between the control and intervention groups were seen in gender-stereotypical roles (e.g., male as breadwinner) and gender-stereotypical traits (e.g., males are tough).

Specific gender normative views about sharing household chores addressed in the GUG! intervention shifted following the intervention. Results from the difference-in-difference analysis indicate that the odds of endorsing more gender equal attitudes towards household responsibilities in wave 4 were 2.23 (95% CI (1.66, 2.99)) times and 2.37 (95% CI (1.42, 3.94)) times higher among IS and OOS intervention participants relative to the control groups, after adjusting for baseline attitudes (Figure 40).



Another area of GUG! interest was to tackle discrimination towards gender atypical behavior. Such attitudes were prevalent at baseline and remained high at wave 4. There was however no differential trend between intervention and control groups (Figures 41 and 42).

Figure 41 | It is okay to tease a boy who acts like a girl

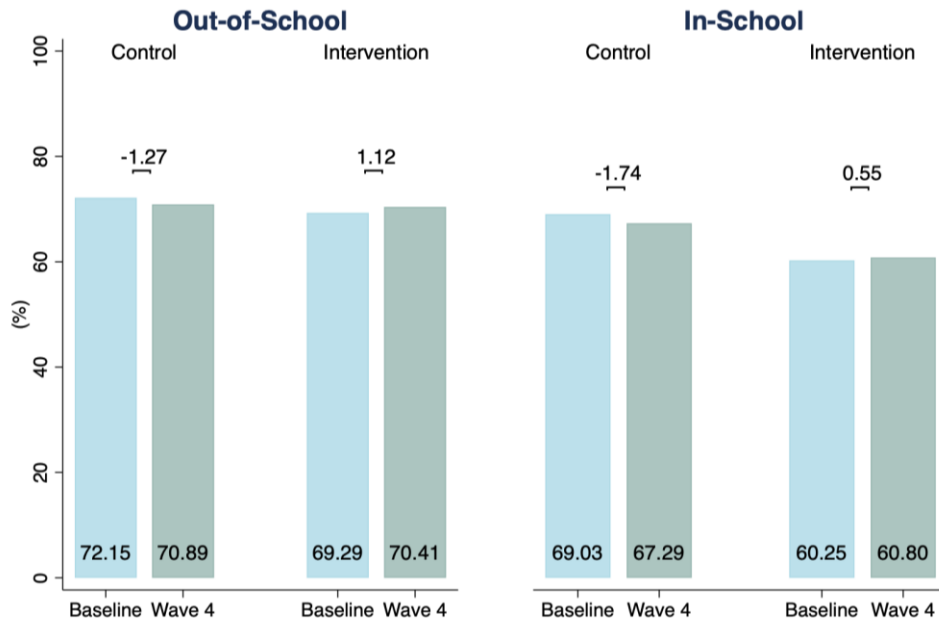
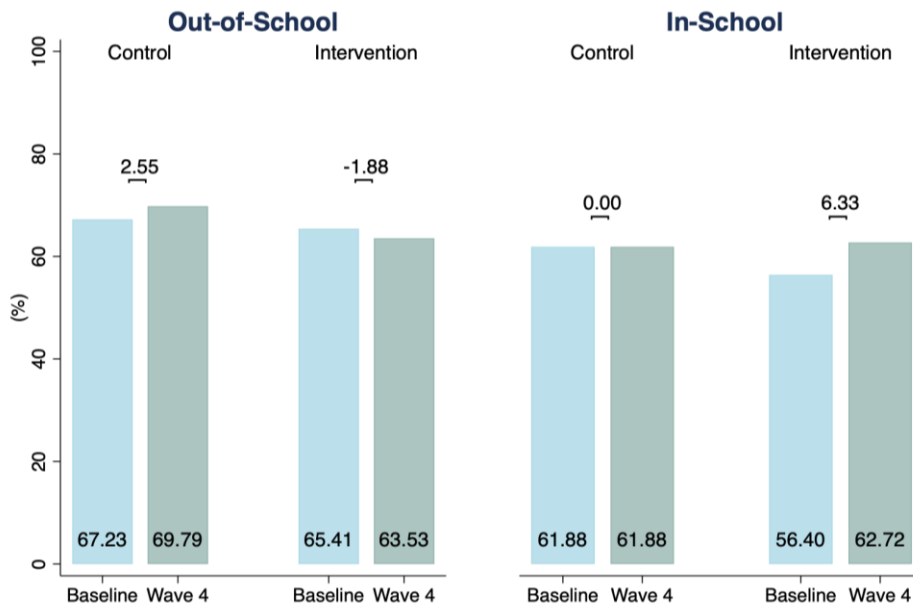


Figure 42 | It is okay to tease a girl who acts like a boy



ATTITUDES RELATED TO GENDER AND SEX

Adolescents were asked about specific sexual attitudes that are influenced by certain gender normative beliefs. Overall, attitudes encouraging male sexual prowess were pervasive and have increased over

time for all study groups (Figure 43). While recognition of shared responsibility for pregnancy prevention increased over time (Figure 44), women are also increasingly socially sanctioned for anticipating the need for condom protection (Figure 45). On the other hand, endorsement of men having multiple partners has remained low since baseline (Figure 46).

Figure 43 | Men are always ready for sex

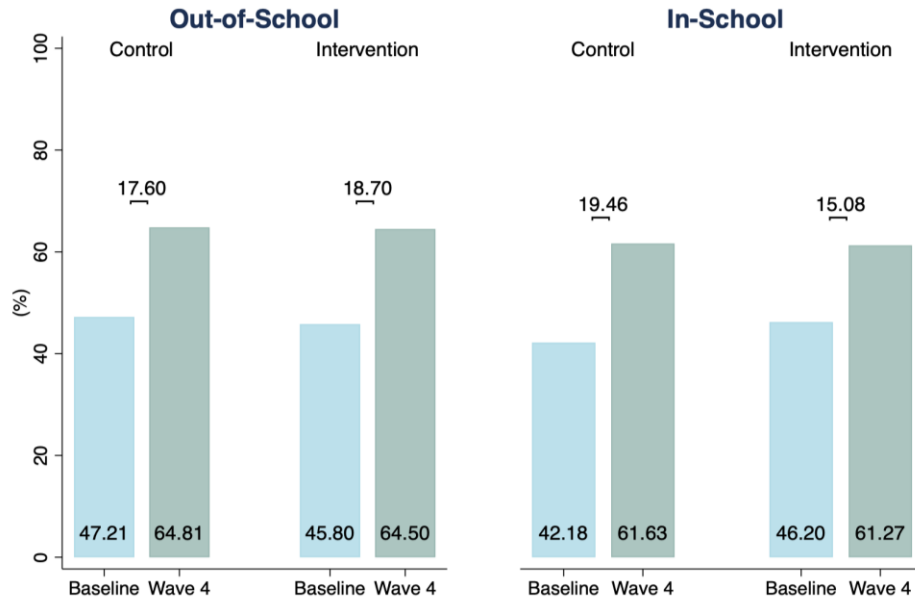


Figure 44 | It is the girl's responsibility to prevent pregnancy

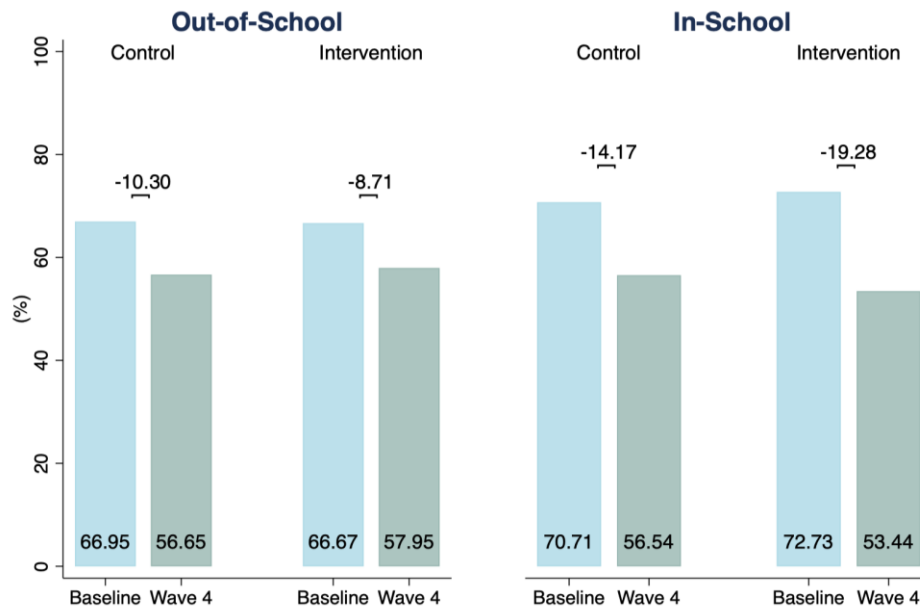


Figure 45 | Women who carry condoms on them are easy

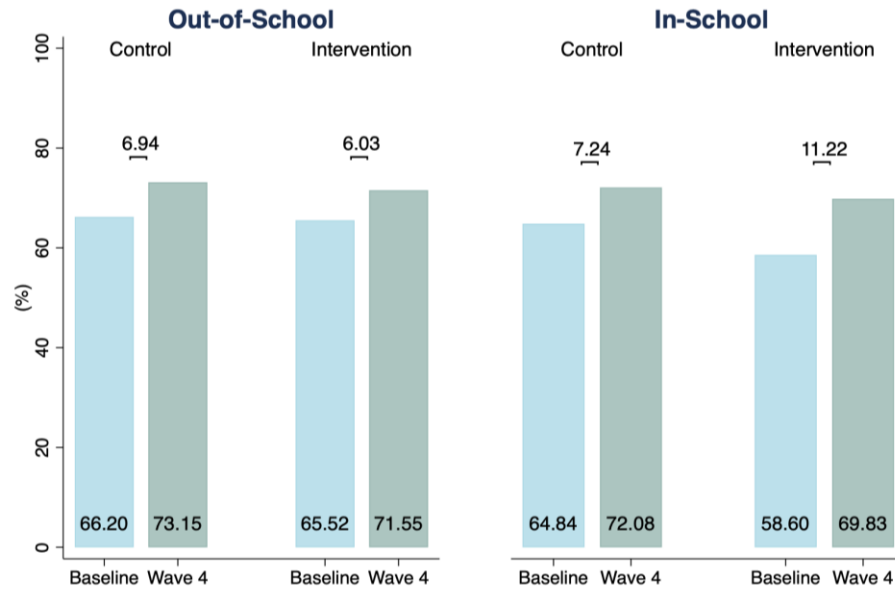
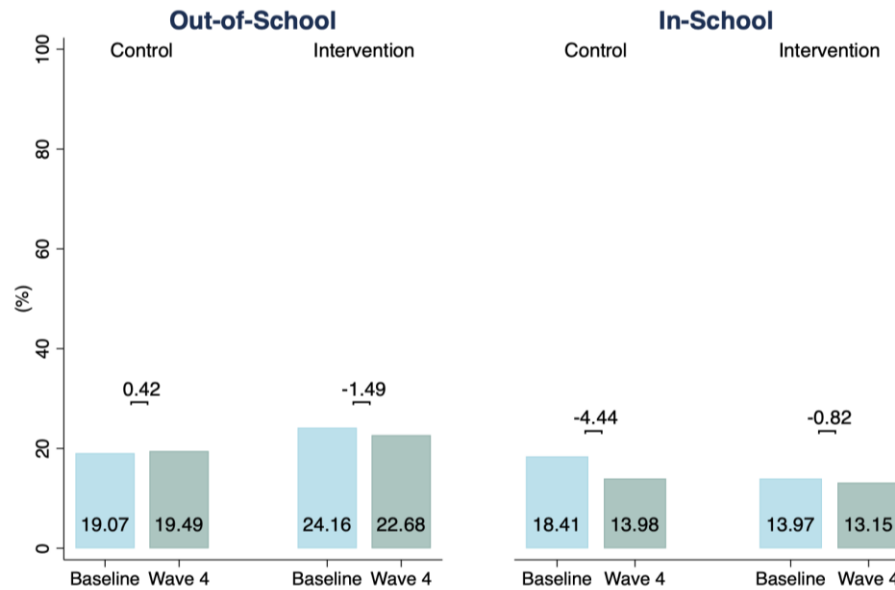
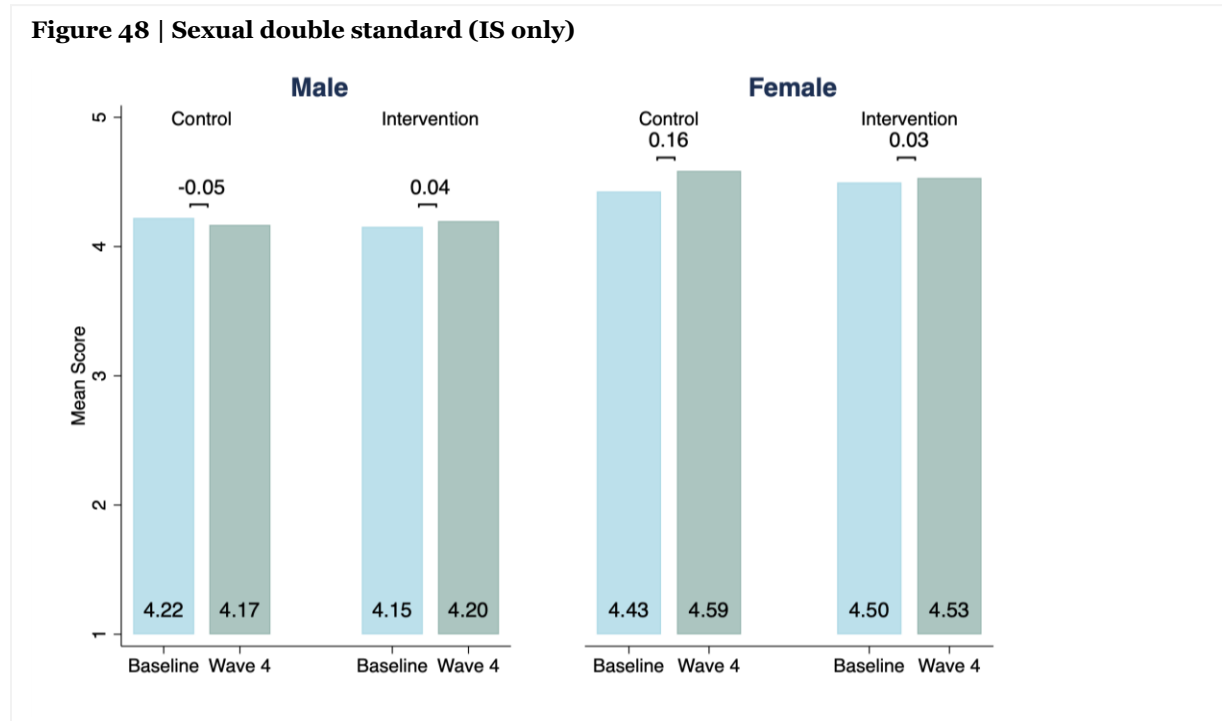
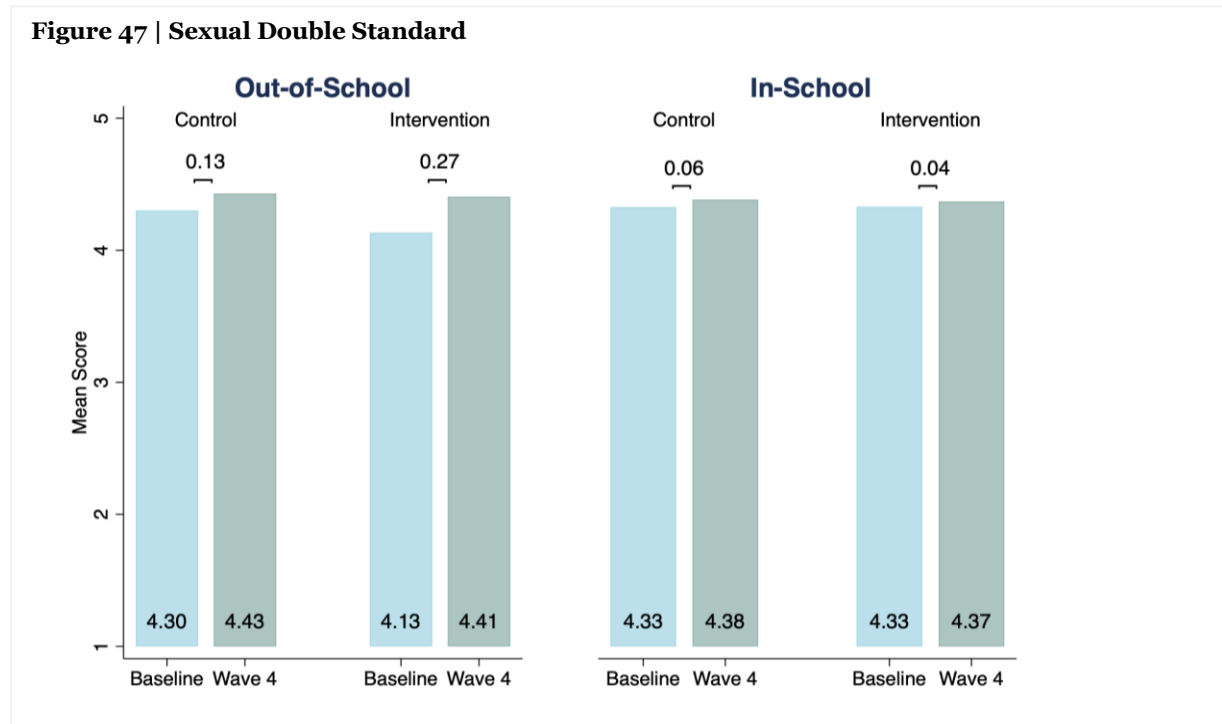


Figure 46 | A real man should have as many female partners as he can



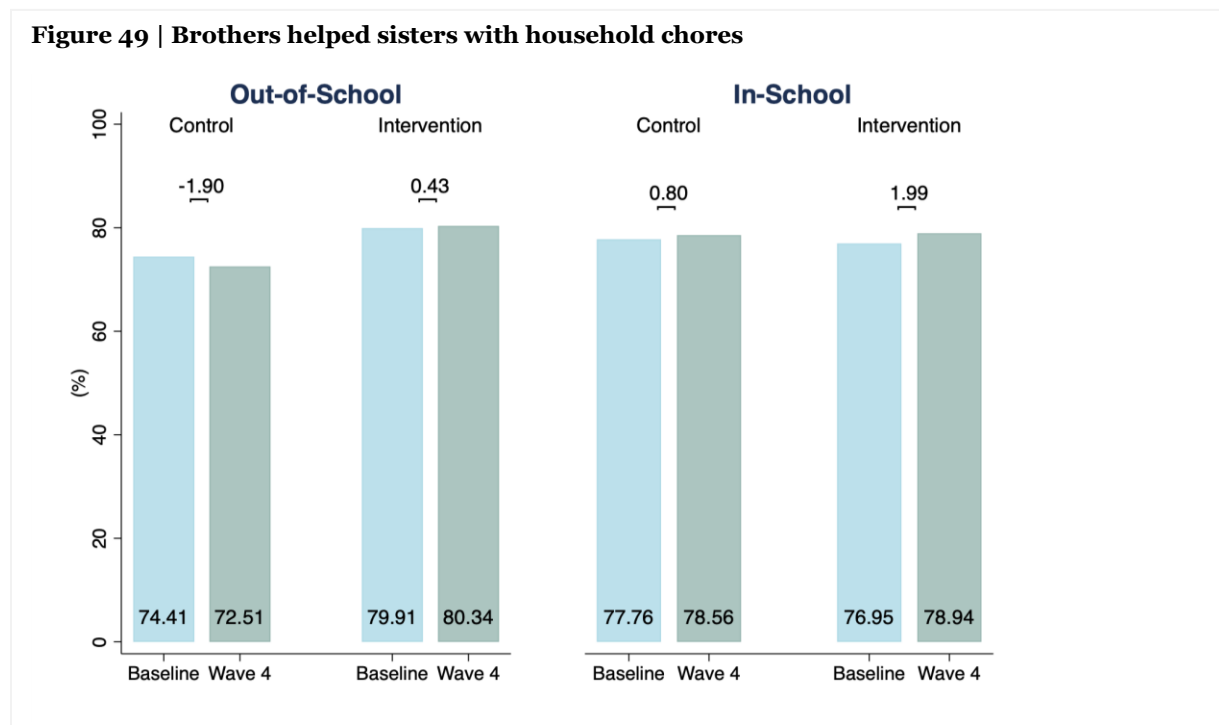
We also found slight increases in young people’s perceptions of a sexual double standard between baseline and wave 4 across study groups (Figure 47). However, the intervention seemed to attenuate some of this increase among IS girls (Figure 48).



4. GENDER-EQUITABLE BEHAVIORS

SHARING OF CHORES

Though attitudes toward sharing of household chores did improve over time, the transition to behavior change was questionable. When female participants were asked whether their brother helped with any of their chores in the past month, we found no difference in household sharing trends between brothers and sisters between the intervention and control groups, and behaviors remained stable between baseline and wave 4 (Figure 49). When male participants were asked whether they helped their sisters with household chores, intervention effects contrary to intention were seen among the youngest (<12 years) in-school GUG participants, with these young GUG male participants being less likely to say they had helped their sisters with chores than those in the control group (87.8% stating they helped in the intervention group, 93.7% in the control group; OR 0.23 (0.06, 0.87), $p=0.030$).



TEASING AND VIOLENCE

At baseline, peer violence perpetration and victimization were common behaviors with no significant differences by study arm. More than one quarter of boys (IS: 28% vs. OOS: 27%) and girls (IS: 21% vs. OOS: 25%) perpetrated violence against their peers in the last 6 months. Peer violence victimization was less common among IS girls than boys (17.06% vs. 28.16%, respectively).

These experiences (teasing victimization, physical violence perpetration and victimization) decreased over time, with the greatest declines seen in teasing victimization (Figure 50). While there were greater

declines in violence victimization among OOS adolescents receiving the intervention than controls, this effect was not statistically significant (Figure 51). Among older IS adolescents (Figure 52), violence perpetration decreased more among the intervention than the control group (OR: 0.63, 95% CI (0.42, 0.95)). No differences were seen in violence perpetration between the intervention and control group by school status (Figure 53).

Figure 50 | Teasing victimization

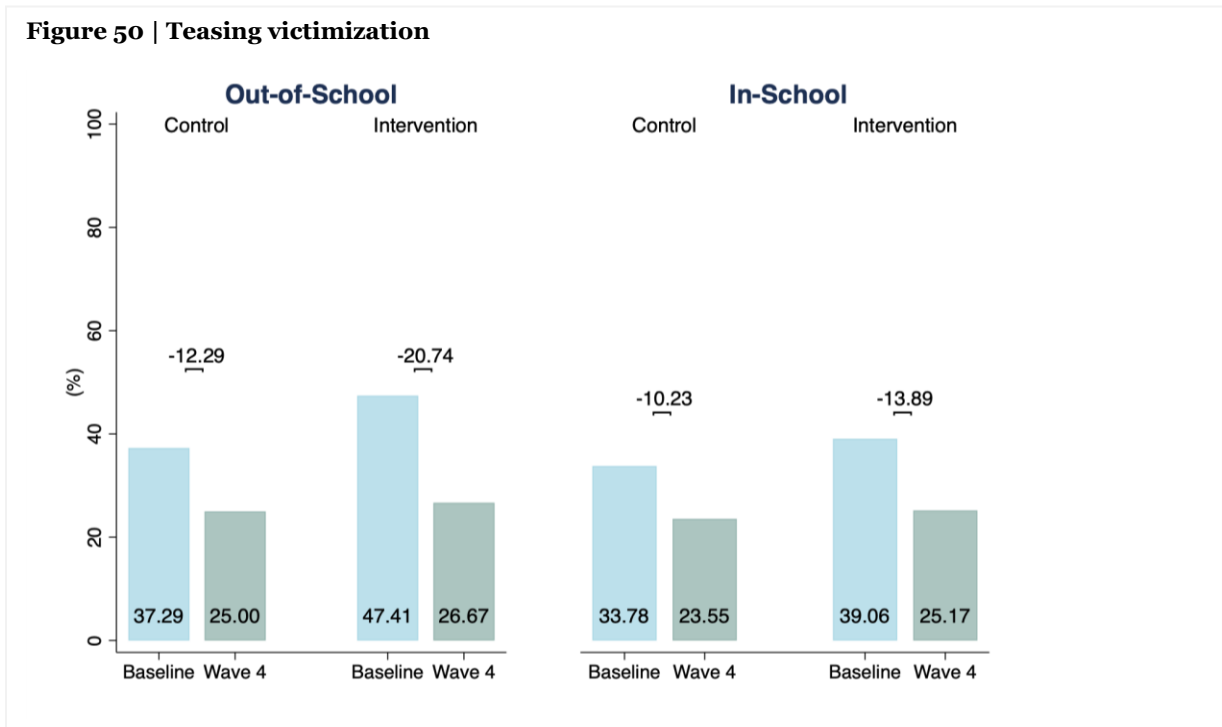


Figure 51 | Violence victimization

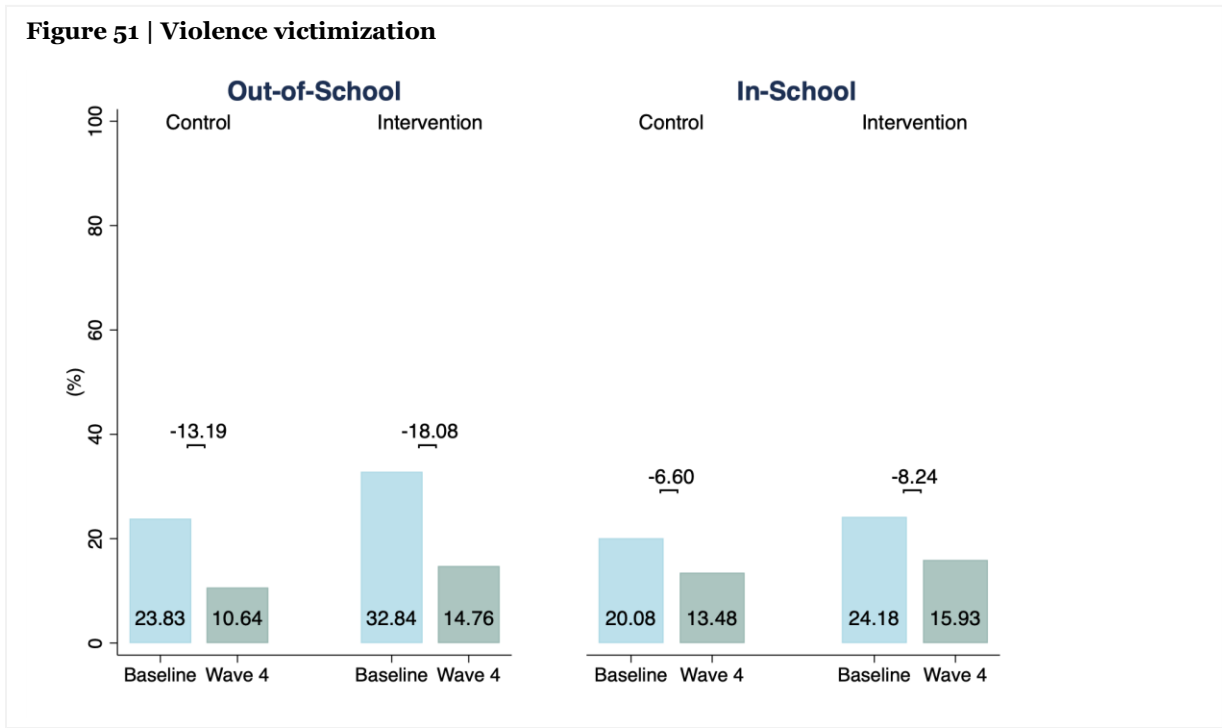


Figure 52 | Violence perpetration (IS only)

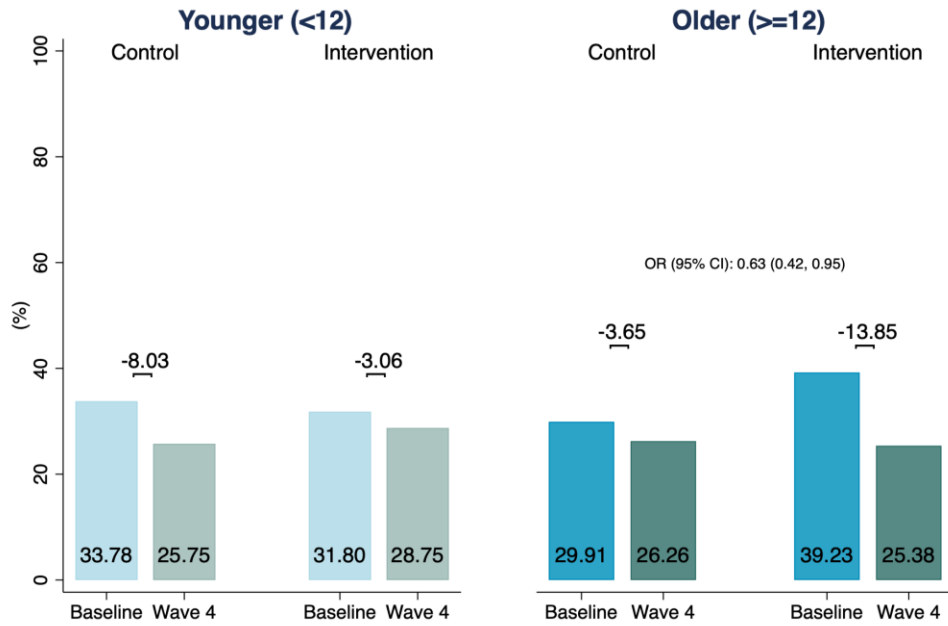
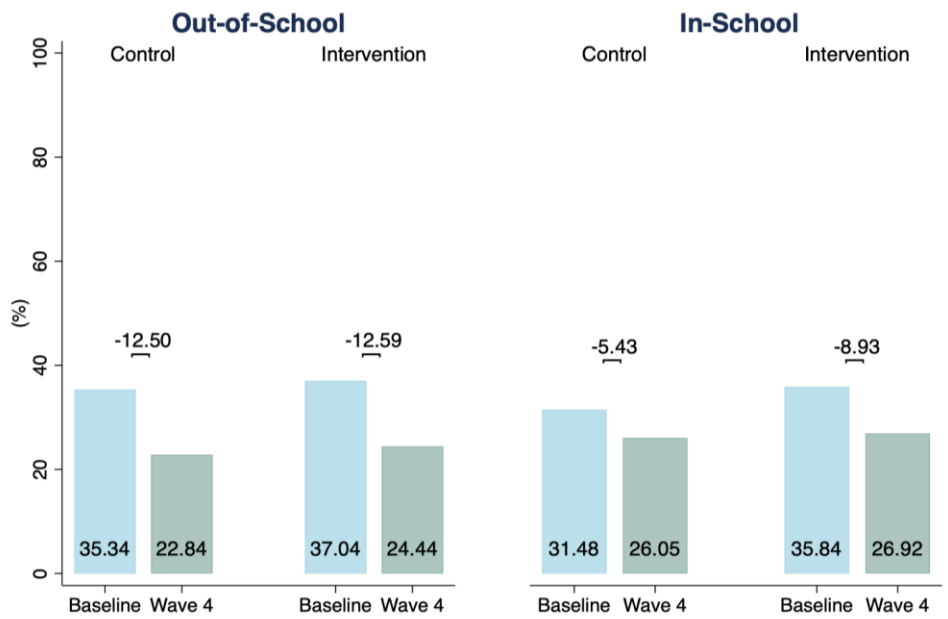


Figure 53 | Violence perpetration



LIMITATIONS

This Wave 4 report presents descriptive results using unadjusted difference-in-differences effects of the GUG! intervention. We do not present analyses to examine the association between gender norms and health and the effect of the GUG! intervention on these associations. These more in-depth analyses are investigated in complementary research efforts that draw upon more advanced conceptual and analytic techniques within cross-cultural comparisons.

While loss to follow up was generally low, it reached 27.00% among OOS adolescents, and 22.76% in the intervention group specifically, which may potentially bias the evaluation results if young people who were lost to follow up respond differently to GUG! activities than those surveyed at wave 4. Results from wave 2 suggested greater impact of GUG! among OOS versus IS participants relative to their respective controls, which was less likely to be significant in waves 3 and 4.

Additionally, the COVID-19 pandemic presented challenges to data collection and could have led to some of the loss to follow up. As most recruitment was done through home visits, data collectors relied on accurate addresses to follow-up with participants. The negative economic impact of the pandemic in Kinshasa might have led to some families being unable to pay rent and relocating, though these instances have not been confirmed. However, the loss to follow up rate is the same as from prior waves.

Contraceptive awareness and sexual attitudes questions were only asked of participants aged 15 and older starting in wave 2, which prevents an assessment of baseline differences between intervention and controls. However, the suboptimal contraceptive knowledge paired with high levels of misperceptions across study arms highlight the need for comprehensive sexual education among younger adolescents, before they engage in any sexual activity.

SUMMARY OF RESULTS

THE GEAS COHORT IN KINSHASA AND GUG!'s IMPACT

The findings from Wave 4 of the Global Early Adolescent Study in Kinshasa (GEAS-Kinshasa) capture both: (1) the developmental and behavioral trends among all young adolescents in the cohort, and (2) evaluation results between the control and intervention group to document the impact of the Growing Up GREAT! (GUG!) intervention.

SRH KNOWLEDGE



Overall, adolescents in the GEAS-Kinshasa cohort are ill-equipped for healthy sexual transitions into adulthood, as they lack SRH knowledge and face social stigma accessing reproductive health services. Although sexual health knowledge improved over time, adolescents' physiological understanding of pregnancy and HIV acquisition in the cohort remains suboptimal. In addition, many adolescents hold negative attitudes and misperceptions about contraception and many perceive high stigma surrounding adolescent sexuality. GUG! successfully increased some components of SRH knowledge in the first year following the intervention though the gain was sustained at Wave 4 only for improvement in pregnancy knowledge among in-school younger adolescents (aged <12). While sexual relations remain rare at Wave 4, they significantly increase with age and these first encounters are, for the majority of adolescents, unprotected.

ASSETS & AGENCY



Parental connectedness tends to decline over time as adolescents build relationships outside of the household. However, the GUG! intervention seems to buffer against this decline. This closeness has not expanded to SRH communication with parents/caregivers, though adolescents increasingly talk with other influential individuals—such as siblings and peers—about body changes, contraception, and pregnancy. Over time, the intervention seems to support emerging benefits in middle and older adolescents, supporting increased body satisfaction and increasing girls' pride about their transition into womanhood. Adolescents in the cohort overall are growing in their freedom to speak up on behalf of themselves and make decisions.

GENDER-EQUITABLE ATTITUDES & NORMS



Gender inequalities are widespread in early adolescence and manifest in differential attitudes, behaviors and outcomes for boys and girls. A majority of adolescents in the cohort endorse differential gender expectations about romantic relationships, roles in the household, social traits and division of power, including support for male authority and female subservience. GUG! seems to have a sustained impact on promoting gender equal attitudes that are specifically discussed in GUG! activities (i.e., chore sharing in the household) but has limited effect on other gender norms such as the sexual double standard, which may represent a barrier to behavioral change in the SRH domain.

GENDER-EQUITABLE BEHAVIORS



Although adolescents did endorse gender equitable *attitudes* about household chore sharing, this did not translate into more equitable household chore sharing behaviors between brothers and sisters. Peer violence perpetration and victimization both declined as adolescents aged, with greater decreases in rates of violence perpetration seen among older (12+ years) in-school adolescents.

IMPLICATIONS

The results of the longitudinal GEAS-Kinshasa cohort study and the GUG! evaluation have several programmatic implications.

Some unequal gender expectations and negative outlooks on girls' sexuality tend to increase with age. While gender transformative interventions among VYAs can shift these perceptions, they cannot challenge the broader gender system alone. This indicates a need for substantive parent, caregiver, and community engagement to foster normative gender roles that support adolescent SRH.

Young adolescents show a lack of SRH preparedness. Greater investment is needed in interventions to improve SRH trajectories including integration of SRH information into the school curriculum of VYAs. Notably, specific and factual information about contraceptive methods is needed to alleviate misperceptions and stigma related to contraception that act as staunch barriers to SRH services for young people. While report of sexual relations remained uncommon among this cohort, longitudinal data allows for an understanding of how these behaviors change over time and the ways normative views about gender, sexuality, and SRH knowledge inform healthy transitions through puberty and into sexual relationships. Wave 5 data will hold more answers on how these behaviors change as more adolescents become sexually active.

When GUG! evaluation results from Waves 2-4 are viewed together, several lessons emerge surrounding how to foster impactful adolescent programming:

An early start: While all age groups were responsive, younger VYAs (under 12 years) are more responsive to GUG! activities than older adolescents, especially with respect to SRH topics such as information about menstruation and pregnancy knowledge, arguing the importance of reaching younger VYAs. With an early start, younger adolescents are more likely to put their acquired skills into practice by engaging in SRH discussions, ultimately resulting in greater gains in SRH knowledge. However, results from Waves 3 and 4 suggest that intervention effects fade over time, calling for repeated and/or booster interventions for sustained effect. In addition, certain topics such as contraception may become more salient as girls and boys mature and enter into romantic relationships.

An ecological approach: It is critical to engage parents and community members in addition to VYAs. Results from previous qualitative work indicate that parents, teachers, and health providers are ill equipped to discuss pubertal transitions and SRH with young adolescents. GUG! helps inform and engage these influential adults in sexuality education

activities to promote necessary and health-promoting dialogue with VYAs. An ecological approach is also critical to address entrenched unequal gender norms that are practiced and transmitted from generation to generation. Even if their attitudes change, it is unrealistic to expect that young people will act in ways that contradict prevailing social expectations.

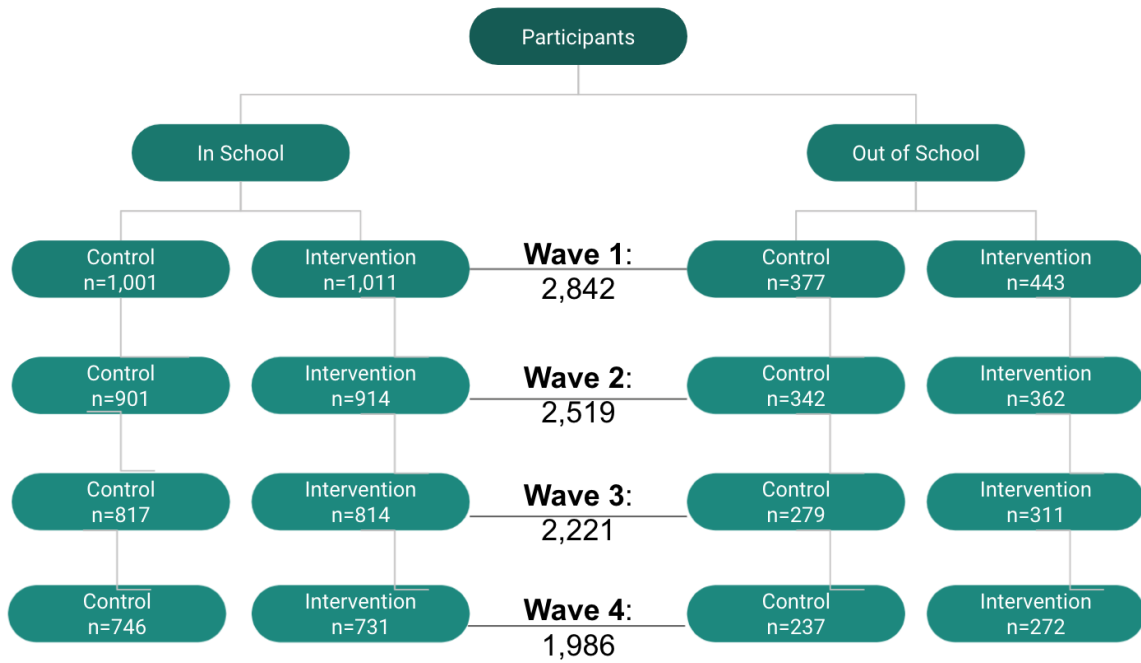
An expansion of interventions to include out of school adolescents: Expanding VYA programs to include those most at need will reach the young people who may benefit most from these programs. The adaptation of these programs to the most vulnerable adolescents is an effective strategy to reduce social inequalities related to access to school that have profound implications across the life course. It may be necessary to intensify SRH interventions or provide complementary programming to meet the increased needs of vulnerable groups.

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APPENDICES

Appendix A. Flow Chart of Study Population across the Four Waves of Data Collection

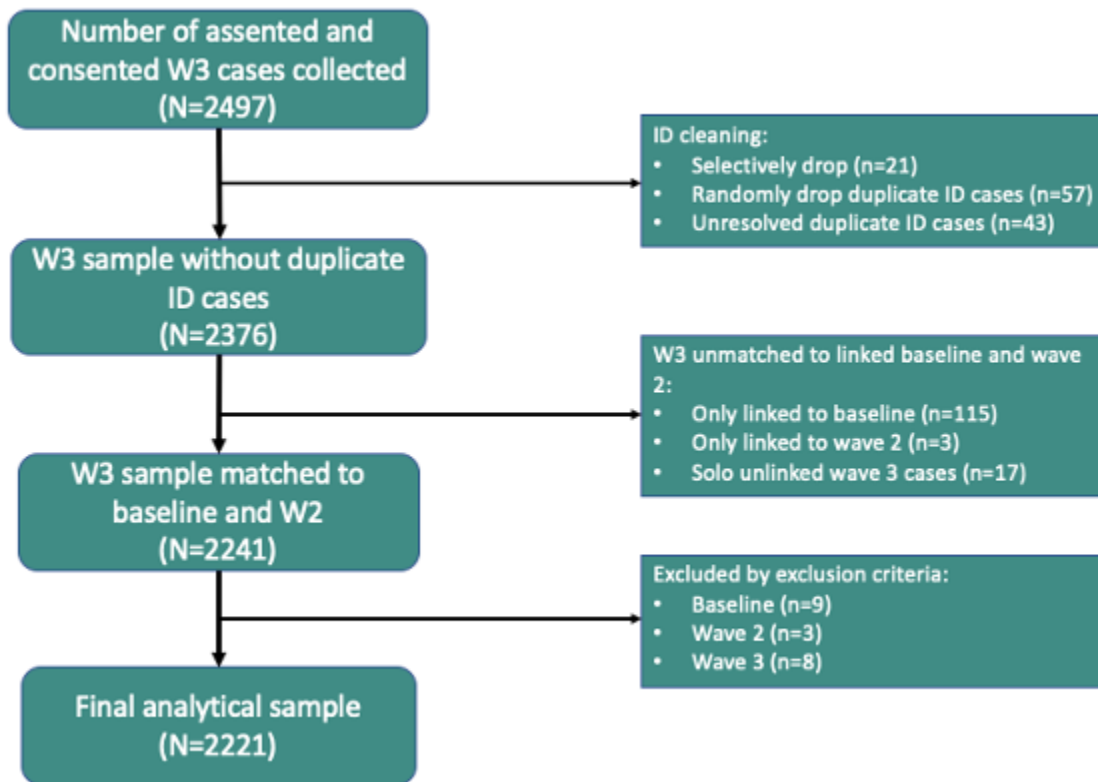


Appendix B. Loss to Follow Up from Baseline to Wave 4

Loss to Follow Up Rates by Baseline Sample Characteristics		Overall (n=2842)		Out of School (n=826)		In School (n=2,016)	
		n (%)	p-value	n (%)	p-value	n (%)	p-value
School Status		598 (21%)		223 (27%)		375 (19%)	<0.001
Study Group	Control	271 (20%)	0.065	98 (26%)	0.470	173 (17%)	0.120
	Intervention	327 (22%)		125 (28%)		202 (20%)	
Sex	Boy	301 (21%)	0.884	115 (26%)	0.444	186 (19%)	0.656
	Girl	297 (21%)		108 (28%)		189 (18%)	
Household Composition*	Two parents	317 (20%)	0.150	80 (27%)	0.806	237 (18%)	0.217
	One parent	176 (22%)		84 (25%)		92 (20%)	
	Grandparents	62 (23%)		39 (29%)		23 (17%)	
	Other	32 (26%)		15 (25%)		17 (27%)	
Wealth Quintile*	Bottom 20%	132 (22%)	0.026	82 (24%)	0.078	50 (20%)	0.606
	20-40%	133 (24%)		76 (34%)		57 (18%)	
	40-60%	122 (21%)		38 (24%)		84 (20%)	
	60-80%	112 (20%)		19 (25%)		93 (19%)	
	Top 20%	90 (17%)		4 (17%)		86 (17%)	

Note: * Sample for each level of these indicators may not add up to the overall sample size or sample size by school enrollment status because only observations with non-missing values were involved in these calculations. Percentage of missingness on household composition is 1.13% (n=32) and is 0.81% (n=23) for family wealth quintile.

Appendix C. Flow Chart of Wave 3 Analytical Population



Appendix D. Per Protocol Analysis Out-of-School Adolescents

Note: Per protocol analyses (PPA) are conducted as a sensitivity analysis to the main, intent to treat (ITT) analyses. Findings in differences and odds ratios should be interpreted with caution due to the small sample size. Differences between the PPA and ITT findings are noted in red text.

	Out of School (N=380: control-186; intervention-194)					
	N	Baseline	Wave4	Difference (W4-baseline)	Delta (difference) 95% CI	P-value
Sexual Double Standard						
Control	186	4.26 +/- 0.90	4.41 +/- 0.80	0.15 +/- 1.24	0.12 (-0.13, 0.37)	0.338
Intervention	194	4.14 +/- 1.00	4.41 +/- 0.73	0.27 +/- 1.26		
age (<12, >=12) X studygroup interaction	380	-0.01 (-0.52, 0.51)				0.976
sex X studygroup interaction	380	0.01 (-0.49, 0.51)				0.969
Adolescent Romantic Expectation						
Control	186	2.98 +/- 1.12	3.37 +/- 1.17	0.39 +/- 1.46	-0.02 (-0.32, 0.27)	0.870
Intervention	194	3.03 +/- 1.14	3.39 +/- 1.07	0.37 +/- 1.48		
age (<12, >=12) X studygroup interaction	380	0.06 (-0.55, 0.67)				0.850
sex X studygroup interaction	380	0.11 (-0.49, 0.70)				0.719
Gender Stereotypical Traits						
Control	186	4.51 +/- 0.58	4.53 +/- 0.56	0.02 +/- 0.78	0.07 (-0.10, 0.24)	0.424
Intervention	194	4.39 +/- 0.73	4.48 +/- 0.60	0.09 +/- 0.93		
age (<12, >=12) X studygroup interaction	380	-0.20 (-0.55, 0.15)				0.270
sex X studygroup interaction	380	-0.09 (-0.43, 0.26)				0.629
Gender Stereotypical Roles						
Control	186	4.52 +/- 0.69	4.32 +/- 0.68	-0.20 +/- 0.96	0.04 (-0.15, 0.24)	0.684
Intervention	193	4.41 +/- 0.76	4.25 +/- 0.70	-0.16 +/- 0.97		
age (<12, >=12) X studygroup interaction	379	0.05 (-0.35, 0.45)				0.800
sex X studygroup interaction	379	0.09 (-0.30, 0.48)				0.653
Gender Equality in Household Chores (%)						
Control	183	66.12	66.12	0.00	OR 2.21 (1.22, 3.99)	0.009

Intervention	191	58.12	75.39	17.28		
age (<12, >=12) X studygroup interaction	374				OR 1.05 (0.31, 3.54)	0.939
sex X studygroup interaction	374				OR 0.77 (0.24, 2.54)	0.674
Brothers Helped Sisters with Household Chores (%)						
Control	166	74.70	71.69	-3.01	OR 1.25 (0.78, 2.02)	0.359
Intervention	164	76.83	78.05	1.22		
age (<12, >=12) X studygroup interaction	330				OR 1.45 (0.54, 3.94)	0.463
sex X studygroup interaction	131				-	-
It is okay to tease a girl who acts like a boy (%)						
Control	184	66.30	70.11	3.80	OR 0.63 (0.35, 1.13)	0.123
Intervention	190	65.79	58.95	-6.84		
age (<12, >=12) X studygroup interaction	374				OR 1.12 (0.33, 3.80)	0.855
sex X studygroup interaction	374				OR 0.65 (0.20, 2.17)	0.489
It is okay to tease a boy who acts like a girl (%)						
Control	186	70.43	71.51	1.08	OR 0.88 (0.49, 1.59)	0.673
Intervention	190	70.00	68.42	-1.58		
age (<12, >=12) X studygroup interaction	376				OR 1.37 (0.42, 4.52)	0.604
sex X studygroup interaction	376				OR 1.07 (0.33, 3.48)	0.915
Girls should be proud of their bodies as they become women (%)						
<i>Different from ITT analysis, where sex interaction is significant but not age interaction.</i>						
Control	184	86.41	93.48	7.07	OR 1.52 (0.47, 4.86)	0.481
Intervention	190	88.42	96.32	7.89		
age (<12, >=12) X studygroup interaction	374				OR 0.04 (0.00, 0.72)	0.029
<12						
Control	76	86.84	90.79	3.95	OR 10.47 (0.98, 111.94)	0.052
Intervention	72	81.94	98.61	16.67		
>=12						
Control	108	86.11	95.37	9.26	OR 0.46 (0.10, 2.10)	0.318

Intervention	118	92.37	94.92	2.54		
sex X studygroup interaction	374	OR 3.66 (0.34, 39.75)				0.287
Men are always ready for sex (%)						
Control	183	46.99	65.03	18.03	OR 1.08 (0.62, 1.87)	0.784
Intervention	186	45.70	65.59	19.89		
age (<12, >=12) X studygroup interaction	369	OR 2.37 (0.77, 7.32)				0.133
sex X studygroup interaction	369	OR 0.38 (0.13, 1.16)				0.089
It's the girl's responsibility to prevent pregnancy (%)						
Control	182	66.48	57.69	-8.79	OR 0.86 (0.48, 1.52)	0.602
Intervention	187	68.45	56.15	-12.30		
age (<12, >=12) X studygroup interaction	369	OR 1.83 (0.56, 6.00)				0.318
sex X studygroup interaction	369	OR 0.36 (0.11, 1.14)				0.081
A real man should have as many female partners as he can (%)						
Control	185	19.46	19.46	0.00	OR 0.89 (0.46, 1.72)	0.733
Intervention	192	25.00	22.92	-2.08		
age (<12, >=12) X studygroup interaction	377	OR 0.78 (0.20, 2.99)				0.721
sex X studygroup interaction	377	OR 0.63 (0.17, 2.40)				0.502
Women who carry condoms on they are easy (%)						
Control	169	65.09	70.41	5.33	OR 0.95 (0.51, 1.77)	0.879
Intervention	161	64.60	68.94	4.35		
age (<12, >=12) X studygroup interaction	330	OR 1.32 (0.37, 4.70)				0.670
sex X studygroup interaction	330	OR 0.70 (0.20, 2.46)				0.573
Freedom of Movement						
Control	186	1.53 +/- 0.76	2.05 +/- 0.90	0.52 +/- 1.03	0.04 (-0.17, 0.25)	0.718
Intervention	194	1.47 +/- 0.64	2.03 +/- 0.91	0.56 +/- 1.08		
age (<12, >=12) X studygroup interaction	380	0.30 (-0.13, 0.73)				0.173
sex X studygroup interaction	380	0.13 (-0.28, 0.54)				0.526

Voice						
Control	186	2.21 +/- 0.68	2.49 +/- 0.80	0.28 +/- 1.00	-0.01 (-0.22, 0.19)	0.892
Intervention	194	2.26 +/- 0.69	2.52 +/- 0.79	0.26 +/- 1.01		
age (<12, >=12) X studygroup interaction	380	-0.12 (-0.53, 0.29)				0.572
sex X studygroup interaction	380	-0.27 (-0.67, 0.13)				0.188
Decision Making						
Control	186	2.68 +/- 0.88	3.41 +/- 0.75	0.73 +/- 1.13	0.03 (-0.20, 0.25)	0.819
Intervention	194	2.73 +/- 0.87	3.49 +/- 0.65	0.76 +/- 1.09		
age (<12, >=12) X studygroup interaction	380	0.14 (-0.31, 0.60)				0.535
sex X studygroup interaction	380	0.10 (-0.35, 0.55)				0.665
Parent Connectedness						
Control	186	3.26 +/- 0.73	3.06 +/- 0.84	-0.20 +/- 1.02	0.13 (-0.09, 0.35)	0.241
Intervention	193	3.17 +/- 0.80	3.10 +/- 0.84	-0.07 +/- 1.13		
age (<12, >=12) X studygroup interaction	379	0.07 (-0.38, 0.51)				0.758
sex X studygroup interaction	379	0.13 (-0.30, 0.57)				0.549
Talked about Body Changes (%)	<i>Different from the ITT analysis, where sex interaction is significant.</i>					
Control	182	27.47	51.65	24.18	OR 0.95 (0.53, 1.72)	0.877
Intervention	190	40.00	64.21	24.21		
age (<12, >=12) X studygroup interaction	372	OR 2.10 (0.58, 7.59)				0.257
sex X studygroup interaction	372	OR 0.35 (0.10, 1.19)				0.092
Talked about Body Changes with Parents/Caregivers (%)	<i>Different from the ITT analysis, where none of the interactions are significant. Results here for <12 years are unstable due to small sample size.</i>					
Control	24	62.50	58.33	-4.17	OR 1.29 (0.44, 3.74)	0.644
Intervention	54	59.26	61.11	1.85		
age (<12, >=12) X studygroup interaction	78	OR 0.04 (0.00, 0.86)				0.040
<12						
Control	6	83.33	66.67	-16.67	OR 18.06 (1.16, 281.25)	0.039
Intervention	14	64.29	92.86	28.57		
>=12						

Control	18	55.56	55.56	0.00	OR 0.74 (0.22, 2.48)	0.625
Intervention	40	57.50	50.00	-7.50		
sex X studygroup interaction	78	OR 0.67 (0.05, 8.97)				0.760
Talked about Pregnancy (%)						
Control	183	13.11	26.78	13.66	OR 0.90 (0.44, 1.86)	0.778
Intervention	189	14.81	27.51	12.70		
age (<12, >=12) X studygroup interaction	372	OR 0.92 (0.17, 5.08)				0.927
sex X studygroup interaction	372	OR 1.54 (0.34, 6.88)				0.571
Talked about Contraception (%)						
Control	169	7.10	22.49	15.38	OR 0.69 (0.28, 1.66)	0.402
Intervention	175	11.43	25.14	13.71		
age (<12, >=12) X studygroup interaction	344	OR 0.38 (0.04, 3.25)				0.374
sex X studygroup interaction	344	OR 2.28 (0.37, 13.93)				0.374
Talked about Sexual Relations (%)						
Control	183	9.84	23.50	13.66	OR 0.73 (0.33, 1.60)	0.433
Intervention	191	12.04	21.99	9.95		
age (<12, >=12) X studygroup interaction	374	OR 11.28 (0.78, 163.64)				0.076
sex X studygroup interaction	374	OR 0.30 (0.06, 1.48)				0.141
Pregnancy Knowledge						
Control	121	4.27 +/- 2.13	6.02 +/- 2.10	1.75 +/- 2.65	-0.08 (-0.73, 0.58)	0.817
Intervention	120	4.47 +/- 2.13	6.15 +/- 1.89	1.68 +/- 2.51		
age (<12, >=12) X studygroup interaction	241	0.45 (-0.89, 1.79)				0.512
sex X studygroup interaction	241	0.35 (-0.96, 1.66)				0.601
HIV Knowledge						
<i>Different from the ITT analysis, where none of the interactions are significant.</i>						
Control	182	1.77 +/- 1.17	2.57 +/- 0.95	0.80 +/- 1.46	-0.05 (-0.34, 0.25)	0.757
Intervention	188	1.83 +/- 1.21	2.58 +/- 0.95	0.75 +/- 1.45		
age (<12, >=12) X studygroup interaction	370	0.69 (0.08, 1.29)				0.026
<12						
Control	76	1.49 +/- 1.14	2.58 +/- 0.94	1.09 +/- 1.47	-0.45 (-0.92, 0.02)	0.059

Intervention	72	1.79 +/- 1.19	2.43 +/- 0.99	0.64 +/- 1.42		
>=12						
Control	106	1.98 +/- 1.16	2.57 +/- 0.97	0.58 +/- 1.41	0.23 (-0.15, 0.62)	0.229
Intervention	116	1.85 +/- 1.23	2.67 +/- 0.92	0.82 +/- 1.47		
sex X studygroup interaction	370	-0.04 (-0.64, 0.56)				0.895
Knows where to go to get condoms (%)						
Control	113	43.36	65.49	22.12	OR 1.08 (0.55, 2.13)	0.813
Intervention	104	42.31	66.35	24.04		
age (<12, >=12) X studygroup interaction	217	OR 1.32 (0.29, 6.08)				0.721
sex X studygroup interaction	217	OR 1.37 (0.35, 5.41)				0.653
Embarrassed to get condoms (%)						
Control	94	72.34	63.83	-8.51	OR 1.68 (0.78, 3.62)	0.185
Intervention	102	60.78	63.73	2.94		
age (<12, >=12) X studygroup interaction	196	OR 0.90 (0.17, 4.76)				0.898
sex X studygroup interaction	196	OR 0.64 (0.13, 3.02)				0.571
Knows where to go to get contraception (girls only) (%)						
Control	63	46.03	68.25	22.22	OR 1.08 (0.37, 3.11)	0.887
Intervention	62	58.06	79.03	20.97		
age (<12, >=12) X studygroup interaction	125	OR 1.22 (0.13, 11.23)				0.858
sex X studygroup interaction	125	- Cannot be estimated due to collinearity				-
Embarrassed to get contraception (girls only) (%)						
Control	61	50.82	63.93	13.11	OR 0.55 (0.22, 1.39)	0.207
Intervention	65	52.31	50.77	-1.54		
age (<12, >=12) X studygroup interaction	126	OR 2.14 (0.30, 14.97)				0.445
sex X studygroup interaction	126	- Cannot be estimated due to collinearity				-
Menstrual Attitudes (ashamed of body when having period) (%)						
Control	11	81.82	63.64	-18.18	OR 0.72 (0.08, 6.19)	0.767

Intervention	23	60.87	30.43	-30.43		
age (<12, >=12) X studygroup interaction	34		- Cannot be estimated due to collinearity			-
sex X studygroup interaction	34		- Cannot be estimated due to collinearity			-
Knows when next period comes (%)						
Control	10	70.00	70.00	0.00	OR 3.20 (0.32, 32.45)	0.325
Intervention	22	45.45	72.73	27.27		
age (<12, >=12) X studygroup interaction	32		- Cannot be estimated due to collinearity			-
sex X studygroup interaction	32		- Cannot be estimated due to collinearity			-
Tracking periods (%)						
Control	11	72.73	63.64	-9.09	OR 4.32 (0.38, 49.24)	0.239
Intervention	22	54.55	77.27	22.73		
age (<12, >=12) X studygroup interaction	33		- Cannot be estimated due to collinearity			-
sex X studygroup interaction	33		- Cannot be estimated due to collinearity			-
General Health (%)						
Control	186	79.57	83.87	4.30	OR 0.75 (0.36, 1.55)	0.435
Intervention	193	79.27	79.27	0.00		
age (<12, >=12) X studygroup interaction	379		OR 0.54 (0.12, 2.47)			0.424
sex X studygroup interaction	379		OR 0.16 (0.04, 0.73)			0.017
Boy						
Control	96	82.29	85.42	3.13	OR 1.80 (0.59, 5.45)	0.302
Intervention	102	73.53	86.27	12.75		
Girl						
Control	90	76.67	82.22	5.56	OR 0.30 (0.11, 0.79)	0.014
Intervention	91	85.71	71.43	-14.29		
Body Satisfaction (%)						
Control	186	29.03	36.02	6.99	OR 0.96 (0.52, 1.76)	0.900
Intervention	194	29.90	36.08	6.19		
age (<12, >=12) X studygroup interaction	380		OR 1.22 (0.36, 4.17)			0.754
sex X studygroup interaction	380		OR 1.25 (0.37, 4.25)			0.716

Depressive symptoms						
Control	186	2.05 +/- 0.75	1.93 +/- 0.71	-0.12 +/- 1.04	0.02 (-0.20, 0.24)	0.848
Intervention	194	2.11 +/- 0.86	2.01 +/- 0.81	-0.10 +/- 1.14		
age (<12, >=12) X studygroup interaction	380	0.08 (-0.37, 0.53)				0.714
sex X studygroup interaction	380	0.32 (-0.12, 0.76)				0.152
Teasing victimization (%)						
Control	186	38.17	25.81	-12.37	OR 0.73 (0.41, 1.32)	0.297
Intervention	192	47.40	27.08	-20.31		
age (<12, >=12) X studygroup interaction	378	OR 0.79 (0.24, 2.62)				0.697
sex X studygroup interaction	378	OR 1.54 (0.46, 5.12)				0.482
Violence victimization (%)						
Control	185	22.16	12.43	-9.73	OR 0.73 (0.34, 1.55)	0.416
Intervention	193	32.64	15.03	-17.62		
age (<12, >=12) X studygroup interaction	378	OR 4.11 (0.86, 19.55)				0.076
sex X studygroup interaction	378	OR 1.10 (0.24, 5.08)				0.901
Violence perpetration (%)						
<i>Different from the ITT analysis, where sex interaction is significant.</i>						
Control	183	36.07	22.95	-13.11	OR 1.04 (0.58, 1.85)	0.900
Intervention	194	38.14	25.26	-12.89		
age (<12, >=12) X studygroup interaction	377	OR 1.65 (0.51, 5.36)				0.402
sex X studygroup interaction	377	OR 2.55 (0.78, 8.31)				0.120
Romantic Relations (ever) (%)						
Control	142	15.49	45.07	29.58	OR 0.86 (0.49, 1.51)	0.601
Intervention	163	15.34	41.10	25.77		
age (<12, >=12) X studygroup interaction	305	OR 0.80 (0.21, 3.10)				0.749
sex X studygroup interaction	305	OR 0.48 (0.15, 1.51)				0.211
Power Imbalance in Last Relation						
<i>Different from the ITT analysis, where the imbalance increases in the intervention (1.20 [0.26, 2.13]). But for both analyses (ITT and PP), sample sizes are very small, thus, can ignore the differences.</i>						
Control	9	3.87 +/- 0.95	3.64 +/- 0.86	-0.22 +/- 1.28	1.16 (-0.12, 2.43)	0.072
Intervention	6	3.27 +/- 1.21	4.20 +/- 0.55	0.93 +/- 0.79		

age (<12, >=12) X studygroup interaction	15	- Cannot be estimated due to no observation in the intervention group of younger (<12) adolescents			-	
sex X studygroup interaction	15	0.02 (-2.95, 2.99)			0.990	
Intimacy in Last Relation						
Control	9	3.57 +/- 0.64	3.77 +/- 0.54	0.20 +/- 0.83	-0.30 (-1.16, 0.56)	0.466
Intervention	6	3.53 +/- 0.64	3.43 +/- 0.76	-0.10 +/- 0.62		
age (<12, >=12) X studygroup interaction	15	- Cannot be estimated due to no observation in the intervention group of younger (<12) adolescents			-	
sex X studygroup interaction	15	-0.10 (-2.07, 1.87)			0.913	
Alcohol consumption (%)						
Control	186	6.45	8.60	2.15	OR 1.06 (0.38, 2.94)	0.909
Intervention	194	7.73	10.82	3.09		
age (<12, >=12) X studygroup interaction	380	OR 3.04 (0.29, 31.33)			0.351	
sex X studygroup interaction	380	OR 1.37 (0.13, 13.96)			0.790	

Appendix E. Per Protocol Analysis In-School Adolescents

	IS (N=1119: control-532; intervention-587)					
	N	Baseline	Wave4	Difference (W4-baseline)	Delta (difference) 95% CI	P-value
Sexual Double Standard	<i>Different from the ITT analysis, where sex interaction is statistically significant.</i>					
Control	532	4.30 +/- 0.85	4.37 +/- 0.81	0.07 +/- 1.11	-0.03 (-0.16, 0.10)	0.641
Intervention	587	4.36 +/- 0.83	4.40 +/- 0.72	0.04 +/- 1.04		
age (<12, >=12) X studygroup interaction	1119	0.03 (-0.22, 0.29)				0.789
sex X studygroup interaction	1119	-0.24 (-0.49, 0.01)				0.060
Adolescent Romantic Expectation						
Control	532	2.94 +/- 1.11	3.37 +/- 1.12	0.44 +/- 1.48	0.14 (-0.03, 0.31)	0.101
Intervention	587	2.77 +/- 1.11	3.35 +/- 1.06	0.58 +/- 1.41		
age (<12, >=12) X studygroup interaction	1119	-0.16 (-0.50, 0.18)				0.346
sex X studygroup interaction	1119	-0.30 (-0.64, 0.04)				0.083
Gender Stereotypical Traits						
Control	532	4.53 +/- 0.59	4.59 +/- 0.53	0.06 +/- 0.76	-0.03 (-0.13, 0.07)	0.585
Intervention	587	4.42 +/- 0.73	4.46 +/- 0.63	0.03 +/- 0.91		
age (<12, >=12) X studygroup interaction	1119	0.09 (-0.11, 0.29)				0.361
sex X studygroup interaction	1119	-0.05 (-0.25, 0.15)				0.608
Gender Stereotypical Roles						
Control	532	4.49 +/- 0.72	4.23 +/- 0.79	-0.26 +/- 1.04	-0.05 (-0.17, 0.07)	0.407
Intervention	587	4.39 +/- 0.77	4.07 +/- 0.79	-0.31 +/- 1.03		
age (<12, >=12) X studygroup interaction	1119	0.04 (-0.21, 0.28)				0.764
sex X studygroup interaction	1119	0.18 (-0.06, 0.43)				0.141
Gender Equality in Household Chores (%)						
Control	530	63.40	57.74	-5.66	OR 2.53 (1.80, 3.56)	<0.001
Intervention	585	60.34	75.21	14.87		
age (<12, >=12) X studygroup interaction	1115	OR 1.61 (0.81, 3.21)				0.175

sex X studygroup interaction	1115	OR 1.63 (0.82, 3.26)			0.164
Brothers Helped Sisters with Household Chores (%)					
Control	457	77.68	78.34	0.66	OR 1.11 (0.80, 1.54)
Intervention	477	75.47	77.99	2.52	
age (<12, >=12) X studygroup interaction	934	OR 0.71 (0.36, 1.38)			0.308
sex X studygroup interaction	406	-			-
It is okay to tease a girl who acts like a boy (%)	<i>Different from the ITT analysis, where the effect of intervention is not statistically significant (OR 1.30 [0.98, 1.72]).</i>				
Control	532	62.59	60.71	-1.88	OR 1.42 (1.03, 1.96)
Intervention	583	55.40	61.92	6.52	
age (<12, >=12) X studygroup interaction	1115	OR 0.73 (0.38, 1.40)			0.345
sex X studygroup interaction	1115	OR 0.88 (0.46, 1.68)			0.693
It is okay to tease a boy who acts like a girl (%)					
Control	532	71.05	65.41	-5.64	OR 1.29 (0.93, 1.79)
Intervention	584	59.25	59.08	-0.17	
age (<12, >=12) X studygroup interaction	1116	OR 1.27 (0.65, 2.46)			0.482
sex X studygroup interaction	1116	OR 0.76 (0.39, 1.48)			0.415
Girls should be proud of their bodies as they become women (%)					
Control	529	92.25	95.27	3.02	OR 0.89 (0.45, 1.75)
Intervention	584	91.95	94.52	2.57	
age (<12, >=12) X studygroup interaction	1113	OR 2.23 (0.57, 8.72)			0.250
sex X studygroup interaction	1113	OR 0.82 (0.21, 3.17)			0.776
Men are always ready for sex (%)					
Control	524	43.13	60.31	17.18	OR 0.94 (0.68, 1.30)
Intervention	580	46.72	62.24	15.52	
age (<12, >=12) X studygroup interaction	1104	OR 1.44 (0.74, 2.79)			0.282
sex X studygroup interaction	1104	OR 0.86 (0.45, 1.67)			0.664

It's the girl's responsibility to prevent pregnancy (%)						
Control	524	70.04	56.30	-13.74	OR 0.80 (0.56, 1.14)	0.218
Intervention	582	72.34	53.61	-18.73		
age (<12, >=12) X studygroup interaction	1106	OR 0.62 (0.30, 1.25)				0.180
sex X studygroup interaction	1106	OR 0.95 (0.47, 1.92)				0.885
A real man should have as many female partners as he can (%)						
<i>Different from the ITT analysis on the effect of intervention, which is not statistically significant (OR 1.29 [0.87, 1.93]).</i>						
Control	531	19.96	12.05	-7.91	OR 1.74 (1.10, 2.77)	0.019
Intervention	587	13.97	13.46	-0.51		
age (<12, >=12) X studygroup interaction	1118	OR 1.16 (0.45, 2.97)				0.756
sex X studygroup interaction	1118	OR 1.10 (0.43, 2.82)				0.838
Women who carry condoms on they are easy (%)						
Control	483	63.98	70.81	6.83	OR 1.21 (0.86, 1.70)	0.270
Intervention	550	58.73	70.18	11.45		
age (<12, >=12) X studygroup interaction	1033	OR 1.65 (0.83, 3.30)				0.156
sex X studygroup interaction	1033	OR 1.25 (0.62, 2.51)				0.529
Freedom of Movement						
Control	532	1.60 +/- 0.66	1.89 +/- 0.87	0.29 +/- 0.95	-0.05 (-0.16, 0.07)	0.426
Intervention	587	1.65 +/- 0.71	1.89 +/- 0.82	0.24 +/- 0.97		
age (<12, >=12) X studygroup interaction	1119	0.02 (-0.21, 0.24)				0.882
sex X studygroup interaction	1119	0.01 (-0.22, 0.23)				0.959
Voice						
Control	532	2.46 +/- 0.64	2.52 +/- 0.78	0.07 +/- 0.95	-0.05 (-0.16, 0.06)	0.364
Intervention	587	2.60 +/- 0.63	2.62 +/- 0.73	0.02 +/- 0.90		
age (<12, >=12) X studygroup interaction	1119	-0.02 (-0.24, 0.20)				0.863
sex X studygroup interaction	1119	-0.04 (-0.26, 0.18)				0.709
Decision Making						
Control	532	2.66 +/- 0.86	3.41 +/- 0.68	0.74 +/- 1.06	-0.16 (-0.29, -0.04)	0.010

Intervention	587	2.85 +/- 0.89	3.43 +/- 0.66	0.58 +/- 1.08		
age (<12, >=12) X studygroup interaction	1119			-0.02 (-0.28, 0.23)		0.862
sex X studygroup interaction	1119			-0.06 (-0.32, 0.19)		0.614
Parent Connectedness <i>Different from the ITT analysis on the effect of intervention, which is statistically significant (0.11 [0.02, 0.21]).</i>						
Control	532	3.28 +/- 0.76	3.15 +/- 0.73	-0.13 +/- 0.96	0.09 (-0.02, 0.20)	0.115
Intervention	586	3.21 +/- 0.74	3.17 +/- 0.73	-0.04 +/- 0.95		
age (<12, >=12) X studygroup interaction	1118			-0.01 (-0.23, 0.22)		0.953
sex X studygroup interaction	1118			-0.01 (-0.23, 0.22)		0.944
Talked about Body Changes (%)						
Control	524	35.11	63.36	28.24	OR 0.92 (0.66, 1.28)	0.613
Intervention	578	44.98	70.59	25.61		
age (<12, >=12) X studygroup interaction	1102			OR 1.50 (0.76, 2.95)		0.241
sex X studygroup interaction	1102			OR 0.78 (0.39, 1.57)		0.490
Talked about Body Changes with Parents/Caregivers (%)						
Control	127	75.59	55.12	-20.47	OR 1.29 (0.71, 2.35)	0.403
Intervention	203	81.28	68.97	-12.32		
age (<12, >=12) X studygroup interaction	330			OR 0.46 (0.10, 2.27)		0.343
sex X studygroup interaction	330			OR 1.41 (0.36, 5.44)		0.619
Talked about Pregnancy (%)						
Control	518	8.88	26.25	17.37	OR 0.72 (0.47, 1.12)	0.144
Intervention	562	15.12	32.03	16.90		
age (<12, >=12) X studygroup interaction	1080			OR 2.49 (0.85, 7.29)		0.095
sex X studygroup interaction	1080			OR 3.15 (1.26, 7.89)		0.014
Boy						
Control	252	4.76	29.76	25.00	OR 0.36 (0.18, 0.75)	0.006
Intervention	258	13.95	33.33	19.38		
Girl						
Control	266	12.78	22.93	10.15	OR 1.15 (0.65, 2.02)	0.633

Intervention	304	16.12	30.92	14.80		
Talked about Pregnancy with Parents/Caregivers (%)						
Control	17	11.76	11.76	0.00	<i>Cannot be estimated due to perfect prediction for failure at Wave 4 of intervention group.</i>	-
Intervention	45	46.67	31.11	-15.56		
age (<12, >=12) X studygroup interaction	62	<i>- Cannot be estimated due to sample sample sizes for interaction analyses.</i>				-
sex X studygroup interaction	56	<i>- Cannot be estimated due to sample sample sizes for interaction analyses.</i>				-
Talked about Contraception (%)						
Control	502	8.76	24.50	15.74	OR 0.87 (0.56, 1.37)	0.561
Intervention	542	13.10	30.81	17.71		
age (<12, >=12) X studygroup interaction	1044	OR 1.03 (0.36, 2.96)				0.954
sex X studygroup interaction	1044	OR 3.11 (1.22, 7.95)				0.018
Boy						
Control	244	5.74	24.18	18.44	OR 0.47 (0.23, 0.97)	0.040
Intervention	251	17.13	33.86	16.73		
Girl						
Control	258	11.63	24.81	13.18	OR 1.47 (0.80, 2.71)	0.218
Intervention	291	9.62	28.18	18.56		
Talked about Sexual Relations (%)						
<i>Different from the ITT analysis on the effect of intervention, which is statistically significant (OR 0.66 [0.44, 0.97]). But because of the upper bond of 95% CI almost overlaps "1", can ignore the difference. In addition, none of the interactions is significant in ITT analysis.</i>						
Control	522	6.51	25.29	18.77	OR 0.62 (0.39, 1.00)	0.052
Intervention	573	11.34	27.92	16.58		
age (<12, >=12) X studygroup interaction	1095	OR 0.86 (0.25, 2.95)				0.806
sex X studygroup interaction	1095	OR 4.23 (1.59, 11.26)				0.004
Boy						
Control	252	5.56	33.73	28.17	OR 0.32 (0.16, 0.63)	0.001
Intervention	265	15.85	34.34	18.49		
Girl						

Control	270	7.41	17.41	10.00	OR 1.36 (0.67, 2.77)	0.399	
Intervention	308	7.47	22.40	14.94			
Pregnancy Knowledge <i>Different from ITT analysis on overall effect, which is not statistically significant.</i>							
Control	385	4.26 +/- 2.02	6.15 +/- 2.09	1.89 +/- 2.70	0.40 (0.03, 0.77)	0.035	
Intervention	434	4.24 +/- 2.05	6.52 +/- 1.94	2.29 +/- 2.69			
age (<12, >=12) X studygroup interaction	819	-1.00 (-1.75, -0.24)					0.009
<12							
Control	185	4.43 +/- 2.12	6.36 +/- 2.17	1.93 +/- 2.87	0.63 (0.07, 1.18)	0.026	
Intervention	201	4.36 +/- 2.08	6.92 +/- 1.74	2.56 +/- 2.65			
>=12							
Control	200	4.11 +/- 1.92	5.96 +/- 1.99	1.85 +/- 2.53	0.20 (-0.30, 0.70)	0.426	
Intervention	233	4.13 +/- 2.02	6.18 +/- 2.04	2.05 +/- 2.70			
sex X studygroup interaction	819	-0.43 (-1.17, 0.31)					0.259
HIV Knowledge							
Control	517	1.90 +/- 1.12	2.44 +/- 1.01	0.54 +/- 1.44	0.08 (-0.09, 0.25)	0.340	
Intervention	572	1.86 +/- 1.08	2.49 +/- 0.97	0.62 +/- 1.35			
age (<12, >=12) X studygroup interaction	1089	0.07 (-0.26, 0.41)					0.671
sex X studygroup interaction	1089	0.08 (-0.26, 0.41)					0.656
Knows where to go to get condoms (%)							
Control	279	42.65	72.76	30.11	OR 0.93 (0.59, 1.48)	0.771	
Intervention	323	45.51	73.68	28.17			
age (<12, >=12) X studygroup interaction	602	OR 1.09 (0.41, 2.91)					0.866
sex X studygroup interaction	602	OR 1.12 (0.43, 2.88)					0.816
Embarrassed to get condoms (%)							
Control	274	67.52	71.53	4.01	OR 1.05 (0.64, 1.71)	0.841	
Intervention	303	68.32	73.27	4.95			
age (<12, >=12) X studygroup interaction	577	OR 0.79 (0.28, 2.24)					0.654
sex X studygroup interaction	577	OR 1.21 (0.45, 3.25)					0.701

Knows where to go to get contraception (girls only) (%)						
Control	207	64.25	70.53	6.28	OR 1.28 (0.74, 2.20)	0.377
Intervention	239	58.16	70.29	12.13		
age (<12, >=12) X studygroup interaction	446	OR 1.13 (0.37, 3.47)				0.831
sex X studygroup interaction	446	-				-
Embarrassed to get contraception (girls only) (%)						
Control	211	54.03	52.61	-1.42	OR 0.80 (0.49, 1.30)	0.364
Intervention	228	55.26	48.25	-7.02		
age (<12, >=12) X studygroup interaction	439	OR 1.20 (0.45, 3.22)				0.721
sex X studygroup interaction	439	-				-
Menstrual Attitudes (ashamed of body when having period) (%)						
Control	69	44.93	27.54	-17.39	OR 1.54 (0.63, 3.71)	0.341
Intervention	78	39.74	32.05	-7.69		
age (<12, >=12) X studygroup interaction	147	- Cannot be estimated due to perfect prediction for failure at Wave 4 of younger (<12) group.				-
sex X studygroup interaction	147	- Cannot be estimated due to perfect prediction for failure at Wave 4 of younger (<12) group.				-
Knows when next period comes (%)						
Control	66	50.00	72.73	22.73	OR 0.50 (0.20, 1.26)	0.141
Intervention	77	63.64	70.13	6.49		
age (<12, >=12) X studygroup interaction	143	OR 1.00 (1.00, 1.00)				-
sex X studygroup interaction	143	-				-
Tracking periods (%)						
Control	68	55.88	77.94	22.06	OR 0.33 (0.13, 0.89)	0.029
Intervention	75	74.67	73.33	-1.33		
age (<12, >=12) X studygroup interaction	143	- Cannot be estimated due to perfect prediction for failure at Wave 4 of younger (<12) group.				-
sex X studygroup interaction	143	- Cannot be estimated due to perfect prediction for failure at Wave 4 of younger (<12) group.				-
General Health (%)						
Control	530	87.55	87.74	0.19	OR 0.98 (0.61, 1.60)	0.944


Intervention	584	88.36	88.36	0.00		
age (<12, >=12) X studygroup interaction	1114			OR 1.38 (0.50, 3.85)		0.534
sex X studygroup interaction	1114			OR 1.89 (0.71, 5.08)		0.205
Body Satisfaction (%)	<i>Different from ITT analysis on overall effect, which is statistically significant (OR 1.34 [1.01, 1.78]).</i>					
Control	532	39.29	41.92	2.63	OR 1.15 (0.83, 1.61)	0.407
Intervention	587	36.46	42.42	5.96		
age (<12, >=12) X studygroup interaction	1119			OR 0.81 (0.41, 1.58)		0.538
sex X studygroup interaction	1119			OR 0.98 (0.50, 1.91)		0.953
Depressive symptoms						
Control	532	1.91 +/- 0.65	1.90 +/- 0.69	-0.02 +/- 0.96	-0.04 (-0.15, 0.08)	0.532
Intervention	587	1.97 +/- 0.71	1.92 +/- 0.77	-0.05 +/- 1.02		
age (<12, >=12) X studygroup interaction	1119			-0.20 (-0.44, 0.03)		0.088
sex X studygroup interaction	1119			0.00 (-0.23, 0.23)		0.993
Teasing victimization (%)						
Control	530	33.40	23.21	-10.19	OR 0.88 (0.61, 1.26)	0.474
Intervention	583	39.79	25.90	-13.89		
age (<12, >=12) X studygroup interaction	1113			OR 1.05 (0.51, 2.16)		0.903
sex X studygroup interaction	1113			OR 0.88 (0.42, 1.85)		0.744
Violence victimization (%)						
Control	530	19.43	13.21	-6.23	OR 0.89 (0.57, 1.38)	0.606
Intervention	584	25.68	16.27	-9.42		
age (<12, >=12) X studygroup interaction	1114			OR 0.56 (0.23, 1.36)		0.201
sex X studygroup interaction	1114			OR 1.31 (0.53, 3.24)		0.557
Violence perpetration (%)	<i>Different from ITT analysis, where interaction with age is significant, and among the older group (>=12) we observe a decline in the odds of violence perpetration (OR 0.63 [0.42, 0.95]).</i>					
Control	526	31.94	26.24	-5.70	OR 0.81 (0.57, 1.17)	0.270
Intervention	577	37.09	26.69	-10.40		
age (<12, >=12) X studygroup interaction	1103			OR 0.50 (0.24, 1.05)		0.066
sex X studygroup interaction	1103			OR 0.89 (0.43, 1.87)		0.763


Romantic Relations (ever) (%)						
Control	435	10.34	36.32	25.98	OR 0.89 (0.61, 1.30)	0.552
Intervention	478	12.13	37.87	25.73		
age (<12, >=12) X studygroup interaction	913	OR 1.04 (0.42, 2.56)				0.935
sex X studygroup interaction	913	OR 0.66 (0.30, 1.44)				0.291
Power Imbalance in Last Relation						
<i>Different from ITT analysis, where the observed decrease in the intervention group is not statistically significant (-0.33 [-0.92, 0.26]).</i>						
Control	23	3.36 +/- 1.06	4.15 +/- 0.80	0.79 +/- 1.28	-0.71 (-1.38, -0.05)	0.036
Intervention	25	3.70 +/- 0.75	3.78 +/- 0.75	0.08 +/- 1.00		
age (<12, >=12) X studygroup interaction	48	-1.31 (-3.95, 1.34)				0.324
sex X studygroup interaction	48	-0.12 (-1.48, 1.24)				0.855
Intimacy in Last Relation						
Control	23	3.71 +/- 0.62	3.91 +/- 0.55	0.20 +/- 0.77	0.12 (-0.35, 0.58)	0.617
Intervention	25	3.41 +/- 0.66	3.72 +/- 0.39	0.31 +/- 0.82		
age (<12, >=12) X studygroup interaction	48	-0.66 (-2.60, 1.28)				0.495
sex X studygroup interaction	48	0.13 (-0.84, 1.11)				0.784
Alcohol consumption (%)						
Control	528	6.63	10.61	3.98	OR 0.70 (0.40, 1.23)	0.212
Intervention	585	7.86	9.06	1.20		
age (<12, >=12) X studygroup interaction	1113	OR 1.02 (0.28, 3.70)				0.973
sex X studygroup interaction	1113	OR 1.98 (0.56, 7.07)				0.292


Appendix F. Evaluation Results by Wave


The following tables represent results for each of the four intermediate outcomes presented in the GUG Theory of Change (Figure 3 above, with intermediate outcomes summarized in the figure below). The main column in each table shows evaluation results from baseline to endline (GEAS Wave 2). Columns 'W3' and 'W4' show any sustained intervention effects at GEAS Waves 3 and 4, respectively. Gray shading indicates no sustained effects, while shading in color indicates a sustained intervention effect. Text within these cells indicates which sub-group of the GUG intervention the effect was true for (e.g., IS <12 represents in-school GUG participants under the ages of 12 years).





 SRH KNOWLEDGE	EFFECT OF INTERVENTION RELATIVE TO CONTROL GROUP					
	IN-SCHOOL INTERVENTION, N=914; CONTROL, N=901	W3	W4	OUT-OF-SCHOOL INTERVENTION, N=362; CONTROL, N=342	W3	W4
PREGNANCY KNOWLEDGE INDEX	✓ MEAN SCORE DIFFERENCE 0.36 (0.12, 0.61), P=0.003		IS <12	X MEAN SCORE DIFFERENCE 0.37 (-0.03, 0.77), P=0.070		
WHERE TO GET CONDOMS	✓ (GIRLS ONLY) GIRLS: OR=1.55 (1.06, 2.27), P=0.023			✓✓ (ESPECIALLY GIRLS) OR=2.03 (1.37, 3.01), P<0.001		
WHERE TO GET INFORMATION ABOUT MENSTRUATION (ASKED OF MENARCHAL GIRLS)	✓✓ I, N=326; C, N=314 OR=2.10 (1.34, 3.29), P=0.001			✓✓ I, N=92; C, N=109 OR=4.18 (1.95, 9.00), P<0.001 (ESPECIALLY GIRLS <12 YEARS)		
WHERE TO GET CONTRACEPTION (ASKED OF GIRLS ONLY)	✓ I, N=474; C, N=448 OR=1.46 (1.03, 2.06), P=0.033			✓✓ I, N=155; C, N=170 OR=2.96 (1.66, 5.29), P<0.001		


 CONNECTEDNESS, PERCEIVED QUALITY OF SERVICES AND BODY COMFORT	EFFECT OF INTERVENTION RELATIVE TO CONTROL GROUP					
	IN-SCHOOL INTERVENTION, N=914; CONTROL, N=901	W3	W4	OUT-OF-SCHOOL INTERVENTION, N=362; CONTROL, N=342	W3	W4
CAREGIVER CONNECTEDNESS	✓ MEAN SCORE DIFFERENCE 0.09 (0.0008, 0.1828), P=0.048		IS	✓ MEAN SCORE DIFFERENCE 0.22 (0.07, 0.38), P=0.005		
EXPECTATION OF GOOD TREATMENT IF SEEKING CONTRACEPTION (ASKED OF GIRLS ONLY)	X I, N=315; C, N=286 OR=1.46 (0.94, 2.26), P=0.090			X I, N=93; C, N=93 OR=1.92 (0.84, 4.41), P=0.124		
COMFORT WITH PUBERTAL DEVELOPMENT	X I, N=492; C, N=451 OR=1.16 (0.40, 3.36), P=0.782			X I, N=198; C, N=138 OR=0.51 (0.04, 6.46), P=0.660		
BODY SATISFACTION INDEX (5 PT)	X MEAN SCORE DIFFERENCE 0.03 (-0.07, 0.14), P=0.513		IS	✓ (GIRLS ONLY) MEAN SCORE DIFFERENCE 0.27 (0.03, 0.51), P=0.028		

 SRH COMMUNICATION WITH OTHERS ABOUT...	EFFECT OF INTERVENTION RELATIVE TO CONTROL GROUP					
	IN-SCHOOL INTERVENTION, N=914; CONTROL, N=901	W3	W4	OUT-OF-SCHOOL INTERVENTION, N=362; CONTROL, N=342	W3	W4
...BODY CHANGES	X OR=0.94 (0.74, 1.18), P=0.583			X OR=0.93 (0.64, 1.36), P=0.713		
...SEXUAL RELATIONSHIPS	X OR=0.83 (0.58, 1.20), P=0.323			✓✓ (ONLY FOR GIRLS) GIRLS: OR=4.44 (1.74, 11.33), P=0.002 BOYS: OR=1.19 (0.54, 2.58), P=0.668		
...PREGNANCY AND HOW IT OCCURS	X OR=0.72 (0.52, 1.101), P=0.061		IS	X OR=1.53 (0.87, 2.70), P=0.139		
...CONTRACEPTION	X OR=0.82 (0.58, 1.16), P=0.269			✓✓ (ESPECIALLY FOR <12Y/O) OVERALL: OR=2.04 (1.05, 3.95), P=0.035 <12 Y/O: OR=13.31 (2.60, 68.09), P=0.002	<12Y/O	

 ATTITUDES RE: BOYS'/GIRLS' ROLES, TRAITS, ACTIVITIES	EFFECT OF INTERVENTION RELATIVE TO CONTROL GROUP					
	IN-SCHOOL INTERVENTION, N=914; CONTROL, N=901	W3	W4	OUT-OF-SCHOOL INTERVENTION, N=362; CONTROL, N=342	W3	W4
SEXUAL DOUBLE STANDARD (E.G., NOT OK FOR GIRLS TO HAVE BOYFRIENDS)	X MEAN DIFF. IN SCORE 0.02 (P=0.613)			X MEAN DIFF. IN SCORE 0.08 (P=0.377)		
GENDER-STEREOTYPICAL ROLES (E.G., THE MALE BREADWINNER)	X MEAN DIFF. IN SCORE -0.06 (-0.15, 0.03), P=0.171			X MEAN DIFF. IN SCORE 0.01 (-0.13, 0.15), P=0.901		
GENDER-STEREOTYPICAL TRAITS (E.G., MALE TOUGHNESS)	X MEAN DIFF. IN SCORE 0.07 (-0.01, 0.14), P=0.613			X MEAN DIFF. IN SCORE 0.06 (-0.06, 0.19), P=0.336		

 ATTITUDES RE: BOYS'/GIRLS' ROLES, TRAITS, ACTIVITIES	EFFECT OF INTERVENTION RELATIVE TO CONTROL GROUP					
	IN-SCHOOL INTERVENTION, N=914; CONTROL, N=901	W3	W4	OUT-OF-SCHOOL INTERVENTION, N=362; CONTROL, N=342	W3	W4
GENDER EQUALITY IN HOUSEHOLD CHORES	✓ OR=1.92 (1.46, 2.52), P<0.001			✓✓ (ESPECIALLY FOR GIRLS) GIRLS: OR=8.08 (3.79, 17.25), P<0.001 BOYS: OR=2.33 (1.29, 4.19), P=0.005		
DECREASED ACCEPTANCE OF GENDER-BASED DISCRIMINATION	✓ AGAINST BOYS: OR=1.35 (1.05, 1.75), P=0.019 AGAINST GIRLS: OR=1.28 (1.00, 1.64), P=0.047			X AGAINST BOYS: OR=0.88 (0.56, 1.38), P=0.573 AGAINST GIRLS: OR=0.89 (0.58, 1.36), P=0.597		

 SHARING OF CHORES	EFFECT OF INTERVENTION RELATIVE TO CONTROL GROUP					
	IN-SCHOOL	W3	W4	OUT-OF-SCHOOL	W3	W4
BROTHER HELPED (FROM SISTERS' PERSPECTIVE)	X I, N=381; C, N=367 OR=1.20 (0.85, 1.70), P=0.308	<12		X I, N=126; C, N=142 OR=1.58 (0.83, 3.03), P=0.167		
HELPED SISTERS (FROM BROTHERS' PERSPECTIVE)	X I, N=360; C, N=382 OR=0.95 (0.56, 1.61), P=0.845			✓✓ I, N=167; C, N=144 OR 2.50 (1.15, 5.46), P=0.021		

 REDUCTION IN BULLYING/ VIOLENCE	EFFECT OF INTERVENTION RELATIVE TO CONTROL GROUP					
	IN-SCHOOL INTERVENTION, N=914; CONTROL, N=901	W3	W4	OUT-OF-SCHOOL INTERVENTION, N=362; CONTROL, N=342	W3	W4
EXPERIENCED TEASING AND VERBAL BULLYING	X OR=1.10 (0.85, 1.43), P=0.455			✓ OR=0.62 (0.42, 0.91), P=0.014		
EXPERIENCED PHYSICAL VIOLENCE SUCH AS SLAPPING OR KICKING	X OR 0.95 (0.70, 1.30), P=0.756			X OR=0.76 (0.48, 1.21), P=0.250		
PERPETRATED TEASING, BULLYING, AND/OR PHYSICAL VIOLENCE	X OR=0.86 (0.66, 1.13), P=0.285		IS 12+	✓ (BOYS ONLY) BOYS: OR=0.50 (0.28, 0.88), P=0.016 GIRLS: OR=1.45 (0.78, 2.69), P=0.234		