



GIRLS INVEST

Methods Protocol

CLINICAL TRIALS UNIQUE ID: NCT06942481

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METHODS

This study involved a two-arm cluster randomized controlled trial among 258 adolescent females ages 15-19 years in 16 secondary schools within low-income communities from two Local Government Areas (LGAs) with the highest concentration of low-income communities within Ibadan, Nigeria. Low-income communities were of particular focus considering the intersection of economic vulnerability and IPV risk^{1,2}. Sixteen schools within low-income communities were selected from the 28 schools approved by the Ministry of Education; schools were randomized to treatment assignment (Girls Invest intervention or wait-list control group) using a randomizer software package after baseline data collection. The wait-list control groups were provided with referrals to local support organizations, as the standard of care, and received Girls Invest subsequent to the six-month follow-up data collection. The study protocol was approved by the Human Research Protection Program at San Diego State University (HS-2021-0031) in the US and the University of Ibadan / University College Hospital Joint Institutional Review Board, in Nigeria (UI/EC/21/0183). Letter of approval was obtained from the Oyo state Ministry of Education, Nigeria and permission obtained from the Principals of each school.

Intervention Description

The Girls Invest intervention involved: 1) app-based trainings on topics related to financial literacy, gender equity, and health and 2) financial resources/incentives supporting girls' education/career.

Girls Invest trainings promote financial literacy and aim to raise girls' critical consciousness related to gender-based economic and social constraints that promote IPV (e.g., economic constraints that promote financial dependence on male partners, social norms that support IPV). Girls Invest app trainings encouraged girls to reflect on traditional gender norms that disfavor girls' future trajectories. Trainings supported gender equitable beliefs and attitudes that promote girls' educational/economic endeavors, health and well-being, and power or control within their families and relationships. In order to complete each module and advance to the next level, girls needed to perform satisfactorily on topic quizzes. App content was interactive and included real life scenarios to maximize girls' engagement. Additionally, to further support engagement and maintain girls' interest and attention, each training was designed to take approximately 20-25 minutes for girls to complete. Participants were provided access to a smartphone to complete the app training modules. The smartphones were kept with the research team and girls could use them after school. To reinforce learning, a booklet containing the content of the app training was given to each girl after completion of the mobile app learning. App training module topics included:

1. **Gender roles and goal setting** covers what gender roles are and how they affect girls' education, career, body image, power in family and relationship decision-making, property rights, and rights over their bodies, including harmful traditional practices. Trainings emphasize the ways in which gender-based discrimination influences girls' health, development, and future trajectories.
2. **Sexual and reproductive health and rights** promotes investing in a "healthy future," covering information on menstruation, sexual health, abstinence, sexual consent, negotiating condom use, sexual risk behaviors for unintended pregnancy and sexually transmitted infections, information on family planning methods, girls' sexual and reproductive decision-making power, and reproductive coercion (e.g. male partners' coercing girls to get pregnant or sabotaging girls' intentions to use family planning).
3. **Money, power, and relationships** discusses the subtle ways in which economic reliance on male partners can decrease girls' decision-making in relationships and increase risk for IPV. This module covers healthy and unhealthy relationships, including warning signs for IPV. Topics on IPV also include how to identify it, resources to get help, how to support peers experiencing IPV, and the effects across all aspects of girls' lives. This module uses story-based curricula to improve awareness and early detection of IPV. It also covers the consequences of IPV, such as effects on mental health

and substance use.

4. **Financial literacy basics** contains information on money management, savings, thrift, accounting, interest, budgeting, loans, investing, financial security and independence. This knowledge is key to supporting young women to be economically self-sufficient thereby, reducing girls' vulnerability to IPV, including leaving abusive relationships.⁴³
5. **Future aspirations** covers preparation for apprenticeships, getting a job, going for higher education, deciding on a future career, and other relevant topic areas to support girls' future financial and entrepreneurial goals. This module provides vignettes from diverse women doing different types of jobs/businesses.

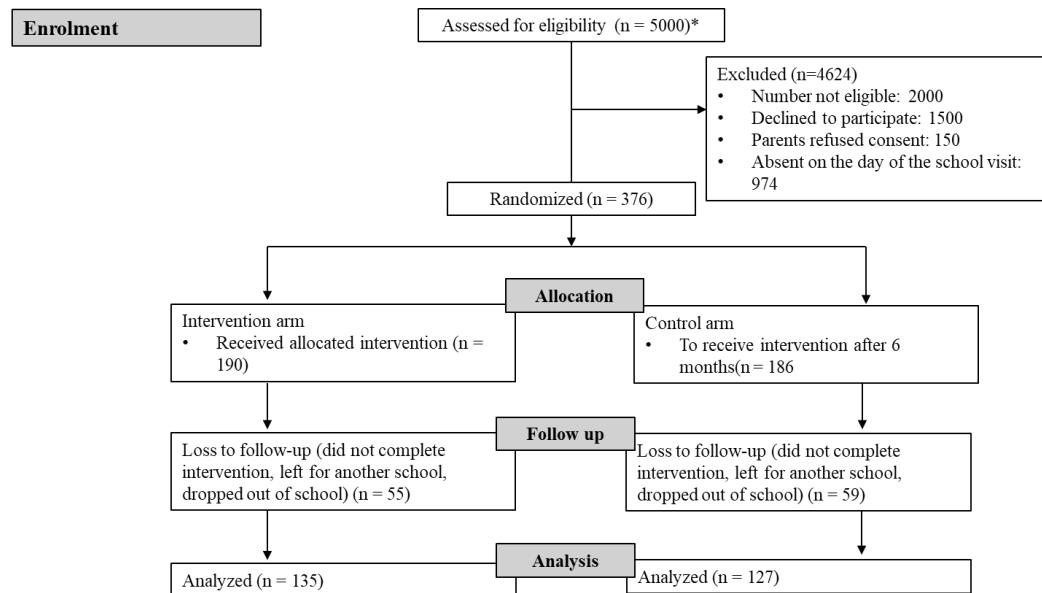
Financial resources provided to girls included paying for examination fees schools required for girls to continue / further their education or purchasing an item to support apprenticeship such as a sewing machine, baking oven and pans, or hair dryers (equivalent to N65,000, approximately 100USD). These financial resources were identified by girls participating in the intervention and were chosen over cash transfers to better ensure that participants had ownership of the resource/incentive (i.e., rather than cash transfers that could be used by the family and not fully directed at the needs of girls).

Recruitment

The school authorities were visited by research team to inform them about the study process. Each school provided a focal person (class teacher), who worked with the research team to coordinate recruitment. Trained research staff, with the assistance of the focal person visited each class to explain the study and the Girls Invest intervention. Girls in senior secondary classes one and two (years 10 and 11) in each of the 16 schools and who were between the ages of 15-19 years were offered to participate in the study. Those interested in participating signed the consent form; those who were under 18 years old had parents sign a consent form as well. Parents were invited to the schools and informed about the study process.

Sampling of the participants, including the numbers approached, as well as those eligible (those ages 15-19) and interested is illustrated in Figure 1. Those approached but not eligible were due to them being under age 15.

Figure 1. Consort Diagram



*Number of individuals assessed for eligibility, number excluded and number that declined to participate are estimated based on the number of students per class in each school.

Data Collection Procedures

Data collected for this study were drawn from process evaluation program monitoring data, participant surveys, and focus group discussions. All participant data were collected between September 2023 and July 2024.

Process evaluation monitoring data were used to report completion rates of the app-based trainings. Data were collected via the app to describe whether participants completed all trainings, and for those with partial completion, how many of the five trainings participants completed. Program monitoring data included app generated data on how long participants spent on each training. Program monitoring data also documented the provision of the economic incentives based on app-training completion.

Surveys were conducted with all participants at baseline and at a six-month follow-up timepoint. The survey collected data on girls' experiences of IPV, gender-based attitudes, and perceptions of economic vulnerability as well as demographic characteristics. Research staff administered the survey in a one-on-one private setting. The survey took about 45 minutes to complete; participants received N4,000 for the baseline survey and N6,000 for the follow-up survey as compensation for their time. The follow up rate was 69% among intervention and control groups, with no significant difference in follow-up by treatment group ($p=0.72$).

Focus group participants ($n=62$; approximately 12-13 participants in each of 5 focus groups) were drawn from study participants who had completed the Girls Invest intervention. Participation was voluntary and demographics matched those of the larger sample. After completing the six-month follow-up survey, participants who voiced interest in participating in the focus groups were contacted to schedule the focus group. Trained and experienced facilitators conducted informed consent among all focus group

participants and subsequently conducted the focus group, which lasted about 60-90 minutes and took place in a private room. Participant satisfaction and acceptance of the intervention were assessed, as well as how app-based trainings impacted participants' knowledge, attitudes, and beliefs regarding Girls Invest topics. Participants were reimbursed N6,000 upon completion of the focus group discussions. Focus group discussions were digitally recorded, transcribed, and de-identified.

Measures

Program monitoring data were automatically downloaded from the app, generating a spreadsheet providing information on module completion, including the time spent on each module. Additional process data were recorded by research staff regarding the provision of the financial incentives upon app-based training completion, including the type of financial incentive received.

Survey measures included sample characteristics as well as gender attitudes and economic factors associated with IPV.

Sample Characteristics: Survey measures included the following sample characteristics: age, ethnicity (Yoruba, Ibo, Hausa, Other), religion (Christianity, Islam, Other), relationship status (currently in a relationship, have ever has a relationship but not currently, never had a relationship), employment (yes/no), apprenticeship training (yes/no), and living situation (living with parents, other family, or others).

Attitudes supportive of traditional gender roles were measured by seven items assessing male and female roles in the following: decision-making (e.g., when to have sex, household purchases), household chores, childcare, reproductive decisions (including pregnancy prevention), and in receiving education/training. Responses involved 5-point Likert scales ranging from strongly agree to strongly disagree. Summary scores were calculated for the three items, with a Cronbach alpha of 0.60, indicating adequate internal consistency.

Attitudes supportive of IPV were measured using 7 validated items adapted from Demographic Health Surveys asking whether any of the following scenarios a husband has good reason to hit his wife: (1) She does not complete housework to his satisfaction, (2) She disobeys him, (3) She refuses to have sexual relations with him, (4) She asks him whether he has other girlfriends, (5) He finds out she has been unfaithful, (6) She goes out without telling him, or (7) She does not prepare a meal to his satisfaction. Responses involved 5-point Likert scales ranging from strongly agree to strongly disagree. Summary scores were calculated for the three items, with a Cronbach alpha of 0.89, indicating high internal consistency.

Coping with experiences of gender-based discrimination included three items assessing perceived ability to identify instances of "gender-based discrimination against me" and coping with such experiences as being able to "take care of myself," and recognizing that such experiences are not "about anything I did as an individual". Responses involved 5-point Likert scales ranging from strongly agree to strongly disagree. Summary scores were calculated for the three items, with a Cronbach alpha of 0.65, indicating adequate internal consistency.

Perceptions of economic vulnerability were assessed using eight items asking about perceived household economic situation, including having enough money to purchase basic necessities (e.g., food, clothes, other needs) and money to pay for education/training of the participant. Items also assessed perceived financial stress of the household. Responses involved 5-point Likert scales ranging from strongly agree to strongly disagree. Summary scores were calculated for the three items, with a Cronbach alpha of 0.60, indicating fair internal consistency.

Focus group guides were developed to 1) provide feedback on the intervention, including the app-based platform and financial incentives provided and 2) to understand the impact of participating in Girls Invest. Specifically, participants were asked to describe their opinions about the use of an app as a model of intervention delivery, as well as their satisfaction with the app training curriculum and financial incentives. The focus groups also addressed how each training topic had impacted the participants' knowledge, attitudes, and beliefs regarding economic and gender related factors that promote IPV (e.g., economic vulnerability, gender norms that support IPV).

Data Analysis

Quantitative survey data were used to describe the sample characteristics, and combined with program monitoring data to assess the proportion of participants completing the app-based trainings, how long participants spent on each training, and whether they received financial incentives based on app training completion, as well as what type of financial incentive they received.

A difference-in-differences approach was used to assess changes between baseline and follow-up in: 1) attitudes supportive of traditional gender roles, 2) attitudes supportive of IPV, 3) coping with experiences of gender-based discrimination, and 4) perceptions of economic vulnerability. The primary analysis was conducted using a linear regression model with cluster-adjusted standard errors to account for intra-cluster correlation. The model included an interaction term between time (pre/post) and study arm (intervention/control) to estimate changes over time associated with the intervention. Given that there were no statistically significant differences in demographic factors at baseline between the intervention and control groups (indicating effective randomization of treatment group assignment), we did not include covariates in the models. Analyses used an intention-to-treat (ITT) approach, with sensitivity analyses conducted to assess robustness to missing data and alternative model specifications. All analyses were performed using SAS v9.4.

For analyzing the focus group data, an inductive, content analysis approach was used. Content analysis involves generating and applying codes to sections of text, then reviewing the text by various codes and 'code families' to identify recurring themes. The coding team created an initial list of codes based on key domains and used these to code discussions. To enhance coding agreement, data were individually coded by two researchers, and coding procedures and definitions were discussed and compared for agreement. Additions of new codes or changes in code definitions were determined via consensus among the research team. Additional codes related to participants sharing information they learned in the app trainings were created to reflect these emerging themes. No new codes emerged after two-thirds of the focus groups were coded, suggesting that content saturation was achieved. For this particular analysis, we retrieved coded text on themes related to acceptability with the program as well as economic and social impacts. Inter-coder reliability was assessed, with 80% coder consistency or higher between coders deemed sufficient for inter-coder reliability.