Protocol for child development and nutrition measures in a large-scale randomized trial on daycare quality in Kenyan informal settlements

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Abstract

Introduction: High-quality early child education can fundamentally alter children's long-term education, earnings, and well-being. In low-resourced settings, children's development is hampered by undernutrition, poverty, and limited access to services. This study will generate high-quality evidence on child development from children who both attend and do not attend daycare across informal settlements in Kenya by (1) examining the relationship between child development, nutritional status, and household characteristics using a large, community-based sample and (2) measuring the impact of childcare quality improvements on child development and nutritional status.

Methods and analysis: We combine a cross-sectional observational study of child development and anthropometrics of approximately 4,700 children aged 0–5 across 11 counties in Kenya with a C-RCT that measures the impact of improved daycare quality on these outcomes. Child development will be assessed across cognitive, socio-emotional, motor, and language domains using validated instruments. Anthropometric measurements will include child height and weight. The primary outcomes are age-standardized developmental indices and anthropometric z-scores. Primary analyses will (1) estimate associations between child development outcomes and nutritional status using multivariable regression models, adjusting for prespecified covariates; and (2) examine differences in outcomes between children attending daycares in treated and control communities. Subgroup analyses will examine heterogeneity by child gender and daycare participation.

Ethics and dissemination: The Strathmore University Institutional Scientific and Ethical Review Committee (SU-ISERC) has provided ethical review for this study, with initial approval SU-ISERC1602/23. This study has also received IRB approval from The Ohio State University (#2023B0300). Written informed consent will be obtained from caregivers before participation. We will disseminate findings through peer-reviewed publications, policy briefs, and presentations to local stakeholders, and we will publish de-identified data and replication code on a public repository.

Trial registration number: AEA RCT Registry number AEARCTR-0011747.

Strengths and Limitations of the Study

- Strength: We measure key indicators—nutritional status and domains of early child development—associated with longer-term educational and health trajectories using well-established methods and tools.

- Strength: We capture these important measures for a difficult-to-reach population of high policy interest: children age 5 and under living in informal settlements across Kenya.

- Strength: Study compares outcomes of children with randomized differential exposure to high-quality daycare

- Limitation: The sample is not randomly drawn from the informal settlements, and the sample of daycare users could not be recruited prior to randomization due to high turnover in daycare usage.

- Limitation: Due to the nature of the setting where measurements need to take place, collected data may be noisier, as some children who are being weighed may not be minimally dressed and the child development assessment may be applied in a more crowded or distracting area than ideal.

1 Introduction

1.1 Background and rationale

High-quality early childhood care and education is a determinant of children's health, development, and well-being, with strong evidence linking early environments to improved educational attainment, labor market outcomes, and adult health [1–3]. In many low- and middle-income countries, including Kenya, such care remains scarce or unaffordable, especially for poor households [4–7]. While Kenya substantially expanded public access to pre-primary and primary school in recent years, families with young children rely heavily on the private market or informal arrangements for care.

In the urban informal settlements that house nearly half of Kenya's urban population, paid daycare is largely informal and unregulated, with high child-to-caregiver ratios, limited caregiver training, few safe and stimulating materials, and insufficient opportunities for responsive and positive caregiver interactions [8,9]. We find that 44% of daycares located in informal settlements across Kenya reported having no toys and 37% had no books [10].

Evidence from both high- and low-income settings shows that structured and supportive interactions between caregivers and children are key pathways through which childcare quality influences developmental trajectories [11]. Providers who are responsive, nurturing, and cognitively stimulating promote secure attachment, language development, and early learning skills [12], while low-quality childcare can constrain children's socio-emotional development and school readiness [13]. Early childhood nutrition is also fundamental to child development, learning, and future academic achievement [14]. Malnutrition— whether due to insufficient calories, poor dietary diversity, or micronutrient deficiencies— can impair brain development, reduce attentiveness, and weaken immune function [1,15]. In informal settlements in Kenya, approximately one-third of residents live below the poverty line, in conditions associated with malnutrition and micronutrient deficiencies [16]. Roughly half of young children in Nairobi informal settlements are stunted [17,18], and we find that 40% of daycares report that at least one child spends the day hungry at least once per week [10]. Informal daycare attendance may be associated with worse nutrition status [19], but this relationship may not be causal if malnutrition is correlated with enrollment decisions. Given this context, it is *a priori* unclear whether attending daycare is positively (or negatively) associated with health outcomes for children in informal settlements.

Although this population is highly vulnerable, data on child development and nutritional status in informal settlements is extremely limited. Families living in these settlements are mobile and hard to reach, making it particularly difficult to collect high-quality data.

We address this gap by (1) documenting child development and nutritional status for approximately 4,700 young children in 51 informal settlements across Kenya, and (2) assessing the causal impact of improvements in childcare quality on child development and anthropometric measurements for children enrolled in paid daycares within these settlements. A reliable, high-quality measurement of early childhood cognitive and

physical development outcomes among a low-income population in Kenya is fundamental for policy design, as is an understanding of the effect of efforts to improve daycare services available to them on these outcomes.

In this study, we build on an existing cluster randomized controlled trial (C-RCT) that has been underway in informal settlements in Kenya since 2024 and involves nearly 1,000 daycare firms [10]. We will collect and analyze data on child development for children aged 3–5 (roughly 2,700 children) and child anthropometric measurements for children aged 0–5 (roughly 4,700 children) in the same communities where these daycares operate. The intervention within the C-RCT focuses on improving the quality of paid daycare, including improvements in caregiving practices, infrastructure, and the provision of nutritious food. The study sample includes (a) young children from households enrolled in the study before the intervention and (b) young children currently enrolled in centers located in treatment and control communities.

1.2 Study objectives

1. To measure early child development in children 3–5 living in informal settlements in Kenya through the International Development and Readiness Assessment (IDELA) Tool and compare our results to existing measurements of child development outcomes found elsewhere.

2. To assess the prevalence and severity of nutritional status deficiencies for children ages 0–5 living in informal settlements across Kenya through anthropometric measurements.

3. To determine the correlates of both early child development and nutritional status, including whether paid caregiving arrangements are associated with children's outcomes.

4. To measure the causal impact of improvements in childcare quality on early child development and anthropometric measurements of nutritional status.

2 Methods: Participants, Interventions, and Outcomes

2.1 Study background

The protocol described here builds on an ongoing C-RCT by (1) including a new sample of children enrolled in our study daycares and (2) collecting new data on anthropometric measurements and child-based assessments of development. The existing C-RCT measures the impact of a social franchising model designed to improve childcare quality on firms and families [10]. We partnered with a Kenya-based social franchising organization that supports and facilitates the improvement of existing daycare centers through training and continuous mentorship on various areas relevant to running a daycare, including high-quality caregiving practices, health and safety, and business management.

The intervention also includes a facility improvement grant and is broad, with components that could improve child health and nutritional status both directly and indirectly. First, the organization requires and supports improved sanitation practices (e.g., installing wash stations, separating toileting from eating locations, etc). Second, it works to improve the physical infrastructure, such as providing rugs for floors. And, third, it provides subsidized, fortified porridge for children. These intervention components may directly improve nutritional status and increase cognitive development of children through improved engagement and nutrition.

For the C-RCT, we randomly assigned 25 communities to receive the treatment and 26 to be in the control group, stratifying by county. The research team conducted this randomization independently after the firm listing, firm baseline, and household listing were complete, at which point it shared allocations with the implementing partner. In treatment communities, the social franchising organization offered its program to all existing daycare firms, and it trained and enrolled those interested in its services. The organization did not enter control communities, allowing us to compare impacts in areas with and without exposure to the franchising model. In [10], we measure the impact of this social franchising model on childcare quality, provider revenues, and parental work outcomes in urban informal settlements across Kenya.

In this protocol, we outline the procedures and expected contribution of the proposed study, which builds on this existing C-RCT. The overall study timeline is shown in Figure 1, and the CONSORT diagram is shown in Figure 2. For this addition, we recruit children currently enrolled in daycare centers in both treatment and control communities but who may not have been in our original study sample (as the sample frame for children in the latter comes from the community, and will include both children who participate in daycare and those who do not). The current study focuses on children—rather than daycare firms or households—to measure child development and nutritional status among children who attend daycare, as well as those who do not, in the study communities, and comparing outcomes between treatment and control communities.

2.2 Study setting

We conduct our study in 51 low-income urban informal settlements located across 11 counties in Kenya. In early 2024, we first carried out an exercise to define the boundaries of the study communities, and therefore potential daycares and children living within them. With guidance from local leaders, study team members walked around the communities and outlined polygons using GPS that would correspond to cluster boundaries for each community. The boundary area was designed to be large enough to include a minimum number of eligible daycares; mapped boundaries were then adjusted accordingly to ensure that each community had at least 10 operating daycares.

2.3 Firm recruitment

Within the 51 communities, we conducted a census of all paid daycares, and then a baseline survey of a subset of them in early 2024, reaching 978 providers. Our implementation partner then invited surveyed firms in treatment and control communities to attend a free half-day child development workshop. We denote the roughly 60% of baseline firms that attended this workshop as the "workshop sample" (see [10] for more details on their characteristics). In treatment communities, 82.5% of the workshop sample then opted to continue the partner's program, undergoing quality improvements and further training. Workshop-attending firms are comparable between treatment and control communities across the range of characteristics we consider, thus allowing us to use the "workshop sample" to compare children in daycares that joined the social franchising organization in treatment communities with children in daycares that would have likely joined the program if the implementation partner had entered their community.

2.4 Child recruitment

Children born in 2021 or later will be recruited from two sources: (1) households listed in the C-RCT baseline, and (2) children currently enrolled in selected daycares. We recruit C-RCT baseline households following the midline survey, after enumerator trust has been built. For the daycare user sample, we ask providers to send study information and consent forms home with parents, and we send enumerators to directly recruit during drop-off times. See detailed recruitment procedures in Appendix A.1.

2.5 Data collection

Enumerators will conduct assessments with these two samples of children, measuring height and weight for all children aged 0–5 and applying the IDELA tool for children aged 3 and older. These assessments will be carried out at local daycares (with agreement from daycare owners) and community centers. Details on anthropometrics and IDELA measurement are provided in Appendix A.1.4 and A.1.5, respectively.

Data collection will be done in two stages, one in October 2025 and one in January 2026.[1] Each stage of data collection will be done over two days in each community, with two enumerators per day.

All instruments will be programmed into SurveyCTO and administered using tablets. Enumerators will carry manipulatives and other materials as necessary.

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[1] The two-stage split is because schools in Kenya are generally closed from November to January.

2.5.1 Sample size and power calculations

As Figure 1 shows, we plan to collect anthropometric measurements from 3345 baseline sample children (1748 control and 1597 treatment) and 660 daycare user sample children (330 control and 330 treatment). This yields 80% statistical power to detect a treatment effect of 0.14 standard deviations on anthropometric measurements for each subsample. For child development, we have 80% power to detect a treatment effect of 0.25 standard deviations, reflecting that roughly 60% of children will be in the relevant age range and that the estimated intra-cluster coefficient is likely to be higher. See Appendix A.2 for more details. These minimum detectable effect sizes are well within the range of measured impacts found from similar interventions (see [20], development impacts ranging from 0.30–0.52 s.d.; and see [21], nutrition impacts averaging 0.20 s.d.).

2.6 Oversight and monitoring

2.6.1 Data monitoring

Data collection and implementation will be monitored by the research team. Innovations for Poverty Action-Kenya (IPA) will implement all data collection. IPA conducts real-time monitoring of data collection progress to track consent, response rates, refusal reasons, and survey duration. During the data collection, IPA also carries out high-frequency data checks to identify potential data problems quickly, such as unexpected missing values. RA and field supervisors also hold weekly debriefings to address any data quality or collection issues in real time.

The child development assessments will follow adapted data quality guidelines. Supervisors will sit in and observe a subset of child assessments and ensure that all ethical and protocol guidelines are being strictly followed. For height and weight measurements, taking two measurements of each and then a third if there is a discrepancy larger than 4cm (height) or 0.5kg (weight)—and recording all of them—increases the likelihood that our data for analysis is accurate. On the IDELA exercise, there are two questions where children are asked to make drawings or write on paper. Enumerators will photograph those pictures for a randomly selected 10% sample, which will be reviewed by another staff member to ensure accurate scoring.

Because this intervention and data collection pose minimal risk, we do not plan external monitoring or formal external auditing.

2.6.2 Harms

Because this study comprises data collection with young children alongside a minimal-risk intervention delivered to childcare providers, we do not anticipate any harms, though study participation could disrupt providers' daily care routines, and children may not want to participate in the assessment. Field staff will pre-book assessment sessions to minimize inconvenience to providers, and they will be trained to identify signs that a child is upset or does not assent to participation. IPA will document any adverse events and share them

with the PIs. Any serious incidents will be reported promptly to the institutional review boards overseeing this study.

2.7 Participant and public involvement

The participants and/or the public were not involved in the design, conduct, reporting, or dissemination plans of this study.

3 Statistical Analysis

Our primary outcomes are anthropometric indicators (height and weight) of child nutrition and child development indices across cognitive, socio-emotional, motor, and language domains.

3.1 Primary outcomes

3.1.1 Nutritional status

- Height-for-age z-scores (HAZ).

- Weight-for-age z-scores (WAZ).

- Stunting, wasting, and underweight, as defined using WHO growth standards.

3.1.2 Child development

- Domain-specific scores of IDELA (motor development; emergent literacy; emergent numeracy; socio-emotional development) standardized to age-adjusted z-scores using the reference distribution.

- Composite index of child development created using item response theory (IRT).

3.2 Data analysis

First, we will analyze and produce descriptive statistics of the key child development outcomes listed above. Second, we will compare these measurements for children in the treatment communities to those in control communities according to the larger study's randomized design using multivariate regression. We will include controls for child age, gender, and strata (county) fixed effects.

We will also examine these outcomes separately for the C-RCT baseline sample and daycare user sample. Because C-RCT baseline households were identified prior to randomization and the intervention, we anticipate that differences in outcomes will reflect the causal intention-to-treat impact of improved childcare in the community. For the daycare user sample, we will capture the treatment-on-treated effect, but this could be biased if the quality improvement affected the selection of children into daycares.

We will restrict our child development analysis to children for whom we obtain IDELA data. And we restrict our nutritional status analysis to children for whom we obtain valid anthropometric measurements. In the event of missing independent variables, we will code them as zero and include a missing variable flag.

Cross-sectional data gathered concurrently through caregiver and daycare firm surveys will produce a large data set, allowing for additional correlation and mediator analyses. The final report of this protocol will follow the general Consolidated Standards of Reporting Trials Statement (CONSORT).

3.2.1 Subsample analysis and heterogeneity

We will examine effects among our two different sample sources: the children recruited through our C-RCT household sample and those recruited as children currently enrolled in the selected 220 daycares. We will also conduct sub-group analyses along the following dimensions:

- Daycare enrollment status: whether using daycare or not; type of daycare used (home- and center- versus school-based daycare); and quality of daycare used

- Child gender

3.3 Software

Data will be collected electronically using SurveyCTO on tablets. All statistical analyses will be carried out in Stata.

4 Ethics and Dissemination

4.1 Research ethics approval

The Strathmore University Institutional Scientific and Ethical Review Committee (SU-ISERC) has provided ethical review for this study, initial approval SU-ISERC1602/23. This study has also received IRB approval from The Ohio State University (submission #2023B0300). The University of Vermont Committee on Human Subjects determined the UVM-affiliated activities to be exempt human subjects research under 45 CFR 46.104(d)(4) (STUDY00002790, 01 November 2023); UVM is not the reviewing IRB for the overall study. Significant amendments will be approved by both Strathmore and OSU IRBs, updated in the trial registry, and communicated to partners and funders. Because this study has minimal risk, we do not have a data monitoring committee and do not have stopping guidelines in place.

Trial conduct will be monitored internally by the principal investigators and project management team. Field supervisors will conduct routine spot checks to ensure adherence to study protocols, participant confidentiality, and data quality standards. Data will be reviewed weekly for completeness and consistency, and any deviations from

protocol will be discussed and documented during biweekly implementation meetings. Given the minimal risk nature of the intervention, no independent monitoring body is deemed necessary.

4.2 Consent and assent

We will only collect measures from children for whom we have received informed consent from their caregiver. For children whose households are in the C-RCT survey sample, we will request consent from caregivers to measure and assess their children at the conclusion of the caregiver interview. The child assessment will take place at a separate point in time, and caregivers will be invited to bring the child to that appointment. For the daycare user sample, we will work with daycare owners to obtain informed consent from the caregivers of the children enrolled in their daycare.

Child assent: Once parental consent has been obtained, enumerators will seek child assent before starting the assessment and throughout the process. Assent will be interpreted broadly, with refusal including either verbal or physical hesitancy. If a child becomes very upset, scared, or angry, the enumerator will record that the child did not assent and move on to the next child.

4.3 Confidentiality

Consistent with our IRB-approved protocol, we will use appropriate data safeguards and precautions at all stages of the research to ensure that identifiable data are kept securely and not shared with individuals outside of the study team.

4.4 Child safeguarding

Innovations for Poverty Action-Kenya has developed a rigorous child safeguarding policy that governs this data collection exercise. All team members will be trained on the care and conduct of research with children, and behavior will be monitored for compliance.

4.5 Dissemination

We will share study findings through presentations to stakeholders and policymakers, policy briefs, and blog posts. The research team will prepare and disseminate academic papers and present at national and international conferences. Following publication, we will publish replication code and de-identified datasets in a public repository.

5 Author Contributions

Beam, Fitzpatrick, and Reimão contributed to the design and implementation of the research. Fitzpatrick oversaw piloting. All authors will contribute to the analysis of the results and to the writing of the manuscript.

6 Acknowledgments

7 Competing Interests Statement

None of the authors have any competing interests.

8 Funding

9 References

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A. Supplementary Appendix

A.1 Child recruitment

Children in the current study, for whom we will measure child development and nutritional status, come from two sources: a listing sample, which is a sample of households that were identified in 2024 as living within the study community boundaries, and a daycare user sample, which includes children currently enrolled in "workshop sample" daycares.

A.1.1 Listing sample

We generated a "listing sample" of households in 2024 by canvassing the study communities to identify and recruit households with children born during or after 2021. We listed 5,741 households within the study communities, of which 5,633 were eligible for participation in the baseline survey. Households were recruited through various methods, including door-to-door visits, approaching individuals in community markets, and at local daycare facilities.

For our C-RCT, we randomly selected 3,419 of these households for baseline in April–July 2024, completing the survey with 3,029 of them. This baseline survey included information on parental labor force participation, daycare use, and caregiving practices. However, that data collection round did not include a caregiver-reported child development module, direct child development assessments with children, or the collection of child anthropometric measurements.

In September–October 2025, we will survey with the households in the baseline and the remaining 2,214 listed households that were not surveyed at baseline. For the current study, at the end of the household survey, we identify one child born in 2021 or later in each household as the "target child." This child will typically be the youngest in the household at the time of the baseline survey (2024). However, if that child is no longer in the household, we will replace them with another child in the household born in 2021 or later. (If there are no other children in that age range, we consider a child born in 2019 or more recently; if the household does not have any child born in 2019 or more recently, we remove them from the sample.) The caregiver of this child (generally the respondent to the household survey) will then be invited to bring the child at a pre-determined time and location within the community for anthropometric measurements and, if the child is aged 3 or older, a direct enumerator-administered child development assessment, as described below in the Data collection section of this protocol.

In the September–October 2025 household survey round, we will use the GSED short-form to collect caregiver-reported indicators of child development for the same children who are invited for the in-person assessment. The GSED tool was originally available in English. A member of the team first translated it into Swahili, and the survey was back-translated and rigorously tested by multiple study team members. The GSED results do not fall within

the main objectives of the current study, though they may be used to assist in our analysis and interpretation of the direct child assessment.

A.1.2 Daycare user sample recruitment

Additionally, we will select four daycare firms from each of the 51 communities. There are an additional 8 daycares selected four treatment communities because these communities were merged after mapping but before randomization, yielding a total of 220 daycares. We target daycares that participated in the 2024 pre-treatment workshop(i.e., they are in the "workshop sample"). These daycares are comparable between treatment and control communities on baseline characteristics and reflect the set of likely takers. That is, if they are in a treatment community, they are significantly more likely to have participated in the quality-improvement intervention than non-attenders. And if they are in a control community, they would have been highly likely to participate had the program been offered in their community. In the event a community does not have enough firms that either agree to participate in the daycare user sample, or a sufficient number of children within the relevant age range enrolled, additional firms within the sample will be recruited as replacements.

All children born in 2021 and later enrolled in the selected daycares will be invited to participate in the height and weight measurement and, if aged 3 and older, the enumerator-administered child development assessment. We will work with the daycares to secure caregiver consent, sending forms home with information on the assessment day and collecting parent signatures at drop off or pick up as relevant. During assessment days, all children who are present and whose parents provided consent will be invited to participate.

Note that daycares hosting these activities consist of both daycares that participated in the C-RCT treatment and those that did not. Enumerators are trained to not refer to the intervention or experiment in any discussion with respondents or caregivers.

A.1.3 Piloting and team training

The procedures were rigorously piloted in three different counties of Kenya in communities outside of the study area in August–September 2025. Training for the full data collection effort will include 7 days of training for a team of 22 enumerators in September 2025, and an additional refresher training for at least 4 days in January 2026. The training agenda will include both classroom exercises and field practice, as well as safeguards for protecting child respondents.

A.1.4 Anthropometric measurement

1. *Guardian and caregiver consent*. Enumerators should only collect height and weight measurements for children whose guardian previously consented. For children whose caregivers brought them to the measurement location, this will be obtained in written form from the caregiver at the time of the meeting. For children who attend the daycares in which the assessments are conducted, consent will be

obtained in advance, with participant daycares collecting the forms from caregivers and passing them onto the enumeration team.

During the measurement process, teams will also record age in months, according to the primary caregiver. If the caregiver does not know the age in months, enumerators will record "Do not know" on the form and proceed.

2. *Preparation of children for height or length and weight measurements.* Once all permissions are obtained, enumerators will begin to prepare children for the measurement. As per WHO guidelines, children under 24 months are measured by length; children 24 months and over are measured by height. For the collection of height and length, children will remove their shoes. If the child's hair would potentially interfere with the height measure, and the hair is arranged in a temporary fashion, then the hair will be taken down to allow for accurate measurement. Otherwise, if the child's hair ornamentation would interfere with measurement, enumerators will be trained to collect the height or length measure from the top of the head.

   Enumerators or caregivers will next remove sweaters, jackets, and shoes in an attempt to have the child wear "minimal clothing." If the parent or legal guardian is present, the enumerator may ask them for assistance. If a parent or legal guardian is not present, it may not be possible to have the child wear minimal clothing. Instead, enumerators will tick on the form the clothes that the child is wearing.

3. *Measurement of child height or length.* Enumerators will measure both height/length and weight for one child before moving to the next child. Note that it takes 2 enumerators per child.

   For each child, height/length will be taken twice and measured in centimeters. If the two instances disagree by 4cm or more, a third measurement will be taken. In the data analysis, the child's height will be the average of the two closest height measures.

4. *Assessment of child weight.* For each child, the weight measurement will also be taken twice and recorded in kilograms to the nearest decimal. If the two instances disagree by 0.5kg or more, a third measurement will be taken.

   For children who are too young to stand on the scale independently, we will first ask the caregiver to hold the child and collect the combined weight. Then, the caregiver will step on the scale without holding the child. The child's weight will be the difference between these two measures. Again, each of these measurements will be taken twice, and a third will be collected if the discrepancy between the first two is greater than 0.5kg.

A.1.5 IDELA measurement

Enumerators will conduct child development assessment using the IDELA tool for children ages 36 months and up whose caregivers have provided consent. Training for the tool follow the materials provided by IDELA.

One enumerator can conduct IDELA with one child at a time. To the extent possible, they have the child be in a quiet place away from distractions, including other children, within the assessment location.

A.2 Power calculations

We calculate statistical power separately for the baseline and daycare user samples.

For the daycare user sample, we estimate a sample size of 1,320 children ages 0–5. Based on firm baseline data, we anticipate that 62% will be ages 3–5. For the household baseline sample, we have a frame of 2045 treatment households and 1868 control households with age-eligible children. We estimate that 56% will have target children ages 3–5, reflecting midline survey progress to date. We anticipate that 85.5% of the sampling frame are likely to bring their children for evaluation, reflecting the 95% response rate to date and field staff estimates of a 90% assessment attendance rate. (99% of parents surveyed so far have consented to the later assessment.)

Because we randomized partner entry at the community level, we must account for the potential correlation of child-level outcomes within communities. For anthropometrics, we conservatively use a community-level ICC of 0.03, based on (8)'s finding that most anthropometric measures had community-ICCs below 0.03 before covariate adjustment. Community-level ICCs on child development are less commonly available ((8) provides community-level ICCs averaging 0.2 for enrollment and attendance only). We use an ICC of 0.10, reflecting the additional likely variation in development outcomes vs. binary enrollment and attendance outcomes.